Session- 2021-22

Name of School/ Department: Gyan vihar School of Engineering & Technology / Diploma in Engineering

A. List of Diploma programs offered

1. Diploma in Electrical Engineering
2. Diploma in Mechanical Engineering
3. Diploma in Civil Engineering
4. Diploma in Computer Science & Engineering

B. List of post graduate programs offered

NA

C.List of Ph.D. Programs offered

N.A

Program Outcome:

- PO1. **Diploma Engineering knowledge**: Provides a solid foundation for future learning. Apply the knowledge of mathematical, scientific and engineering fundamentals in formulating and solving engineering problems.
- PO2. **Problem analysis**: Identify, analyse and provide substantial conclusions for complex engineering problems using mathematics, natural sciences, and engineering sciences.
- PO3. **Design/development of solutions**: Maintain a core of mathematical and technical knowledge that is adaptable to changing technologies. Design appropriate solutions for complex engineering problems towards meeting societal needs.
- PO4. **Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of the information to provide valid conclusions.

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- PO5. **Modern tool usage**: Apply modern tools and techniques for prediction and modelling of complex engineering activities with an understanding of the limitations.
- PO6. **The engineer and society**: Apply reasoning informed by the contextual knowledge through good analytical design and implementing the skills in the industries, government, academia and consulting sectors.
- PO7. **Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- PO8. **Individual and team work**: Work competently as an individual or in a team in one or more core areas of engineering and technology.
- PO9. **Communication**: Communicate effectively on engineering activities to understand, write and present reports.
- PO10. **Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
- PO11. **Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Program Specific Outcomes: Diploma in Electrical Engineering

- **PSO1**-Able to apply the knowledge gained during the course of the program from Mathematics, Basic Computing, Basic Sciences and Social Sciences in general and all electrical courses in particular to identify, formulate and solve real life problems faced in industries.
- **PSO2**-To train students with good extensiveness of information in the field of Diploma in electrical engineering streams so as to formulate engineering principles, order to offer techno commercially feasible and socially acceptable solutions to real life engineering problems.
- **PSO3**-Diploma engineers will demonstrate confidence to learn by self and exhibit ability for lifelong learning.
- **PSO4**-Diploma engineers ability to design a System, Component, or Process to meet desired needs with in realistic constraints such as Economic,

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Paper Code	**DEE231**
Paper Title	**BASIC ELECTRICAL ENGINEERING**
Course outcomes	***Upon successful completion of the course, students would be able to:***
CO 1	The course content gives full knowledge to learn how R, L and C reacts with DC and AC circuit.
CO 2	Find the solution of problem dependent on designing of small iron core transformer.
CO 3	Solve the problems related to Kirchhoff‟s Law and Capacitance.
CO 4	Enable students to solve difficulties face by small units on basis of batteries.
CO 5	Enable students to solve difficulties face by small units on basis of batteries.

Paper Code	**DEE232**
Paper Title	**ELECTRONICS DEVICES AND CIRCUIT**
Course outcomes	***Upon successful completion of the course, students would be able to:***
CO 1	The course content gives full knowledge to learn how Semiconductor diode used in rectification.
CO 2	Find the solution of problem dependent on BJT
CO 3	its voltage, current and power gain.
CO 4	Solve the problems related to Power Amplifier.
CO 5	Enable students to solve difficulties face by feedback for gain, stability, frequency and nonlinear distortion.

Paper Code	**DEE233**
Paper Title	**ELECTRICAL MEASUREMENT & INSTRUMENTATION**
Course outcomes	***Upon successful completion of the course, students would be able to:***
CO 1	The course content gives full knowledge to learn how measuring instrument can also give some error.
CO 2	Find the solution of problem dependent on indicating type instrument.
CO 3	Solve the problems related to resistance measurement & bridges.
CO 4	Enable students to solve difficulties face by CRO & Transducer.
CO 5	Solve the problems related to resistance measurement & bridges.

Paper Code	**DEE234**
Paper Title	**DESIGN OF ELECTRICALINSTALLATION-I**
Course	***Upon successful completion of the course, students would be able to:***

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outcomes	
CO 1	Increasing use of Fuses, MCB, isolators, E.L.C.B. and energy meters.
CO 2	Find the solution of problem dependent on Calculation of material and labour cost.
CO 3	Determine the Need of Earthling, Pipe and plate Earthling. Solve the problems related to
CO 4	Design for main switch boards and distribution board.
CO 5	Enable students to use application of Estimation of material required for distribution substation.

Paper Code	**DEE235**
Paper Title	**ELECTRICAL MACHINES-I**
Course outcomes	***Upon successful completion of the course, students would be able to:***
CO 1	The course content gives full knowledge to learn Fleming‟s rule of electromagnetic induction used in DC machines.
CO 2	Find the solution of problem dependent on electrical power due to losses.
CO 3	Determine the aspects of parallel operation of DC Machines. Solve the problems related to different connections of transformer.
CO 4	Design for main switch boards and distribution board.
CO 5	Enable students to use application of DC motor in day to day life.

Paper Code	**DEE236**
Paper Title	**GENERATION OF ELECTRIC POWER**
Course outcomes	***Upon successful completion of the course, students would be able to:***
CO 1	The course content gives full knowledge to learn economic aspects of generation and transmission of electrical energy.
CO 2	Find the solution of problem dependent on electrical power demand.
CO 3	Determine the variable source of electrical power (Solar, Wind) Solve the problems related to Underground and Overhead transmission lines.
CO 4	Enable students to use application of different power stations and load allocation among different power station.
CO 5	Enable students to use application of DC motor in day to day life.

Paper Code	**DEE237**
Paper Title	**CIRCUIT THEORY**
Course outcomes	***Upon successful completion of the course, students would be able to:***
CO 1	The course content gives full knowledge to learn Network parameters and their application.
CO 2	Find the solution of problem dependent on electrical circuit voltage, current and power calculation.
CO 3	Determine the aspects of active and passive network parameters.
CO 4	Enable students to use application of two port network and resonance.

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CO 5	Solve the problems related to circuit transients.

Paper Code	**DEE238**
Paper Title	**POWER ELECTRONICS - I**
Course outcomes	***Upon successful completion of the course, students would be able to:***
CO 1	The course content gives full knowledge to learn Power Electronics Devices.
CO 2	Find the solution of problem dependent on triggering and efficiency of SCR.
CO 3	Determine the different aspects of 1 and 3 Phase converter. Solve the problems related to source impedance and power factor by PWM.
CO 4	Enable students to use Control strategies of Choppers.
CO 5	Enable students to use Control strategies of Choppers.

Paper Code	**DEE271**
Paper Title	**ELECTRICAL ENGINEERING DRAWING LAB**
Course outcomes	***Upon successful completion of the course, students would be able to:***
CO 1	The course content gives full knowledge to nonlinear electrical devices.
CO 2	Find the solution of problem dependent on triggering and efficiency of SCR.
CO 3	Find the solution of problem dependent on joints in electrical wiring.
CO 4	Solve the problems related to single phase transformer.
CO 5	Enable students to solve difficulties face in different types of winding of DC generator.

Paper Code	**DEE272**
Paper Title	**ELECTRICAL MEASUREMENT AND INSTRUMENTATION LAB-I**
Course outcomes	***Upon successful completion of the course, students would be able to:***
CO 1	The course content gives full knowledge to learn Frequency measurement using CRO.
CO 2	Find the solution of problem dependent on power in 3-phase circuits by two wattmeter method.
CO 3	Solve the problems related to Calibration of ammeter and voltmeter.
CO 4	Enable students to solve difficulties face in measurement using AC and DC Bridges.
CO 5	Enable students to solve difficulties face in measurement using AC Bridges.

Paper Code	**DEE273**
Paper Title	**BASIC ELECTRICAL ENGINEERING LAB**
Course	***Upon successful completion of the course, students would be able to:***

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outcomes	
CO 1	The course content gives full knowledge to learn how R, L and C reacts with DC and AC circuit.
CO 2	Find the solution of problem dependent on designing of small iron core transformer.
CO 3	Solve the problems related to Kirchhoff‟s Law and Capacitance.
CO 4	Enable students to solve difficulties face by small units on basis
CO 5	Enable students to solve difficulties face in different types of winding of DC generator.
Paper Code	**DEE274**
Paper Title	**ELECTRONICS DEVICES ANDCIRCUIT LAB**
Course outcomes	***Upon successful completion of the course, students would be able to:***
CO 1	The course content gives full knowledge to learn how Semiconductor diode used in rectification.
CO 2	Find the solution of problem dependent on BJT and its voltage, current and power gain.
CO 3	Solve the problems related to Kirchhoff‟s Law and Capacitance.
CO 4	Solve the problems related to Power Amplifier.
CO 5	Enable students to solve difficulties face by feedback for gain, stability, frequency and nonlinear distortion.

Paper Code	**DEE275**
Paper Title	**ELECTRICAL MACHINES LAB-I**
Course outcomes	***Upon successful completion of the course, students would be able to:***
CO 1	The course content gives full knowledge to learn Fleming‟s rule of electromagnetic induction used in DC machines.
CO 2	Find the solution of problem dependent on electrical power due to losses.
CO 3	Solve the problems related to Kirchhoff‟s Law and Capacitance.
CO 4	Determine the aspects of parallel operation of DC Machines. Solve the problems related to different connections of transformer.
CO 5	Enable students to use application of DC motor in day to day life.

Paper Code	**DMA231**
Paper Title	**ADVANCE MATHEMATICS**
Course outcomes	***Upon successful completion of the course, students would be able to:***
CO 1	The course content gives full knowledge to learn Linear Programming.
CO 2	Find the solution of problem dependent on Project Scheduling.
CO 3	Solve the problems related to Transportation.
CO 4	Solve the problems related to Power Amplifier.
CO 5	Enable students to solve difficulties face in Numerical method and transform

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	Calculus.

Paper Code	DHS302
Paper Title	**INDUSTRIAL MANAGEMENT**
Course outcomes	***Upon successful completion of the course, students would be able to:***
CO 1	Enable students for Essential Imperatives and Steps in Industrial & Process Management.
CO 2	Find the solution of problem dependent on planning &organization.
CO 3	Determine the Need of Schools of Management thoughts.
CO 4	Solve the problems related to Hierarchy Theory &Planned Location.
CO 5	Enable students to use application of material management and scope of material management.

Paper Code	DHS232
Paper Title	**ENTREPRENEURSHIP**
Course outcomes	***Upon successful completion of the course, students would be able to:***
CO 1	The course content gives full knowledge to learn hoe an entrepreneur can succeed.
CO 2	Find the solution of problem dependent on industrial units.
CO 3	Determine the Need of Schools of Management thoughts.
CO 4	Solve the problems related to Location and pricing of industrial units.
CO 5	Enable students to solve difficulties face by small units

Paper Code	DHS231
Paper Title	**BASIC ECONOMICS AND SOCIAL SCIENCES**
Course outcomes	***Upon successful completion of the course, students would be able to:***
CO 1	The course content gives full knowledge to learnnature and scope of economics.
CO 2	Find the solution of problem dependent on Micro Economics.
CO 3	Solve the problems related to Law of Demand, Law of Supply.
CO 4	Solve the problems related to Location and pricing of industrial units.
CO 5	Enable students to solve difficulties face in social reforms and political economics.

Paper Code	DEE378
Paper Title	**ANALOG & DIGITAL ELECTRONICS LAB**
Course outcomes	***Upon successful completion of the course, students would be able to:***

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CO 1	Increasing use of electronic gadgets in control of analog electronics makes this course indispensable for having an insight into trouble-shooting techniques.
CO 2	Find the solution of problem dependent on Schottky&Zener diode.
CO 3	Determine the variable characteristics & applications of BJT & FET.
CO 4	Solve the problems related to Operational Amplifier.
CO 5	Enable students to use application of Logic Gates and Sequential and Combinational Circuits..

Paper Code	DEE377
Paper Title	**MAT LAB**
Course outcomes	***Upon successful completion of the course, students would be able to:***
CO 1	Find the Information of any input signal used in electrical equipments.
CO 2	Find the solution of problem dependent on Low and High pass
CO 3	Solve the problems related to Law of Demand, Law of Supply.
CO 4	Filters.
CO 5	Determine the difference between Band reject and Band Pass Filters. Solve the problems related to AND and OR gate.

Paper Code	DEE376
Paper Title	**ESTIMATION & COSTING LAB**
Course outcomes	***Upon successful completion of the course, students would be able to:***
CO 1	Increasing use of Fuses, MCB, isolators, E.L.C.B. and energy meters.
CO 2	Find the solution of problem dependent on Calculation of material and labour cost.
CO 3	Determine the Need of Earthing, Pipe and plate Earthing. Solve the problems related to
CO 4	Design for main switch boards and distribution board.
CO 5	Enable students to use application of Estimation of material required for distribution substation.

Paper Code	DEE375
Paper Title	**SWITCH GEAR & PROTECTION LAB**
Course outcomes	***Upon successful completion of the course, students would be able to:***
CO 1	The course content gives full knowledge to learn economic aspects of

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	generation,
CO 2	Voltage regulation methods in power system and performance of EHV and HVDC transmission.
CO 3	Find the solution of problem dependent on Voltage Regulation of DC and AC distribution systems.
CO 4	Enable students to use application of different power stations and load allocation among different power station.
CO 5	Determine the variable application of different types of Relays. Solve the problems related to Underground and Overhead lines.

Paper Code	DEE373
Paper Title	**ELECTRICAL DESIGN & ESTIMATING LAB**
Course outcomes	***Upon successful completion of the course, students would be able to:***
CO 1	Idea of method used in RSEB to calculate the voltage regulation.
CO 2	Find the solution of problem dependent on **Design and estimate the list of materials**.
CO 3	Determine the variable characteristics & applications of BJT & FET.
CO 4	Determine the Single line diagram of 220/132 KV G.S.S. and 33/11 KV substation.
CO 5	Solve the problems related to Design of distribution scheme for a small colony including load survey. Enable students to use application of Pole mounted substation, G.S.S. Earthing

Paper Code	DEE379
Paper Title	**ELECTRICAL MACHINES LAB-II**
Course outcomes	***Upon successful completion of the course, students would be able to:***
CO 1	Find the Torque-Slip Characteristics of induction machines.
CO 2	Find the Torque-Slip Characteristics of induction machines. Find the solution of problem dependent on parallel operation of alternators.
CO 3	Determine the variable characteristics & applications of BJT & FET.
CO 4	Determine the difference between V and inverted V curve. Solve the problems related to transient behaviour of 3-phase machines.
CO 5	Enable students to use application of special machines for solvability of many problems.

Paper Code	DEE338
Paper Title	**ADVANCE CIRCUIT THEORY**
Course outcomes	***Upon successful completion of the course, students would be able to:***
CO 1	Find the Torque-Slip Characteristics of induction machines.
CO 2	Find the Power Relation of 3-phase networks.
CO 3	Solve the problems related to transient response of circuit.

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	Enable students to use application of network synthesis.
CO 4	Find the solution of problem dependent on Power Calculation.
CO 5	Enable students to use the Active and Passive filters as their application.

Paper Code	DEE339
Paper Title	**ENERGY MANAGEMENT**
Course outcomes	***Upon successful completion of the course, students would be able to:***
CO 1	Enable students for Essential Imperatives and Steps in User Side Energy Planning.
CO 2	Find the solution of problem dependent on Energy and Economy.
CO 3	Determine the Need of Energy audit of electrical system.
CO 4	Solve the problems related to Design Power Generation and Electric Power Sector Planning in India.
CO 5	Enable students to use application of Combustion products of fossil fuels. Particulate matter, fabric filter and Baghouse.

Paper Code	DEE340
Paper Title	**ANALOG & DIGITAL ELECTRONICS**
Course outcomes	***Upon successful completion of the course, students would be able to:***
CO 1	Increasing use of electronic gadgets in control of analog electronics makes this course indispensable for having an insight into trouble-shooting techniques.
CO 2	Find the solution of problem dependent on Schottky&Zener diode.
CO 3	Determine the variable characteristics & applications of BJT & FET.
CO 4	Solve the problems related to Operational Amplifier.
CO 5	Enable students to use application of Logic Gates and Sequential and Combinational Circuits..
Paper Code	**DCP131**
Paper Title	**Computer &Information Technology Fundamental**
Course outcomes	***Upon successful completion of the course, students would be able to:***
CO 1	The course content gives full knowledge to learn about Computer and its Basics.
CO 2	Students will be able to know about CPU and ALU.
CO 3	Students will be able to make word file, report file etc.
CO 4	Apply their algorithms to build programs in the C programming language.
CO 5	Students easily know XP and Windows 7.

Paper Code	**DCY131**
Paper Title	**CHEMISTRY-I**
Course	***Upon successful completion of the course, students would be able to:***

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outcomes	
CO 1	The course content gives full knowledge of basic of chemistry (atomic structure, atomic weight etc.)
CO 2	To know about Avogadro no, salt etc.
CO 3	Students will be able to differentiate between organic and inorganic compound.
CO 4	Students will be able to differentiate between organic and inorganic compound.
CO 5	Students easily know about electro chemistry.
Paper Code	**DEN131**
Paper Title	**BASIC ENGLISH-I**
Course outcomes	***Upon successful completion of the course, students would be able to:***
CO 1	The course content gives full knowledge to learn how to make sentences.
CO 2	Find the solution of problem of direct-indirect and active-passive voice.
CO 3	Find the solution of problem of active-passive voice.
CO 4	Students will be able to know how to use tenses.
CO 5	Students easily differentiate in between Noun, Pronoun, and Preposition etc.

Paper Code	**DMA131**
Paper Title	**MATHEMATICS-I**
Course outcomes	***Upon successful completion of the course, students would be able to:***
CO 1	The course content gives full knowledge to learn about algebra and trigonometry.
CO 2	Find the solution of problem of trigonometry.
CO 3	Students will be able to solve problem on coordinate geometry.
CO 4	Students easily know about circle
CO 5	Students easily know about circle, parabola and ellipse.

Paper Code	**DPY 131**
Paper Title	**PHYSICS-I**
Course outcomes	***Upon successful completion of the course, students would be able to:***
CO 1	The course content gives full knowledge to learn about units and dimensions.
CO 2	Find the solution of problem of gravitation and satellite.
CO 3	Students will be able to solve problem on transfer of heat.
CO 4	Students easily know about liquid.
CO 5	Students easily know about liquid and elasticity.

Paper Code	**DCP175**
Paper Title	**COMPUTER &INFORMATION TECHNOLOGY FUNDAMENTAL LAB**
Course outcomes	***Upon successful completion of the course, students would be able to:***

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CO 1	The course content gives full knowledge to learn about Computer and its Basics.
CO 2	Students will be able to know about CPU and ALU.
CO 3	Students will be able to make word file, report file etc.
CO 4	Students easily know XP and Windows 7.

Paper Code	**DPY 131**
Paper Title	**CHEMISTRY LAB-I**
Course outcomes	***Upon successful completion of the course, students would be able to:***
CO 1	The course content gives full knowledge of basic of chemistry (atomic structure, atomic weight etc.) To know about Avogadro no, salt etc.
CO 2	Students will be able to differentiate between organic and inorganic compound.
CO 3	Students easily know about electro chemistry.

Paper Code	**DEN171**
Paper Title	**BASIC ENGLISH LANGUAGE LAB-I**
Course outcomes	***Upon successful completion of the course, students would be able to:***
CO 1	The course content gives full knowledge to learn how to make sentences.
CO 2	Find the solution of problem of direct-indirect and active-passive voice.
CO 3	Students will be able to know how to use tenses.
CO 4	Students easily differentiate in between Noun, Pronoun,

Paper Code	**DME176**
Paper Title	**WORKSHOP PRACTICE-I**
Course outcomes	***Upon successful completion of the course, students would be able to:***
CO 1	Student will be able to Weld one metal into another metal without affecting parent metal
CO 2	Cast the metal to form a new shaped casting metal Perform carpentry work in industry.
CO 3	Student will be able to Design various joints and weld them.

Paper Code	**DPY 172**
Paper Title	**PHYSICS-I LAB**
Course outcomes	***Upon successful completion of the course, students would be able to:***
CO 1	Student will be able to take diameter, area ,volume dimension using screw gauge and varniercaliper
CO 2	Find the solution of problem of gravitation and satellite.
CO 3	Students will be able to solve problem on transfer of heat.
CO 4	Students easily know about liquid and elasticity.

Paper Code	**DCY138**

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Paper Title	CHEMISTRY-II
Course outcomes	*Upon successful completion of the course, students would be able to:*
CO 1	The course content gives full knowledge of basic of Water.
CO 2	To know about Lubricants.
CO 3	Students will be able to differentiate between Paint and Varnish. Students easily know about Polymers.
CO 4	The course content gives full knowledge of basic of Water.

Paper Code	DEN136
Paper Title	BASIC ENGLISH-II
Course outcomes	*Upon successful completion of the course, students would be able to:*
CO 1	The course content gives full knowledge to learn how to make sentences.
CO 2	Find the solution of problem of preposition and modals.
CO 3	Students will be able to know how to use tenses.
CO 4	Students easily write essay, letter and paragraph etc.

Paper Code	DMA139
Paper Title	MATHEMATICS-II
Course outcomes	*Upon successful completion of the course, students would be able to:*
CO 1	The course content gives full knowledge to learn about Maxima and Minima.
CO 2	Find the solution of problem of Differential Calculus.
CO 3	Students will be able to solve problem on Integral Calculus. Students easily know about Differential Function.
CO 4	The course content gives full knowledge to learn about Maxima and Minima.

Paper Code	DME140
Paper Title	APPLIED MECHANICS
Course outcomes	*Upon successful completion of the course, students would be able to:*
CO 1	1.Define scope of Engineering Mechanics
CO 2	2.Understand Co - planer Concurrent Force system
CO 3	3.Compute resultant & Equilibrium forces for given coplanar concurrent force system

Paper Code	DPY137
Paper Title	PHYSICS-II
Course outcomes	*Upon successful completion of the course, students would be able to:*
CO 1	The course content gives full knowledge to learn about A.C. & D.C. Circuits.
CO 2	Find the solution of problem of Nuclear Physics.
CO 3	Students will be able to solve problem on transfer of heat.

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CO4	Students easily know about Semi Conductors.

Paper Code	**DCY179**
Paper Title	**CHEMISTRY LAB-II**
Course outcomes	***Upon successful completion of the course, students would be able to:***
CO 1	The course content gives full knowledge of basic of chemistry (atomic structure, atomic weight etc.)
CO 2	To know about Avogadro no, salt etc.
CO 3	Students will be able to differentiate between organic and inorganic compound.
CO4	Students easily know about electro chemistry.

Paper Code	**DEE182**
Paper Title	**BASIC ELECTRICAL &ELECTRONICS ENGINEERING LAB**
Course outcomes	***Upon successful completion of the course, students would be able to:***
CO 1	The course content gives full knowledge of measurement of electrical and electronic quantities..
CO 2	Knowledge of different switches.
CO 3	Enable students to making project.

Paper Code	**DEN177**
Paper Title	**BASIC ENGLISH LANGUAGE LAB-II**
Course outcomes	***Upon successful completion of the course, students would be able to:***
CO 1	The course content gives full knowledge to learn how to make sentences.
CO 2	Find the solution of problem of direct-indirect and active-passive voice.
CO 3	Students will be able to know how to use tenses.
CO4	Students easily take part in G.D. etc.

Paper Code	**DME180**
Paper Title	**WORKSHOP PRACTICE-II**
Course outcomes	***Upon successful completion of the course, students would be able to:***
CO 1	Pack the product under wooden package perfectly
CO 2	Weld one metal to another metal without giving damage to parent metal
CO 3	Work on the fitting of pipes under any industry.

Paper Code	**DME181**
Paper Title	**ENGINEERING DRAWING LAB-II**
Course outcomes	***Upon successful completion of the course, students would be able to:***
CO 1	Design a plan of a house or any building.

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CO 2	Know where to use rivets or screws.
CO 3	Know how many types of bolts and nuts are there so that they may not get confused in industry.

Paper Code	**DPY178**
Paper Title	**PHYSICS LAB-II**
Course outcomes	***Upon successful completion of the course, students would be able to:***
CO 1	The course content gives full knowledge to learn about units and dimensions.
CO 2	Find the solution of problem of gravitation and satellite.
CO 3	Students will be able to solve problem on transfer of heat.
CO4	Students easily know about liquid and elasticity.

Paper Code	**DCS221**
Paper Title	**OFFICE AUTOMATION LAB**
Course outcomes	***Upon successful completion of the course, students would be able to:***
CO 1	Install operating system.
CO 2	Install Hard disk, RAM, CD, ROM, CPU and other computer components.
CO 3	Work with MS-word, and use MS word features
CO 4	Use MS word Mail options.
CO 5	Work with MS-Excel, and use MS Excel features.

Paper Code	**DCP371**
Paper Title	**COMPUTER PROGRAMMING LAB**
Course outcomes	***Upon successful completion of the course, students would be able to:***
CO 1	Find the solution of problem dependent on Flowcharts and algorithm development.
CO 2	Determine the Need of programming languages.
CO 3	Solve the problems related to Design Conditional and control statements.
CO 4	Use MS word Mail options.
CO 5	Enable students to use application of Arrays, 2D array, user defined functions.

Program Specific Outcomes: **Diploma in Mechanical Engineering**

Program Specific Outcomes:

PSO1-Successfully practice or apply the principles of Mechanical Engineering in a variety of employment areas.

PSO2-Achieve professional success with an understanding and appreciation of ethical behaviour, social responsibility, and diversity, both as individuals and in team environments.

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PSO3-Pursue continued life-long learning through professional practice, further graduate education or other training programs in engineering science or other professional fields.

Course Code	Course Name	Course Outcome
DME231	STRENGTH OF MATERIAL	CO.1Apply concepts of strength of materials to obtain solutions to real time Engineering problems.
		CO.2Able to analyze the different types of loading and the consequent deflection.
		CO.3 Able to analyze different types of stress and strain in the beam or load applied.
		CO.4 Interpret hardness curve measured after heat treatment.
		CO.5 Find correlation between material structure and its creep.
DME233	MATERIAL SCIENCE	CO.1 The main objective of this course is to provide the basic knowledge needed to explore the discipline of materials science and engineering.
		CO.2 To develop the knowledge of how the structure of materials is described technically, including crystallography, microstructure, defects, and phase diagrams
		CO.3 To develop the knowledge of how the properties of materials are described technically and how material failure is analyzed
		CO.4 To introduce the concepts of structure-property relationships 5. To develop knowledge in various class of materials and their applications
DME237	PROCESS IN MANUFACTURING	CO.1 Demonstrate an understanding of various materials and their properties employed in different manufacturing processes.
		CO.2 Understand the principles of foundry and casting.
		CO.3 Choose materials in a manufacturing process based on their properties.
		CO.4 Conduct experiments on various manufacturing processes and to automate them
		CO.5 Study in detail about the modern welding processes followed in industries.
DME271	STRENGTH OF MATERIAL LAB	CO.1 Interpret hardness curve measured after heat treatment.
		CO.2 Find correlation between material structure and its creep.

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		CO.3 Index XRD plot and determine phases of a material. . CO.4 Perform non destructive failure analysis
DME273	MATERIAL SCIENCE LAB	CO. 1 Acquire experimentation skills in the field of metallurgy.
		CO.2 Develop theoretical understanding of the mechanical properties of materials by performing experiments.
		CO.3 Apply the knowledge of phase diagrams and testing methods in related areas.
DME267	PROCESS IN MANUFACTURING -1 LAB	CO. 1 Welding and soldering operations. .
		CO.2 Fabrication of simple sheet metal parts.
		CO.3 Drilling operation
		CO.4 Operation on lathe machine class of materials and their applications
DME279	METROLOGY LAB	CO.1 Apply the procedures to measure length, width, depth, bore diameters, internal and external tapers, tool angles, and surface roughness by using different instruments. .
		CO.2 Measure effective diameter of Thread profile using different methods
		CO.3 Demonstrate knowledge of different machine tools used in machine shop.
MA231	ADVANCE MATHEMATICS	CO.1 The course content gives full knowledge to learn Linear Programming.
		CO.2 Find the solution of problem dependent on Project Scheduling
		CO.3 Solve the problems related to Transportation.
		CO.4 Enable students to solve difficulties face in Numerical method and transform Calculus

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DME283	WORKSHOP TECHNOLOGY LAB	CO.1 Basic operation in drilling and lathe.
		CO.2 . Basic operation in shaper machine
		CO.3 Basic operation in milling machine how to cut gear and nuts.
		CO.4 Basic about how the selection of tool can be done for different machine and operation.
DME285	MACHINE DESIGN LAB	CO.1 Analyze and select machine elements/components.
		CO.2 Know the applications of the various elements, materials used to make them, and methods used
		CO.3 Integrate various machine elements and components into the design of a machine or mechanical system through a design project.
D DME232	FLUID MECHANICS AND MACHINE	CO.1 To find frictional losses in a pipe when there is a flow between two places.
		CO.2 2. Calculate the conjugate depths in a flow.
		CO.3 Analyze the model and the prototype.
		CO.4 Find the dependent and independent parameters for a model of fluid flow.
		CO.5 Explain the various methods available for the boundary layer separation
D DME234	THERMODYNAMICS AND IC ENGINES	CO.1 Solve problems on internal combustion engines and prepare heat balance sheet.
		CO.2 Get an insight of various components and principles of engines, compressors etc.
		CO.3 Design refrigeration and air-conditioning system for a particular application.
		CO.4 Demonstrate the knowledge of waste heat recovery and thermal storage
DME242	AUTOMOBILE ENGINEERING	CO.1 Develop chassis and identify suitable engine for different applications
		CO.2 Formulate steering, braking and suspension systems
		CO.3 3. Select a suitable conventional and automatic transmission system
		CO.4 Identify the usage of Electrical vehicles / Hybrid vehicles and power plants .
DME274	FLUID MECHANICS AND MACHINE LAB	CO.1 Analyze various flow problems and fluid characteristics.
		CO.2 Determine the losses of flow through various mediums like pipes.
		CO.3 Apply the concept of fluid mechanics to design various systems.
DME282	Automobile Engineering Lab	CO.1 Student will know how to assemble and disassemble engine parts.
		CO.2 2. Student will know about the different types of system like braking system, steering system
		CO.3 To develop the knowledge of how the properties of materials are described technically and how material failure is

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		analyzed
		CO.4 To introduce the concepts of structure-property relationships.
DME278	THEORY OF MACHINE -1 LAB	CO.1 Know how to do the balancing of rotating parts.
		CO.2 Know how to operate brakes and dynamometer.
		CO.3 Know how the force analysis is done in single cylinder four stroke engines.
		CO.4 Know the working of flywheel and governor in vehicle.
DME272	THERMODYNAMIC LAB	CO.1 Explain the working of Steam power plant.
		CO.2 Distinguish between S.I/C.I, Two- stroke and Four-stroke Internal Combustion Engines.
		CO.3 Estimate relative humidity using adiabatic saturator and compare different Hygrometers.
		CO.4 Calculate Coefficient of Performance of Vapor compression refrigeration system for Reversed Carnot, Ideal and Actual cycles.
DME280	CAD PRACTICE LAB	CO.1 Students are able to use basic hand tools in a safe manner
		CO.2 Students are able to move from CAD to CAM and use numerically controlled machines to produce simple artifacts .
		CO.3 Students are able to design a consumer device based upon market demands, through QFD analysis, concept selection, and function analysis.
		CO.4 Students understand basic machining processes.
DHS232	ENTREPRENEURSHIP	CO.1 The course content gives full knowledge to learn hoe an entrepreneur can succeed.
		CO.2 Find the solution of problem dependent on industrial units.
		CO.3 Solve the problems related to Location and pricing of industrial units.
		CO.4 Enable students to solve difficulties face by small units
DME238	THEORY OF MACHINE-1	CO.1 Demonstrate an understanding of the concepts of various mechanisms and pairs.
		CO.2 Do velocity and acceleration analysis of simple mechanisms.
		CO.3 Design a layout of cam for specified motion.
		CO. 4 Synthesis simple mechanisms for function, path generation and body guidance .
		5. Demonstrate an understanding of principle of gears.
DME272	THERMODYNAMIC LAB	CO.1 Explain the working of Steam power plant.
		CO.2 . Distinguish between S.I/C.I, Two- stroke and Four-stroke Internal Combustion Engines.
		CO.3 Estimate relative humidity using adiabatic

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		saturator and compare different Hygrometers.
		CO.4 Calculate Coefficient of Performance of Vapor compression refrigeration system for Reversed Carnot, Ideal and Actual cycles.
DME280	CAD PRACTICE LAB	CO.1 Students are able to use basic hand tools in a safe manner
		CO.2 Students are able to move from CAD to CAM and use numerically controlled machines to produce simple artifacts
		CO.3 Students are able to design a consumer device based upon market demands, through QFD analysis, concept selection, and function analysis.
		CO.4 Students understand basic machining processes.
DHS232	ENTREPRENEURSHIP	CO.1 The course content gives full knowledge to learn hoe an entrepreneur can succeed.
		CO.2 Find the solution of problem dependent on industrial units.
		CO.3 Solve the problems related to Location and pricing of industrial units.
		CO.4 Enable students to solve difficulties face by small units.
DME238	THEORY OF MACHINE-1	CO.1 Demonstrate an understanding of the concepts of various mechanisms and pairs.
		CO.2 Do velocity and acceleration analysis of simple mechanisms.
		CO.3 Design a layout of cam for specified motion.
		CO.4 Synthesis simple mechanisms for function, path generation and body guidance
DME240	WORKSHOP TECHNOLOGY	CO.1 Demonstrate an understanding of various materials and their properties employed in different manufacturing processes.
		CO.2 . Understand the principles of foundry and casting.
		CO.3 Choose materials in a manufacturing process based on their properties.
		CO.4 Study in detail about the modern welding processes followed in industries.
DME340	Heat & mass transfer	CO.1 Understand the mechanisms of chip formation in machining.
		CO.2 Understand the various machining processes such as turning, drilling, boring, shaping, slotting, milling and grinding.
		CO.3 Understand the principle of gear generation and non-traditional machining processes.
		CO.4 Identify and suggest correct manufacturing process for particular application.
DME333	CAD/CAM	CO.1 Understand the importance of CAD/CAM principles in the Product development.

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		CO.2 Develop programs related to manufacturing using codes.
		CO.3 Analyze the importance of networking in manufacturing environment
DME335	THERMAL ENERGY & POWER PLANT	CO.1 Ability to have adequacy with Design, erection and development of energy conversion plants.
		CO.2 Optimization of Energy Conversion plant with respect to the available resources.
		CO.3 Scope of alternative erection of optimized, suitable plant at the location depending upon Geographical conditions.
DME381	POWER GENERATION LAB	CO.1 *Understand about diesel power plant*
		CO.2 *Understand about hydro power plant*
		CO.3 *Understand about steam power plant*
		CO.4 *Understand about nuclear power plant*
		CO.5 *Understand about cooling tower boiler*
DME371	PROCESS IN MANUFACTURING-II LAB	CO.1 Acquire knowledge about green sand molding process, gates and risers.
		CO.2 Acquaint with basic welding processes and cutting parameters of turning processes, thread cutting etc.
		CO.3 Make decisions on various cutting parameters for different materials in lathe operations.
DME373	CAD LAB	CO.1 Make drawings of assemblies with the help of part drawings given.
		CO.2 Ability to select, configure and synthesize mechanical components into assemblies.
		CO.3 Apply the knowledge of fits and tolerances for various applications.
		CO.4 5. Able to model components of their choice using CAD software.
DME377	HEAT AND MASS TRANSFER LAB	CO.1 An ability to demonstrate the fundamental principles of heat transfer in practice.
		CO.2 Design and test practical heat transfer systems like heat exchangers, condensers, evaporators etc.
		CO.3 Develop empirical correlations for predicting heat and mass transfer rates for a given system.
		CO.4Troubleshoot existing engineering heat transfer systems and develop alternatives and more energy efficient systems.
DME375	DYNAMICS OF MACHINE LAB	CO.1 Synthesis simple mechanisms
		CO.2 Draw cam profiles
		CO.3 Measure Gyroscopic torque
		CO.4 Understand free, forced damped vibrations
DHS302	INDUSTRIAL MANAGEMENT	CO.1 Enable students for Essential Imperatives and Steps in Industrial & Process Management.

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		CO.2 Find the solution of problem dependent on planning & organization.
		CO.3 Determine the Need of Schools of Management thoughts.
		CO.4 Solve the problems related to Hierarchy Theory & Planned Location.
DME377	HEAT & MASS TRANSFER LAB	CO.1 An ability to demonstrate the fundamental principles of heat transfer in practice.
		CO.2 Design and test practical heat transfer systems like heat exchangers, condensers, evaporators etc.
		CO.3 Develop empirical correlations for predicting heat and mass transfer rates for a given system.
		CO.4 4. Troubleshoot existing engineering heat transfer systems and develop alternatives and more energy efficient systems.
DME332	REFRIGERATION AND AIR CONDITIONING	CO.1 Obtain cooling capacity and coefficient of performance by conducting test on vapor compression refrigeration systems
		CO.2 Present the properties, applications and environmental issues of different refrigerants
		CO.3 To develop the knowledge of how the properties of materials are described technically and how material failure is analyzed
		CO.4 To introduce the concepts of structure-property relationships 5. To develop knowledge in various class of materials and their applications
DME372	REFRIGERATION AND AIR CONDITIONING LAB	CO.1 Determine C.O.P of refrigeration and heat pump
		CO.2 Know about the various refrigeration accessories.
		CO.3 3. Know about compressor and different refrigeration system
		CO.4 Know about the testing of three ton air conditioner performance.
DME374	COMPUTER AIDED MANUFACTURING LAB	CO.1 Understand the importance of CAD/CAM principles in the Product development.
		CO. 2. Develop programs related to manufacturing using codes.
		CO.3 Analyze the importance of networking in manufacturing environment .
DME334	MECHATRONICS	CO.1 Program software packages involving data acquisition
		CO.2 To develop the knowledge of how the structure of materials is described technically, including crystallography, microstructure, defects, and phase diagrams

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		CO.3 To develop the knowledge of how the properties of materials are described technically and how material failure is analyzed
		CO.4 To introduce the concepts of structure-property relationships 5. To develop knowledge in various class of materials and their applications
DME336	RELIABILITY AND MAINTENANCE	CO.1 Understand the relationship of key concepts in reliability engineering and application to maintenance strategies in a manufacturing environment;
		CO.2 Establish maintenance strategies according to system characteristics and design transition programs to implement these strategies;
		CO.3 Manage the manufacturing organization with highest possible

Program Specific Outcomes: **Diploma in Civil Engineering**

PSO1- Able to apply the knowledge gained during the course of the program from Mathematics, Basic Computing, Basic Sciences and Social Sciences in general and all Civil courses in particular to identify, formulate and solve real life problems faced in industries.

PSO2-To train students with good extensiveness of information in the field of Diploma in civil engineering streams so as to formulate engineering principles, order to offer techno commercially feasible and socially acceptable solutions to real life engineering problems.

PSO3-Diploma engineers will demonstrate confidence to learn by self and exhibit ability for lifelong learning. PSO4- Diploma engineers ability to design a System, Component, or Process to

meet desired needs with in realistic constraints such as Economic, Environmental, Designing, Manufacturability, and Sustainability

Course Code	Course Name	Course Outcome
MA231	ADVACNCE MATHEMATICS	CO.1 The course content gives full knowledge to learn linear programming
		CO.2 Find the solution of problem dependent on project scheduling.
		CO.3 Solve the problems related to transportation
		CO.4 Enable students to solve difficulties face in numerical method and transfer calculus
DCF231	BULDING MATERIAL AND CONSTRUCTION	CO.1 Brief knowledge about material used in construction
		CO.2 Different type of material used in building
		CO.3 Different type of door and windows
		CO.4 About different type of masonry

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DCE231	STRENGTH OF MATERIAL	CO.1 Apply concept of strength of material to obtain real time solution of engineering problems
		CO.2 Able to analyze the different type of loading and the consequent deflection
		CO.3 interpret hardness curve measured after heat treatment
		CO.4 Find correlation between material structure and it's creep
		CO.5 able to analyze different type of stress in the beam or load applied
DCF232	CONCRETE TECHNOLOGY	CO.1 Determine the properties of concrete ingredients i.e. cement, sand and coarse aggregate by conducting different tests
		CO.2 Use different type of cement as per their properties for different field applications
		CO.3 Design economic mix proportion for different exposure conditions and intended purposes
		CO.4 Use different type of admixture to improve the properties of concrete
DCE233	SURVEYING-I	CO.1 Brief knowledge about surveying.
		CO.2bout different types of instruments used in surveying .
		CO.2 Use of chain, tape, compass, cross staff, theodolite .
		CO,3 About different types of method by using compass, thedolite, plane table etc.
		CO.4 About different types of method by using compass, thedolite, plane table etc.
DCE 234	Hydraulic And Hydraulic Machine	CO.1 Compute the total hydro static pressure &center of pressure.
		CO.2 Describe the principle of pressure measuring devices.
		CO.3 Identify the concept of fluid flow.
		CO.4 Compute the loss of water flowing through pipes.
DME 236	SURVEYING-II	CO.1 Use survey instruments like the theodolite and plane table.
		CO.2 Record the data in field book and plot the collected data.
		CO.3 Find out horizontal and vertical distances with a tachometer
		CO.4 Set out simple curve using Theodolite.
DCE 238	ENVIEROMENTAL ENGINEERING	CO.1 Brief knowledge about waste water.
		CO.2 About different types of supply of water.
		CO.3 Different types of collection of waste water.
		CO.4 About different types of treatment process for waste water.
DCE272	HYDRAULICS AND HYDRAULICS MACHINE LAB	CO.1 The student will be able to measure pressure and pressure head from different monometers.
		CO.2 The student will be able to verify Bernoulli's

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		equation with experiments.
		CO.3The student will be able to determine minor and major looses from pipes.
		CO.4 The student will be able to know different hydraulic machine with their working process.
DCE 273	MATERIAL TESTING LAB	CO.1 Know about different building materials.
		CO.2 Prepare different test on bricks.
		CO.3 Able to check consistency of cement
		CO.4 Basic about how the selection of tool can be done for different structures.
DME 285	Machine Design Lab	CO.1 Analyze and select machine elements/components.
		CO.2 Know the applications of the various elements, materials used to make them
		CO.3 methods used Integrate various machine elements and components into the design of a machine
		CO.4 Basic about how the selection of tool can be done for different machine and operation
DCE 274	SURVEY LAB – II	CO.1 The course content gives full knowledge to learn how to used equipments of surveying.
		CO.2 Find the area of any field or building by using theodolite
		CO.3 The course content gives full knowledge to learn how to used equipments of surveying.
		CO.4 Find the dependent and independent parameters for a model of fluid flow.
DCE275	BUILDING DRAWING –II & CAD LAB	CO.1 Student will be able to draw plan for any type of building
		CO.2 Student will be able to draw plan of different building components.
		CO.3 Student will be able to draw plan using CAD.
		CO.4 Student will able to draw plan of component of structures.
DCE277	SURVEY LAB – I	CO.1 The course content gives full knowledge to learn how to used equipments of surveying.
		CO.2 Find the area of any field or building by using chain and cross staff.
		CO.3To find elevation from different points
		CO.4To find vertical and horizontal distance using chain , tape etc.
DCE278	ENVIRONMENTAL ENGINEERING LAB	Student will be able to evaluate percentage available chlorine in bleaching powder.
		Student will be able to evaluate total and calcium hardness in water samples.
		Student will be able to evaluate percentage available chlorine in bleaching powder.
DCE279	BUILDING CONSTRUCTION LAB	CO.1 Mark layout of building on ground.
		CO.2 Know the procedure for execution of various constructions activities.
		CO.3 Identify & suggest rectification the various defects

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		in civil engineering works.
		CO.4 Mark layout of building on ground.
DCE282	CONCRETE TECHNOLOGY LAB	CO.1 Student will be able to find different properties of cement by test.
		CO.2 Student will be able to know different properties of aggregates by test.
		CO.3 How to prepare concrete.
		CO.4 What to do for mix design.
DCE331	TRANSPORTION ENGINEERING	CO.1 Explain the Methods of transport
		CO.2 Brief knowledge about transportation engineering ,
		CO.3 About different types of design used in transportation ,
		CO.4 Different types of highway materials and their construction.
		CO.5 About different points related to railway engineering.
DCE332	DESIGN OF REINFORCED CEMENT CONCRETE	CO.1 Brief knowledge about R.C.C.
		CO.2 About different types of slabs and beams.
		CO.3 Different types of retaining wall.
		CO.4 Brief knowledge of pre-stressed concrete.
		CO.5 Brief knowledge about R.C.C.& Concrete
DHS 232	ENTERPERNEURSHIP	CO.1 The course content gives full knowledge to learn hoe an entrepreneur can succeed.
		CO.2 Find the solution of problem dependent on industrial units.
		CO.3 Solve the problems related to Location and pricing of industrial units.
		CO.4 Enable students to solve difficulties face by small units.
DHS203	BASIC ECONOMICS AND SOCIAL SCIENCES	CO.1 The course content gives full knowledge to learnnature and scope of economics.
		CO.2 Find the solution of problem dependent on Micro Economics.
		CO.3 Solve the problems related to Law of Demand, Law of Supply. Enable students to solve difficulties face in social reforms and political economics.
		CO.4 The course content gives full knowledge to learnnature and scope of economics.
DCE333	THEORY OF STRUCTURE	CO.1 Brief knowledge about structure.
		CO.2 About different types of arches.
		CO.3 Know how to find BM & SF.
		CO.4 Well known how to compute SFD & BMD..
DCE334	IRRIGATION ENGINEERING	CO.1 Brief knowledge about irrigation engineering,
		CO.2 About different properties of hydrology.,
		CO.3 Brief knowledge of canal.
		CO.4 Brief knowledge cross drainage work..
DCE 335	CONSTRUCTION MANAGEMENT	CO.1 Brief knowledge about project planning.
		CO.2 Able to know how to schedule any projects.
		CO.3 Able to material management on construction sight.
		CO.4 About tender, contract, and disputes.

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DCE338	DESIGN OF STEEL STRUCTURE	CO.1 Brief knowledge about properties of steel.
		CO.2 Reaction of steel in civil structure.
		CO.3 Brief knowledge about properties T Shape & truss
DCE371	TRANSPORTION ENGINEERING LAB	CO.1 Student will be able to find the toughness of aggregates.
		CO.2 Student will be able to determine specific gravity & water absorption of aggregates.
		CO.3 Able to know different properties of material & perform also in lab.
		CO.4 Student will be able to find the Sleeper density in railway
DCE375	SURVEYING LAB –III & CAMP	CO.1 Student will be able to measurement of curves from different methods.
		CO.2 Student will be able to used closed traverse.
		CO.3 Due to survey camp , students able to measure all the horizontal distance, vertical distance and angles on different position, place and environment.
		CO.4 Student will be able to measurement of curves from different methods.
		CO.5 Student will be able to used closed traverse.
DCE372	CIVIL ENGINEERING ESTIMATING AND COSTING LAB	CO.1 Student will be able to analyse rate of any activity.
		CO.2 Student will be able to prepare estimate data for multi-storied residential building.
		CO.3 Valuation process for any civil engineering work.
		CO.4 Rate analysis methods
DHS 302	INDUSTRIAL MANAGEMENT	CO.1 Enable students for Essential Imperatives and Steps in Industrial & Process Management.
		CO.2 Find the solution of problem dependent on planning & organization.
		CO.3 Determine the Need of Schools of Management thoughts.
		CO.4 Solve the problems related to Hierarchy Theory & Planned Location.
		CO.5 Enable students to use application of material management and scope of material management.
DCE379	CONSTRUCTION TECHNOLOGY LAB	CO.1 Student will be able to mix concrete.
		CO.2 Able to construct masonry by different types.
		CO.3 Able to construct different section of masonry.
		CO.4 Student will be able to mix concrete.
		CO.5 Able to construct masonry by different types.
DCE376	REINFORCED CEMENT CONCRETE LAB	CO.1 Know prepare R.C.C slab
		CO.2 Know prepare R.C.C beam
		CO.3 Know prepare R.C.C. column
		CO.4 Know prepare R.C.C singly beam.
DME 231	*STRENGTH OF MATERIAL*	*CO.1Apply concepts of strength of materials to obtain solutions to real time Engineering problems.*
		CO.2 Able to analyze the different types of loading and the consequent deflection.
		CO.3 Able to analyze different types of stress and strain in

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		the beam or load applied.
		CO.4 Interpret hardness curve measured after heat treatment.
		CO.5 Find correlation between material structure and its creep.
DME 271	STRENGTH OF MATERIAL LAB	*CO.1 Find correlation between material structure and its creep.*
		CO.2 Index XRD plot and determine phases of a material.
		CO.3 Perform non destructive failure analysis.
DCE336	QUANTITY SURVEY AND VALUATION	CO.1 Brief knowledge about tendering.
		CO.2 Make and check any contract.
		CO.3 Complete valuation of any section from respective methods.
		CO.4 Make a estimate for any construction work.

Program Specific Outcomes: Diploma in Computer Science & Engineering

PSO1-Foundation of Computer System: Ability to understand the principles and working of computer systems. Students can assess the hardware and software aspects of computer systems.

PSO2-Foundations of Software development: Ability to understand the structure and development methodologies of software systems. Possess professional skills and knowledge of software design process.

PSO3-Familiarity and practical competence with a broad range of programming language and open source platforms.

PSO4-Foundation of mathematical concepts: Ability to apply mathematical methodologies to solve computation task, model real world problem using appropriate data structure and suitable algorithm.

PSO5-Applications of Computing and Research Ability: Ability to use knowledge in various domains to identify research gaps and hence to provide solution to new ideas and innovations

DIPLOMA IN COMPUTER SCIENCE

Paper Code	DCS203
Paper Title	**Computer System Programming**
Course outcomes	***Upon successful completion of the course, students would be able to:***
CO 1	Can learn about computer.
CO 2	learn Computer fundamentals
CO 3	know how computer work and about computer languages.

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CO 4	Apply their algorithms to build programs in the C programming language.
CO 5	Explain and illustrate the programs related to array and also get the concept of list, array and user defined data types.

Paper Code	**DCP131**
Paper Title	**Computer &Information Technology Fundamental**
Course outcomes	***Upon successful completion of the course, students would be able to:***
CO 1	The course content gives full knowledge to learn about Computer and its Basics.
CO 2	Students will be able to know about CPU and ALU.
CO 3	Students will be able to make word file, report file etc.
CO 4	Apply their algorithms to build programs in the C programming language.
CO 5	Students easily know XP and Windows 7.

Paper Code	**DCY131**
Paper Title	**CHEMISTRY-I**
Course outcomes	***Upon successful completion of the course, students would be able to:***
CO 1	The course content gives full knowledge of basic of chemistry (atomic structure, atomic weight etc.)
CO 2	To know about Avogadro no, salt etc.
CO 3	Students will be able to differentiate between organic and inorganic compound.
CO 4	Students will be able to differentiate between organic and inorganic compound.
CO 5	Students easily know about electro chemistry.
Paper Code	**DEN131**
Paper Title	**BASIC ENGLISH-I**
Course outcomes	***Upon successful completion of the course, students would be able to:***
CO 1	The course content gives full knowledge to learn how to make sentences.
CO 2	Find the solution of problem of direct-indirect and active-passive voice.
CO 3	Find the solution of problem of active-passive voice.
CO 4	Students will be able to know how to use tenses.
CO 5	Students easily differentiate in between Noun, Pronoun, and Preposition etc.

Paper Code	**DMA131**

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Paper Title	MATHEMATICS-I
Course outcomes	***Upon successful completion of the course, students would be able to:***
CO 1	The course content gives full knowledge to learn about algebra and trigonometry.
CO 2	Find the solution of problem of trigonometry.
CO 3	Students will be able to solve problem on coordinate geometry.
CO 4	Students easily know about circle
CO 5	Students easily know about circle, parabola and ellipse.

Paper Code	DPY 131
Paper Title	PHYSICS-I
Course outcomes	***Upon successful completion of the course, students would be able to:***
CO 1	The course content gives full knowledge to learn about units and dimensions.
CO 2	Find the solution of problem of gravitation and satellite.
CO 3	Students will be able to solve problem on transfer of heat.
CO 4	Students easily know about liquid.
CO 5	Students easily know about liquid and elasticity.

Paper Code	DCP175
Paper Title	COMPUTER &INFORMATION TECHNOLOGY FUNDAMENTAL LAB
Course outcomes	***Upon successful completion of the course, students would be able to:***
CO 1	The course content gives full knowledge to learn about Computer and its Basics.
CO 2	Students will be able to know about CPU and ALU.
CO 3	Students will be able to make word file, report file etc.
CO 4	Students easily know XP and Windows 7.

Paper Code	DPY 131
Paper Title	CHEMISTRY LAB-I
Course outcomes	***Upon successful completion of the course, students would be able to:***
CO 1	The course content gives full knowledge of basic of chemistry (atomic structure, atomic weight etc.) To know about Avogadro no, salt etc.
CO 2	Students will be able to differentiate between organic and inorganic compound.
CO 3	Students easily know about electro chemistry.

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Paper Code	DEN171

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Paper Title	BASIC ENGLISH LANGUAGE LAB-I
Course outcomes	***Upon successful completion of the course, students would be able to:***
CO 1	The course content gives full knowledge to learn how to make sentences.
CO 2	Find the solution of problem of direct-indirect and active-passive voice.
CO 3	Students will be able to know how to use tenses.
CO 4	Students easily differentiate in between Noun, Pronoun,

Paper Code	DME176
Paper Title	WORKSHOP PRACTICE-I
Course outcomes	***Upon successful completion of the course, students would be able to:***
CO 1	Student will be able to Weld one metal into another metal without affecting parent metal
CO 2	Cast the metal to form a new shaped casting metal Perform carpentry work in industry.
CO 3	Student will be able to Design various joints and weld them.

Paper Code	DPY 172
Paper Title	PHYSICS-I LAB
Course outcomes	***Upon successful completion of the course, students would be able to:***
CO 1	Student will be able to take diameter, area ,volume dimension using screw gauge and varniercaliper
CO 2	Find the solution of problem of gravitation and satellite.
CO 3	Students will be able to solve problem on transfer of heat.
CO 4	Students easily know about liquid and elasticity.

Paper Code	DCY138
Paper Title	CHEMISTRY-II
Course outcomes	***Upon successful completion of the course, students would be able to:***
CO 1	The course content gives full knowledge of basic of Water.
CO 2	To know about Lubricants.
CO 3	Students will be able to differentiate between Paint and Varnish. Students easily know about Polymers.
CO 4	The course content gives full knowledge of basic of Water.

Paper Code	DEN136
Paper Title	BASIC ENGLISH-II
Course	***Upon successful completion of the course, students would be***

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outcomes	*able to:*
CO 1	The course content gives full knowledge to learn how to make sentences.
CO 2	Find the solution of problem of preposition and modals.
CO 3	Students will be able to know how to use tenses.
CO 4	Students easily write essay, letter and paragraph etc.

Paper Code	DMA139
Paper Title	MATHEMATICS-II
Course outcomes	*Upon successful completion of the course, students would be able to:*
CO 1	The course content gives full knowledge to learn about Maxima and Minima.
CO 2	Find the solution of problem of Differential Calculus.
CO 3	Students will be able to solve problem on Integral Calculus. Students easily know about Differential Function.
CO 4	The course content gives full knowledge to learn about Maxima and Minima.

Paper Code	DME140
Paper Title	APPLIED MECHANICS
Course outcomes	*Upon successful completion of the course, students would be able to:*
CO 1	1.Define scope of Engineering Mechanics
CO 2	2.Understand Co - planer Concurrent Force system
CO 3	3.Compute resultant & Equilibrium forces for given coplanar concurrent force system

Paper Code	DPY137
Paper Title	PHYSICS-II
Course outcomes	*Upon successful completion of the course, students would be able to:*
CO 1	The course content gives full knowledge to learn about A.C. & D.C. Circuits.
CO 2	Find the solution of problem of Nuclear Physics.
CO 3	Students will be able to solve problem on transfer of heat.
CO4	Students easily know about Semi Conductors.

Paper Code	DCY179
Paper Title	CHEMISTRY LAB-II
Course outcomes	*Upon successful completion of the course, students would be able to:*
CO 1	The course content gives full knowledge of basic of chemistry (atomic structure, atomic weight etc.)
CO 2	To know about Avogadro no, salt etc.

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CO 3	Students will be able to differentiate between organic and inorganic compound.
CO4	Students easily know about electro chemistry.

Paper Code	**DEE182**
Paper Title	**BASIC ELECTRICAL &ELECTRONICS ENGINEERING LAB**
Course outcomes	***Upon successful completion of the course, students would be able to:***
CO 1	The course content gives full knowledge of measurement of electrical and electronic quantities..
CO 2	Knowledge of different switches.
CO 3	Enable students to making project.

Paper Code	**DEN177**
Paper Title	**BASIC ENGLISH LANGUAGE LAB-II**
Course outcomes	***Upon successful completion of the course, students would be able to:***
CO 1	The course content gives full knowledge to learn how to make sentences.
CO 2	Find the solution of problem of direct-indirect and active-passive voice.
CO 3	Students will be able to know how to use tenses.
CO4	Students easily take part in G.D. etc.

Paper Code	**DME180**
Paper Title	**WORKSHOP PRACTICE-II**
Course outcomes	***Upon successful completion of the course, students would be able to:***
CO 1	Pack the product under wooden package perfectly
CO 2	Weld one metal to another metal without giving damage to parent metal
CO 3	Work on the fitting of pipes under any industry.

Paper Code	**DME181**
Paper Title	**ENGINEERING DRAWING LAB-II**
Course outcomes	***Upon successful completion of the course, students would be able to:***
CO 1	Design a plan of a house or any building.
CO 2	Know where to use rivets or screws.
CO 3	Know how many types of bolts and nuts are there so that they may not get confused in industry.

Paper Code	**DPY178**

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Paper Title	PHYSICS LAB-II
Course outcomes	***Upon successful completion of the course, students would be able to:***
CO 1	The course content gives full knowledge to learn about units and dimensions.
CO 2	Find the solution of problem of gravitation and satellite.
CO 3	Students will be able to solve problem on transfer of heat.
CO4	Students easily know about liquid and elasticity.

Paper Code	DCS204
Paper Title	**Fundamentals of Data Structure and Algorithm**
Course outcomes	*On successful completion of the course, the student will be able to:*
CO 1	Get knowledge about the data structure, how to design an algorithm and importance of data structure
CO 2	How we represent an array in memory and all application of array
CO 3	How we implement the link list and its application
CO 4	How we implement the tree data structure and its application
CO 5	How we implement the graph data structure and its application

Paper Code	DCS205
Paper Title	**Operating System Basics & Pc Packages**
Course outcomes	*On successful completion of the course, the student will be able to:*
CO 1	Know about operating system and window XP
CO 2	Learn about various features of window XP
CO 3	Learn about installation of various software and know about explorer.
CO 4	Know about Linux system architecture.

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CO 5	Can work with word processor and can use its features.

Paper Code	DCS205
Paper Title	**Operating System Basics & Pc Packages**
Course outcomes	*On successful completion of the course, the student will be able to:*
CO 1	Know about operating system and window XP
CO 2	Learn about various features of window XP
CO 3	Learn about installation of various software and know about explorer.
CO 4	Know about Linux system architecture.
CO 5	Can work with word processor and can use its features.

Paper Code	DCS206
Paper Title	**Web Technology**
Course outcomes	*On successful completion of the course, the student will be able to:*
CO 1	Understand web basics.
CO 2	understand hierarchy of objects in HTML and XML
CO 3	can create good, effective and customized websites
CO 4	Know regardintedtechnologiesg internet rela
CO 5	Can develop an applet application

Course Outcome

Paper Code	DCS207

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Paper Title	**FUNDAMENTALS OF INFORMATION TECHNOLOGY**
Course outcomes	*On successful completion of the course, the student will be able to:*
CO 1	Know about information technology and data types.
CO 2	Learn about e-commerce and its advantage
CO 3	Know Transmission media and signals types.
CO 4	Know various function of operating system.
CO 5	Learn application software and GUI interface.

Paper Code	DCS208
Paper Title	**Computer Organization & Architecture**
Course outcomes	*On successful completion of the course, the student will be able to:*
CO 1	Describe computer architecture and organization, computer arithmetic, and CPU design
CO 2	Describe I/O system and interconnection structures of computer.
CO 3	Identify high performance architecture design.
CO 4	Use assembly language to program a microprocessor system.
CO 5	Develop independent learning skills and be able to learn more about different computer architectures and hardware

Paper Code	DCS209
Paper Title	**Open Source Technology**
Course outcomes	Learn UNIX and LINUX concepts
CO 1	Will know about GNU Project and the Free Software Foundation

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CO 2	Describe I/O system and interconnection structures of computer.
CO 3	Know Linux System Administration works.
CO 4	Use the concept of Memory Management
CO 5	Know Software package Management

Paper Code	DCS210
Paper Title	**Data Base Management System**
Course outcomes	*On successful completion of the course, the student will be able to:*
CO 1	Students learn about the concepts of DBMS and proceeds over the file management system and they will also learn to design the database.
CO 2	Students learn, how write database queries to store and retrieve information from database by getting knowledge of relational algebra, relational calculus and SQL
CO 3	Students come to know about the short comes in designing of relational database and refinement of relations for a good database design.
CO 4	Students learn about the security issues in database in mechanisms or concepts to employ security and transaction management in database
CO 5	Students learn about indexing and hashing in database

Paper Code	DCS212
Paper Title	**E- Commerce in Business**
Course outcomes	*On successful completion of the course, the student will be able to:*
CO 1	Know E- Commerce.
CO 2	Use inter and intra ecommerce .
CO 3	Use concept of Network Infrastructure behind E- Commerce

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CO 4	Use Electronic Payments methods.
CO 5	Encryption and Transaction security issues.

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Established by Government of Rajasthan U/S 2(f) of UGC Act 1956
vide Suresh Gyan Vihar University Act 2008 (Act no. 16 of 2008)

SYLLABUS

OF

DIPLOMA IN ENGINEERING

FIRST YEAR (1st & 2nd Semester)

Common to all braches

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Edition-2021-22

Salient features in proposed Curriculum

1. The curriculum is structured to have 3 years (6 semesters) including Industrial training in an Organization / Industry relevant to the field of specialization. This is mainly aimed to improve the practical skills in the students to make them ready to cater to the needs of Industry with hands on experience and with a very good practical vision.
2. An effort has been made to improve the communication skills and personality development of the students, by restructuring the English Language / communication subject.
3. Primarily to develop verbal communication skills in English among students.
4. The main intention behind this is to improve their communication / presentation skills and to develop their personality to enable them to stand as a useful product in the global market.
5. Practicals on Information Technology are introduced in the Ist year curriculum itself. This enables the student to have good acquaintance with computers, internet and e-Mailing from First year onwards. It also enables the student to keep pace with latest trends of the present day technology.
6. Their knowledge and skills in computers are continued by introducing practical.
7. Developing reading & writing skills in students, especially among students who lack confidence in communicating in English.
8. Every effort has been made while restructuring the curriculum to mould the students to become very good Technicians with more practical visualization. This has been done by deleting unnecessary and extra information and regrouping the subjects to impart theoretical inputs to the students up to sufficient depth. This saving in time has been utilized in slightly improving on the practical inputs during in-house training itself.
9. Seminars also form a part of the curriculum in all the three years. This will surely improve the abilities of the students in communication / presentation skills.
10. Training to isolate important information from a written text and represent the same in note form.
11. Increase ability to write short paragraphs and to write technical reports.
12. To improve speaking skill of students through active listening & speaking practice.
13. Visualization and analytical approach towards the subject is necessary
14. To increase power of comprehending a written text.
15. Basic Mathematics knowledge to solve the problems.

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16. Knowledge of basic concepts of sciences such as physics, chemistry and mathematics
17. Much emphasis has been given for practical subjects in both the semester by allotment of separate subject codes. Also the examination time for all practical subjects is common and is fixed as 3 hrs duration. This allows the examiners (both internal and external) to pay much attention towards the examinee during practicals.

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Teaching and Examination Scheme for Diploma in Engineering
I Year Diploma (Common to All Branches of Engg.)
Edition-2021-22

I Year **I Semester**

Course Code	Nature of Course (UC/ PC/ UE/PE)	Course Name	Credits	Contact Hrs/Wk.			Exam Hrs.	Weightage (in%)	
				L	T/S	P		CE	ESE
DEN-131	UC	Basic English-I	3	3	-	-	3	40	60
DPY- 131		Physics-I	3	3	-	-	3	40	60
DMA- 131		Mathematics-I	3	3	-	-	3	40	60
DEN- 171		Basic English Language Lab- I	1	-	-	2	3	60	40
DPY- 171		Physics-I Lab	2	-	-	3	3	60	40
DCY-131		Chemistry-I	3	3	-	-	3	40	60
DCY-171		Chemistry-I Lab	2	-	-	3	3	60	40
PC- 101		Proficiency in Co Curricular Activities	2						100
DCP- 131	PC	Computer & Information Technology Fundamentals	3	3	-	-	3	40	60
DME- 171		Engineering Drawing –I Lab	2	-	-	3	3	60	40

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DCP- 171		Computer & Information Technology Fundamentals Lab	2	-	-	3	3	60	40

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I Year Diploma (Common to All Branches of Engg.)
Edition-2021-22

I Year **II Semester**

Course Code	Nature of Course (UC/ PC/	Course Name	Credits	Contact Hrs/Wk.			Exam Hrs.	Weightage (in%)	
				L	T/S	P		CE	ESE
DEN-132	UC	Basic English –II	3	3	-	-	3	40	60
DPY-132		Physics-II	3	3	-	-	3	40	60
DMA-132		Mathematics-II	3	3	-	-	3	40	60
DEM – 201		Employability Skills – I	1	-	-	2	3	60	40
DPY-172		Physics-II Lab	2	-	-	3	3	60	40

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DEN-172		Basic English Language Lab- II	1	-	-	2	3	60	40
DCY-132		Chemistry-II	3	3	-	-	3	40	60
DCY-172		Chemistry –II Lab	2	-	-	3	3	60	40
PC- 101		Proficiency in Co Curricular Activities	2						100
DME-174	PC	Work Shop Practice	1	-	-	2	3	60	40
DME-134		Applied Mechanics	3	3	-	-	3	40	60
DME-172		Engineering Drawing- II Lab	1	-	-	2	3	60	40
DEE-172		Basic Electrical and Electronics Engg. Lab	2	-	-	3	3	60	40

SURESH GYAN VIHAR UNIVERSITY

I Year Diploma (Common to All Branches of Engg.

LIST OF COURSES OFFERED

Edition-2021-22

Course Code	Course Name	Credits	Contact Hrs/Wk.			Exam Hrs.	Weightage (in%)	
			L	T/S	P		CE	ESE
DEN-131	Basic English – I	3	3	-	-	3	40	60
DEN-132	Basic English –II	3	3	-	-	3	40	60
DEN- 171	Basic English Language Lab- I	1	-	-	2	3	60	40

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DEN- 172	Basic English Language Lab- II	1	-	-	2	3	60	40
DEM 201	Employability Skills-I	1	-	-	2	3	60	40
DPY-131	Physics-I	3	3	-	-	3	40	60
DPY-132	Physics-II	3	3	-	-	3	40	60
DPY- 171	Physics -I Lab	2	-	-	3	3	60	40
DPY-172	Physics-II Lab	2	-	-	3	3	60	40
DCY131	Chemistry-I	3	3	-	-	3	40	60
DCY132	Chemistry-II	3	3	-	-	3	40	60
DCY-171	Chemistry-I Lab	2	-	-	3	3	60	40
DCY-172	Chemistry-II Lab	2	-	-	3	3	60	40
DMA-131	Mathematics-I	3	3	-	-	3	40	60
DMA-132	Mathematics-II	3	3	-	-	3	40	60
DME-134	Applied Mechanics	3	3	-	-	3	40	60
DME- 171	Engineering Drawing –I lab	2	-	-	3	3	60	40
DME-172	Engineering Drawing –II Lab	1	-	-	2	3	60	40
DME-174	Work Shop Practice	1	-	-	2	3	60	40
DCP- 131	Computer & Information Technology Fundamentals	3	3	-	-	3	40	60
DCP- 171	Computer & Information Technology Fundamentals Lab	2	-	-	3	3	60	40
DEE- 172	Basic Electrical and Electronics Engg. Lab	2	-	-	3	3	60	40
PC- 101	Proficiency in Co Curricular Activities	2	-	-	-		100	-
PC-102	Proficiency in Co Curricular Activities	2	-	-	-		100	-

Course Title: **BASIC ENGLISH-I**		Course Code	: **DEN131**
Semester	: **I**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **3:0:0**	Credits	: **3 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**

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Pre-requisites:

Basic knowledge of English at secondary level.

Course Objectives:

1. This course supposed to give the knowledge of how to make various type sentences.
2. To analyse the different type of sentences.
3. To analyse tense and question tag.
4. To analyse where to use Noun, Pronoun, Articles, Adverb, Punctuation, Preposition etc.
5. To analyse the problems faced in direct-indirect and active voice.

Course Content:

Topic and Contents	Hours	Marks
UNIT-1: BASIC SENTENCES-I & II	08	20
Basic Sentence Patterns –I (Nine basic 5 sentence patterns)		
UNITS-2: BASIC SENTENCES-II	06	20
Basic Sentence Patterns –II • Transformation of Sentences • Determines • Preposition		
UNITS-3: TENSES	08	20
• Tenses • Question Tags		
UNIT-4: COMMON ERROR	06	20
• Noun • Pronoun • Articles • Adverb • Punctuation • Preposition		
UNIT 5: NARRATION	08	20
• Direct - indirect, • Voice - Active – Passive		
TOTAL	**36**	**100**

Reference:

1. Intermediate English Grammar Raymond Murphy, Foundation Books, New Delhi.
2. Eng. Grammar, usage & Composition Tickoo & Subramanian S.Chand and Co.
3. Living Eng. Structure Stannard Alien, Longman.

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Course outcomes:

On successful completion of the course, the student will be able to:

1. The course content gives full knowledge to learn how to make sentences.
2. Find the solution of problem of direct-indirect and active-passive voice.
3. Students will be able to know how to use tenses.
4. Students easily differentiate in between Noun, Pronoun, and Preposition etc.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S				M				S			
2	M	S					S				M	
3				M				M				
4	S	S				S					W	

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	30
2	Applying the knowledge acquired from the course	30
3	Analysis and Evaluation	40

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

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Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course
	End of Course survey			End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Model Question Paper:

DIPLOMA IN ENGINEERING

BASIC ENGLISH- I (DEN-131)

Time: 3 Hours **Maximum Marks: 60**

Instructions to candidates:

- Attempt over all 5 questions selecting one question from each unit.
- All questions carry equal marks.

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Guidelines for Question Paper Setting:

1. The question paper must be prepared based on the blue print without changing the weigh age of model fixed for each unit.
2. The question paper pattern provided should be adhered to
    - The paper should have 10 questions in all, wherein it will have 2 questions from each unit.
    - Student shall be asked to attempt in all 5 questions, 1 Question from each unit.
    - Student shall be given Internal choice in every Unit.
3. Questions should not be set from the recapitulation topics.

Course Title: **BASIC ENGLISH-II**		Course Code	: **DEN132**
Semester	: **I**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **3:0:0**	Credits	: **3 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: **Diploma in Engineering**			

Pre-requisites:

Basic knowledge of sentence, tense and narration etc.

Course Objectives:

1 This course supposed to give the knowledge of how to make various type sentences.
2 To analyse the different type of sentences.
3 To analyse tense and Common Error.
4 To analyse where to use modals- may, might, must etc.
5 To write letter, paragraph etc.

Course Content:

Topic and Contents	Hours	Marks
UNIT-1: BASIC SENTENCE PATTERNS-I	07	20
• Narration, Voice, Basic Sentence Patterns. (Nine basic sentence patterns)		
UNITS-2: BASIC SENTENCE PATTERNS-II	07	20
• Transformation of Sentences • Determiners		

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• Preposition		
UNITS-3: TENSES	07	20

• Tenses
• Common errors
  ○ Noun
  ○ Pronoun
  ○ Articles
  ○ Adverb
  ○ Punctuation
  ○ Preposition etc.		

UNIT-4: MODALS IN CONVERSATIONAL	08	20
Usage Prefix, Suffix, Idioms & Phrasal verbs: Can, Could, Should, Will, Would, May, Might, Must, Need not, Dare not, Ought to, Used to. Phrases: At all; In stead of; In Spite of; As well as; Set up; Up set; Look up; Call off; Call out; Come across; Set right; Look other. Idioms Work up (excite); Break down; Stand up for; Turn down; Pass away; Pass on; Back up; Back out; Carry out; Done for (ruined); Bring about; Go through; Ran over; Look up (improve); Pick out		
UNIT 5: COMPOSITION	07	20
Precise Writing, Letter writing, paragraph writing, report writing, Essay writing, Unseen passage		
TOTAL	**36**	**100**

Reference:

1. Intermediate English Grammar Raymond Murphy, Pub: Foundation Books, New Delhi
2. Eng. Grammar, usage & Composition Tickoo & Subramanian Pub: S.Chand and Co.
3. Living Eng. Structure Stannard Alien. Pub: Longman
4. A Practical Eng. Grammar Thomson and Martinet (and its Exercise Books) Pub : ELBS
5. High School English Grammar Wren & Martin and Composition.

Course outcomes:

On successful completion of the course, the student will be able to:

1 The course content gives full knowledge to learn how to make sentences.
2 Find the solution of problem of preposition and modals.
3 Students will be able to know how to use tenses.
4 Students easily write essay, letter and paragraph etc.

Mapping Course Outcomes with Program Outcomes:

Course	Programme Outcomes

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outcomes	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S			S				M			M
2			S		M			M			M	
3	M			S			M			S		
4	S					M						S

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	30
2	Applying the knowledge acquired from the course	30
3	Analysis and Evaluation	40

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSESSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8

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		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course
	End of Course survey			End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Model Question Paper:

DIPLOMA IN ENGINEERING

BASIC ENGLISH- II (DEN-132)

Time: 3 Hours **Maximum Marks: 60**

Instructions to candidates:

- Attempt over all 5 questions selecting one question from each unit.
- All questions carry equal marks.

Guidelines for Question Paper Setting:

4. The question paper must be prepared based on the blue print without changing the weigh age of model fixed for each unit.
5. The question paper pattern provided should be adhered to

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- The paper should have 10 questions in all, wherein it will have 2 questions from each unit.
- Student shall be asked to attempt in all 5 questions, 1 Question from each unit.
- Student shall be given internal choice in every Unit.

6. Questions should not be set from the recapitulation topics.

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Course Title: **BASIC ENGLISH LANGUAGE LAB-I**		Course Code	: **DEN171**
Semester	: **I**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **0:0:2**	Credits	: **1 Credits**
Type of course	: **Practical**	Total Contact Hours	: **20**
Continuous Internal Evaluation	: **60 Marks**	SEE	: **40 Marks**
Programmes: **Diploma in Engineering**			

Pre-requisites:

Basic Knowledge of English at secondary level.

Course Objectives:

1 This course supposed to give the knowledge of how to make various type sentences.
2 To analyse the different type of sentences.
3 To analyse tense and question tag.
4 To analyse where to use Noun, Pronoun, Articles, Adverb, Punctuation, Preposition etc.
5 To analyse the problems faced in direct-indirect and active voice.

Course Content:

Topic and Contents
UNIT-1: LISTENING SKILL DEVELOPMENT
For improving listening skills the following steps are recommended, Listen to Pre-recorded Tapes /Work on language proficiency software , Reproduce Vocally what has been heard Reproduce in Written form Summarise the text heard , Suggest Substitution of Words and Sentences Answer Questions related to the taped text, Summaries in Writing.
UNITS-2: SPEAKING SKILLS
Introducing English consonant-sounds and vowel-sounds. Remedial exercises where necessary, Knowing Word stress, Shifting word stress in poly-syllabic words .Work with language software.
UNITS-3: VOCABULARY
Synonyms. Homonyms. Antonyms and Homophones Words often confused, as for example, [I-me; your-yours; its-it's; comprehensible-comprehensive; complement-compliment] Context-based meanings of the words, for example, man[N] man[vb]; step[|N|, step[vb] conflict _____Israel Palestinian conflict, Emotional conflict, Ideas conflict
UNIT-4: PERSONALITY DEVELOPMENT

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Delivering Short Discourses: About oneself, Describing a Place, Person, Object ,Describing a Picture, Photo.
UNIT 5: GROUP DISCUSSION
Presentation and Interview skills.

Reference:

1. A Practical Eng. Grammar Thomson and Martinet. (and its Exercise Books),ELBS.
2. High School English Grammar and Composition Wren & Martin.

Course outcomes:

On successful completion of the course, the student will be able to:

1 The course content gives full knowledge to learn how to make sentences.
2 Find the solution of problem of direct-indirect and active-passive voice.
3 Students will be able to know how to use tenses.
4 Students easily differentiate in between Noun, Pronoun, Preposition etc.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1		S		S		S				S		
2	M				S			S				
3			S				S				S	
4									S			S

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	40
2	Applying the knowledge acquired from the course	40
3	Analysis and Evaluation	20

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Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

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Course Title: **BASIC ENGLISH LANGUAGE LAB-II**		Course Code	: **DEN172**
Semester	: **I**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **0:0:2**	Credits	: **1 Credits**
Type of course	: **Practicals**	Total Contact Hours	: **20**
Continuous Internal Evaluation	: **60 Marks**	SEE	: **40 Marks**
Programmes: **Diploma in Engineering**			

Pre-requisites:

Basic Knowledge of English Listening, Speaking and Vocabulary etc.

Course Objectives:

1 This course supposed to give the knowledge of how to make various type sentences.
2 To analyse the different type of sentences.
3 To analyse tense and question tag.
4 To analyse where to use Noun, Pronoun, Articles, Adverb, Punctuation, Preposition etc.
5 To analyse the problems faced in Group Discussion.

Course Content:

Topic and Contents

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UNIT-1: LISTENING SKILLS

(1) For improving listening skills the following steps are recommended, .

(a) Listen to Pre-recorded Tapes.

(b) Reproduce vocally what has been heard.

(c) Reproduce in Written form.

(d) Summarise the text heard.

(e) Suggest Substitution of Words and Sentences.

(f) Answer Questions related to the taped text.

(g) Summarise in Writing.

UNITS-2: SPEAKING SKILLS

(1) Introducing English consonant-sounds and vowel-sounds.

- Remedial exercises where necessary

(2) Knowing Word stress

Shifting word stress in poly-syllabic words

[For pronunciation practice read aloud a para or page regularly while others monitor

UNITS-3: VOCABULARY

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1. Synonyms. Homonyms. Antonyms and Homophones

2. Words often confused, as for example,

[I-me; your-yours; its-it's; comprehensible-comprehensive; complement-compliment]

3. Context-based meanings of the words, for example,

   (a) man[N] man[vb]; step[|N| ,step[vb].

   (b) conflict _____Israel Palestinian conflict, Emotional conflict, Ideas conflict

   (c) learn ——— 1 learn at this school
   I learnt from the morning news.

4. Delivering Short Discourses:

   (a) About oneself.

   (b) Describing a Place, Person, Object.

   (c) Describing a Picture, Photo.

UNIT 4: GROUP DISCUSSION

(1) Developing skill to initiate a discussion [How to open]

(2) Snatching initiative from others [Watch for weak points, etc.]

UNIT 5: EXPAND A TOPIC-SENTENCE INTO 4-5 SENTENCE NARRATIVE

Reference:

1. Intermediate English Grammar Raymond Murphy, Pub: Foundation Books, New Delhi

2. Eng. Grammar, usage & Composition Tickoo & Subramanian Pub: S.Chand and Co.

3. Living Eng. Structure Stannard Alien. Pub: Longman

4. A Practical Eng. Grammar Thomson and Martinet. (and its Exercise Books) Pub : ELBS

5. High School English Grammar Wren & Martin. and Composition

Note :

1. The Medium of teaching and examination will be English.
2. The Question on Essay Writing (Unit-7) will be compulsory. The student will have to attempt one essay out of two, touching the given points on general/ local topic related to environmental problems.

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3. At least on question will be set from each unit.
4. No theory question will be set from syllabus of practicals.

Course outcomes:

On successful completion of the course, the student will be able to:

1 The course content gives full knowledge to learn how to make sentences.
2 Find the solution of problem of direct-indirect and active-passive voice.
3 Students will be able to know how to use tenses.
4 Students easily take part in G.D. etc.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S		S		M				M			M
2		S				M				M		S
3	S			M				M			S	
4		S					M					S

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	40
2	Applying the knowledge acquired from the course	40
3	Analysis and Evaluation	20

Course Assessment and Evaluation:

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The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

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DEM 201 Employability Skills – II LTPC: 0201Total Contact Hours: 20

S.No.	Topic	Details	Contact Hours
1	Communication	Role Play, Reading, Formal writing skills Listening, Interaction Process, Interpersonal Relationship	15
2	Attitude& Manners	Motivation, Team Building, Winning Strategy, CAN DO,	5
3	Preparation, presentation	Presentation skills, Preparation Skills,	4
4	Industry	Concept & Importance of SIP, Industrial Mentoring & Networking	1

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Course Title: **PHYSICS-I**		Course Code	: **DPY131**
Semester	: **I**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **3:0:0**	Credits	: **3 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: **Diploma in Engineering**			

Pre-requisites:

Basic Knowledge of Physics at secondary level.

Course Objectives:

1 This course supposed to give the knowledge of Units and Dimension.
2 To give the knowledge of elasticity.
3 To gain the knowledge about liquid.
4 To analyse gravity and velocity of satellite.

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5 To give the knowledge of Heat.

Course Content:

Topic and Contents	Hours	Marks
UNIT-1: UNITS AND DIMENSIONS	08	20
1.1 Idea of various systems of units SI units - Basic, Supplementary and Derived Units, Prefixes & Symbols 1.2 Dimensions and Dimensional Formulae 1.3 Principle of Homogeneity of Dimensions 1.4 Dimensional Analysis 1.5 Applications and Limitations		
UNITS-2: ELASTICITY	06	20
2.1 Elasticity 2.2 Stress and Strain 2.3 Elastic Limit & Hooke's law 2.4 Young's Modulus, Bulk Modules & Modulus of Rigidity, Poisson's Ratio		
UNITS-3: PROPERTIES OF LIQUIDS	08	20
3.1 Surface Tension & Surface Energy 3.2 Cohesive & Adhesive Force 3.3 Angle of Contact 3.4 Capillarity & Expression for Surface Tension 3.5 Streamline & Turbulent Flow 3.6 Reynolds Number.l 3.7 Viscosity & Coefficient of Viscosity 3.8 Stoke's law & Terminal Velocity		
UNIT-4: GRAVITATION & SATELLITES	08	20
4.1 Newton's law of Gravitation 4.2 Acceleration due to Gravity 4.3 Kepler's laws of Planetary Motion (statement only) 4.4 Artificial Satellite (simple idea), Geo-Stationary Satellites 4.5 Escape Velocity 4.6 Velocity & Time Period of an Artificial Satellite.		
UNIT 5: TRANSFER OF HEAT	06	20
5.1 Idea of Conduction,Convection & Radiation 5.2 Thermal Conductivity & Coefficient of Thermal Conductivity 5.3 Black Body 5.4 Kirchoff's Laws & Stefan Boltzmann Law (statement only) 5.5 Newton's Law of Cooling & its Derivation from Stefan's Law		
TOTAL	**36**	**100**

Reference:

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1. Engineering Physics Gaur & Gupta

2. Applied Physics Vol.-I Hari Harlal, NITTTR

3. Applied Physics Vol.-II Hari Harlal, NITTTR

4. A Text Book of Applied Physics N.S. Kumar

5. Principles of Physics Brijlal, Subhramanyam

Course outcomes:

On successful completion of the course, the student will be able to:

1 The course content gives full knowledge to learn about units and dimensions.
2 Find the solution of problem of gravitation and satellite.
3 Students will be able to solve problem on transfer of heat.
4 Students easily know about liquid and elasticity.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S		S			M		S	S			S
2		S		S	M					S	S	
3	S		S				S		S			S
4		S			S					S		

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl.	Educational Component	Weight

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No.		age (%)
1	Remembering and Understanding	40
2	Applying the knowledge acquired from the course	30
3	Analysis and Evaluation	30

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course
	End of Course survey			End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

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Model Question Paper:

DIPLOMA IN ENGINEERING

PHYSICS- I (DPY-131)

Time: 3 Hours **Maximum Marks: 60**

Instructions to candidates:

- Attempt over all 5 questions selecting one question from each unit.
- All questions carry equal marks.

Guidelines for Question Paper Setting:

1 The question paper must be prepared based on the blue print without changing the weigh age of model fixed for each unit.

2 The question paper pattern provided should be adhered to

- The paper should have 10 questions in all, wherein it will have 2 questions from each unit.
- Student shall be asked to attempt in all 5 questions, 1 Question from each unit.
- Student shall be given internal choice in every Unit.

3 Questions should not be set from the recapitulation topics.

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Course Title: **PHYSICS-II**		Course Code	: **DPY132**
Semester	: **I**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **3:0:0**	Credits	: **3 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: **Diploma in Engineering**			

Pre-requisites:

Basic Knowledge of Physics at secondary level.

Course Objectives:

1 This course supposed to give the knowledge of D.C. Circuits.
2 To give the knowledge of A.C. circuits.
3 To gain the knowledge about Semi Conductors.
4 To analyse Nuclear Physics.
5 To give the knowledge of Heat Transfer.

Course Content:

Topic and Contents	Hours	Marks
UNIT-1: ELECTROSTATICS AND D.C. CIRCUITS	08	20
1.1 Coulomb's Law 1.2 Intensity of Electric Field, Intensity due to a Point Charge 1.3 Electric Lines of Forces & Electric Flux 1.4 Electric Potential, Electric Potential due to a Point Charge 1.5 Resistivity, Effect of Temperature on Resistance 1.6 Ohm's Law 1.7 Resistance in Series and Parallel and their Combination 1.8 Kirchoff's Law 1.9 Wheatstone Bridge 1.10 Meter Bridge		
UNITS-2: A.C. CIRCUITS AND MODERN PHYSICS	08	20
2.1 Faraday's Laws of Electro Magnetic Induction, Lenz's Law 2.2 Self and Mutual Inductance 2.3 Alternating Current, Phase & Phase Difference 2.4 Instantaneous, Average and rms value of AC 2.5 Behaviour of Resistance, Capacitance and Inductance in an AC Circuit		

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2.6 AC Circuits Containing, R-L, R-C and LCR in Series 2.7 Power in AC Circuit and Power Factor 2.8 Photo Electric Effect 2.9 Einstein's Equation		
UNITS-3: SEMI CONDUCTOR PHYSICS	06	20
3.1 Energy Bands in Conductor, Semi Conductor & Insulator 3.2 Chemical Bonds in Semiconductor 3.3 Intrinsic and Extrinsic Semiconductors 3.4 PN-Junction Diode, Working, Biasing and Characteristics Curves 3.5 Zener Diode and Voltage Regulation using it 3.6 Half Wave & Full Wave Rectifiers (only working, no derivations)		
UNIT-4: NUCLEAR PHYSICS, POLLUTION AND ITS CONTROL	08	20
4.1 Mass - Defect and Binding Energy 4.2 Nuclear Reactions 4.3 Natural and Artificial Radioactivity 4.4 Law of Radioactive Disintegration 4.5 Half Life & Mean Life. 4.6 Idea of Nuclear Fission and Fusion 4.7 Chain Reaction.		
UNIT 5: TRANSFER OF HEAT	06	20
5.1 Modes of Transmission of Heat - Idea of Conduction, Convection & Radiation 5.2 Thermal Conductivity & Coefficient of Thermal Conductivity 5.3 Black Body 5.4 Kirchoff's Laws & Stefan Boltzmann Law (statement only) 5.5 Newton's Law of Cooling & its Derivation from Stefan's Law		
TOTAL	**36**	**100**

Reference:

1. Engineering Physics Gaur & Gupta
2. Applied Physics Vol.-I Hari Harlal, NITTTR
3. Applied Physics Vol.-II Hari Harlal, NITTTR
4. A Text Book of Applied Physics N.S. Kumar
5. Principles of Physics Brijlal, Subhramanyam

Course outcomes:

On successful completion of the course, the student will be able to:

1 The course content gives full knowledge to learn about A.C. & D.C. Circuits.
2 Find the solution of problem of Nuclear Physics.
3 Students will be able to solve problem on transfer of heat.
4 Students easily know about Semi Conductors.

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Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S			S			M			M		M
2		S			S			M			M	
3			M			S			S			S
4	S			M					M			

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	40
2	Applying the knowledge acquired from the course	30
3	Analysis and Evaluation	30

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
TASS	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer	1 to 8

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						books	
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course
	End of Course survey			End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Model Question Paper:

DIPLOMA IN ENGINEERING

PHYSICS- II (DPY-132)

Time: 3 Hours **Maximum Marks: 60**

Instructions to candidates:

- Attempt over all 5 questions selecting one question from each unit.
- All questions carry equal marks.

Guidelines for Question Paper Setting:

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1 The question paper must be prepared based on the blue print without changing the weigh age of model fixed for each unit.

2 The question paper pattern provided should be adhered to

3 The paper should have 10 questions in all, wherein it will have 2 questions from each unit.

4 Student shall be asked to attempt in all 5 questions, 1 Question from each unit.

5 Student shall be given internal choice in every Unit.

6 Questions should not be set from the recapitulation topics.

Course Title: **PHYSICS LAB-I**		Course Code	: **DPY171**
Semester	: **I**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **0:0:3**	Credits	: **2 Credits**
Type of course	: **Practical**	Total Contact Hours	: **30**
Continuous Internal Evaluation	: **60 Marks**	SEE	: **40 Marks**
Programmes: **Diploma in Engineering**			

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Pre-requisites:

Basic Knowledge of Physics Lab at secondary level.

Course Objectives:

1 This course supposed to give the knowledge of Units and Dimension.
2 To give the knowledge of elasticity.
3 To gain the knowledge about liquid.
4 To analyse gravity and velocity of satellite.
5 To give the knowledge of Heat.

Course Content:

LIST OF EXPERIMENTS	
01.	To Measure Internal Diameter, External Diameter and Depth of a Calorimeter using Vernier Calliper's.
02.	To Measure Density of a Wire using Screw gauge.
03.	To Measure Radius of Curvature of a Lens, Mirror using Spherometer.
04.	To Determine Refractive Index of Glass using Prism.
05.	To Determine the Refractive Index of Glass using Travelling Microscope.
06.	To Determine Focal Length of a Convex Lens by Displacement Method.
07.	To Determine the Velocity of Sound at 0^0C using Resonance Tube.
08.	To Determine Young's Modulus of Elasticity using Searle's Apparatus.
09.	To Verify the Parallelogram Law of Force and Lemi's Theorem.
10.	To determine the coefficient of viscosity of a high viscous liquid.

Reference:

1. Engineering Physics Gaur & Gupta
2. Applied Physics Vol.-I Hari Harlal, NITTTR
3. Applied Physics Vol.-II Hari Harlal, NITTTR
4. A Text Book of Applied Physics N.S. Kumar
5. Principles of Physics Brijlal, Subhramanyam

Course outcomes:

On successful completion of the course, the student will be able to:

1 The course content gives full knowledge to learn about units and dimensions.
2 Find the solution of problem of gravitation and satellite.
3 Students will be able to solve problem on transfer of heat.
4 Students easily know about liquid and elasticity.

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Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S			S				S			M	
2		S			M		M			S		M
3			M			S			S			M
4												

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	40
2	Applying the knowledge acquired from the course	30
3	Analysis and Evaluation	30

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	

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				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

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Course Title: **PHYSICS LAB-II**		Course Code	: **DPY172**
Semester	: **I**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **0:0:3**	Credits	: **2 Credits**
Type of course	: **Practical**	Total Contact Hours	: **30**
Continuous Internal Evaluation	: **60 Marks**	SEE	: **40 Marks**
Programmes: **Diploma in Engineering**			

Pre-requisites:

Basic Knowledge of Physics Lab-I.

Course Objectives:

1 This course supposed to give the knowledge of Units and Dimension.
2 To give the knowledge of elasticity.
3 To gain the knowledge about liquid.
4 To analyse gravity and velocity of satellite.
5 To give the knowledge of Heat.

Course Content:

LIST OF EXPERIMENTS	
01.	To Determine Acceleration due to Gravity using Simple Pendulum.
02.	To Verify Newton's Law of Cooling.
03.	To Verify Law of Resistances.
04.	To Determine Specific Resistance of Material using Meter Bridge.
05.	To Determine Internal Resistance of a Primary Cell using Potentiometer.
06.	To Compare Emf of two Primary Cells using a Potentiometer.
07.	To Draw Characteristic Curves of PN Diode and Determine it's Static and Dynamic Resistance.
08.	To Draw Characteristic Curves of a PNP/NPN Transistor in CB/CE

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	Configuration.
09.	To Measure Resistance of a Galvanometer by Half-Deflection Method.
10.	Determine the frequency of the given tuning fork using sonometer.

Reference:

1. Engineering Physics Gaur & Gupta
2. Applied Physics Vol.-I Hari Harlal, NITTTR
3. Applied Physics Vol.-II Hari Harlal, NITTTR
4. A Text Book of Applied Physics N.S. Kumar
5. Principles of Physics Brijlal, Subhramanyam

Course outcomes:

On successful completion of the course, the student will be able to:

1 The course content gives full knowledge to learn about units and dimensions.
2 Find the solution of problem of gravitation and satellite.
3 Students will be able to solve problem on transfer of heat
4 Students easily know about liquid and elasticity.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S		S		M			S			M	
2		S					M			M		S
3				M					M			S
4	S					S					M	

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	40
2	Applying the knowledge acquired from the course	30
3	Analysis and Evaluation	30

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Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

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Course Title: **CHEMISTRY-I**		Course Code	: **DCY131**
Semester	: **I**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **3:0:0**	Credits	: **3 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: **Diploma in Engineering**			

Pre-requisites:

Basic Knowledge of Chemistry at secondary level.

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Course Objectives:

1 This course supposed to give the knowledge of Units and Dimension.
2 To give the knowledge of elasticity.
3 To gain the knowledge about liquid.
4 To analyse gravity and velocity of satellite.
5 To give the knowledge of Heat.

Course Content:

Topic and Contents	Hours	Marks
UNIT-1: ATOMIC STRUCTURE AND CHEMICAL BONDING	08	20
Atomic Structure : Bohr model of atom [Radius and Energy of H – atom is excluded] , De Broglie modification, Quantum numbers, Orbits and Orbitals, Aufbau principal, Pauli's Exclusion principle, Hunds rule of maximum multiplicity, Electronic configuration of elements upto atomic number 36. Definition of Atomic number, Mass number, Isotopes, Isotones and Isobars with suitable examples. Concept of hybridization sp3, sp2,sp and shape of molecules (simple example H2O, NH3, BCl3 , BeCl2) Chemical Bonding: Electrovalent, Covalent and coordinate bonds, H-bond in HF, water and ice. Classification of solids – crystalline and amorphous. Relationship between structure and properties of the following crystalline solids- (i) Ionic solid i,e. Sodium chloride (ii) Covalent solid i,e. diamond and graphite.		
UNITS-2: AVOGADRO CONCEPT , ACIDS , BASES & SALTS	08	20
Avogadro number, Mole concept, Simple numerical problems involving Weight and volume. Acids, Bases and Salts (Arrhenius and Lewis concept) Basicity of acids and Acidity of bases, Neutralization reaction, Hydrolysis of Salts,. Equivalent Weight of acids, bases, & salts of Strength of Solution ---- normality, molarity, molality, formality and percentage strength, standard solution primary and secondary standards, concept of pH, and pH scale, Indicators and choice of indicator, principles of acidimetry and alkalimetry (simple numerical problems) Buffer solution (excluding numerical problems) Solubility product principle (excluding numerical problems), common ion effect with relation to group analysis.		
UNITS-3: OXIDATION, REDUCTION, ELECTROCHEMISTRY	08	20
Oxidation and Reduction by electronic concept, balancing chemical equations by Ion-electron method, Redox Titration, Electrolysis, Arrhenius theory, Faraday's Laws, Electrolysis of CuSO4 solution using Pt-electrode and Cu-electrode, simple numerical problems on electrolysis, Application of electrolysis such as Electroplating, Electrorefinings and Electrotyping, Electrochemical Cells, Primary		

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Cell- Dry Cell, Secondary Cell --- Lead storage cell, Electrochemical series.Reversible and irreversible reactions, Exothermic and Endothermic reactions, concept of chemical equilibrium, Lechatelier's principle, Industrial preparation of Ammonia by Haber's Process.		
UNIT-4: MINERALS, ORES, GANGUE, FLUX, SLAG, GENERAL METHOD OF EXTRACTION OF METALS WITH REFERENCE TO IRON	06	20
Metallurgy copper and Aluminium (detailed method of extraction is excluded) Definition of Alloy, purposes of making Alloy, Composition and uses of alloys (Brass, Bronze German Silver, Deuralumin, Nichrome, Bell metal, Gun metal, Monel metal, Alnico, Dutch metal, Babbit metal, stainless steel), Amalgams, properties and uses of cast iron, wrought iron, steel and sponge iron , Manufacture of steel by L-D process, composition and uses of different alloy steels.		
UNIT 5: ORGANIC COMPOUNDS	06	20
Differences between inorganic and organic compounds, Classification, Homologous series, Functional groups, Isomerism, Nomenclature up to C5, properties and preparation of Methane, Ethylene and Acetylene.		
TOTAL	**36**	**100**

Reference:

1.S. S. Dara Environmental chem. & pollution control S. Chand Publication
2.Dr. Aloka Debi A Text Book of Env. Engg. Dhanpat Rai Publishing Co.
3.Jain & Jain Engg. Chem. Dhanpat Rai Publishing Co.
4. Jain & Jain Engg. Chem. Dhanpat Rai Publishing Co.
5. Dr. Aloka Debi A Text Book of Env. Engg. Dhanpat Rai Publishing Co.
Shrieve Atkins Industrial Chemstry
6. Bahl & Bahl A Text Book of Organic Chemistry S. Chand Publication
7. M. M. Uppal Engg. Chemistry
8. S. N. Poddar & S. Ghosh General & Inorganic. Chemistry Book Syndicate Pvt. Ltd.
9. Harish Kr. Chopra Anupama Parkar Engg. Chemistry

Course outcomes:

On successful completion of the course, the student will be able to:

1 The course content gives full knowledge of basic of chemistry (atomic structure, atomic weight etc.)
2 To know about avogadro no, salt etc.
3 Students will be able to differentiate between organic and inorganic compound.
4 Students easily know about electro chemistry.

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Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S			S			S			M		
2		S		S		S			S			S
3			S		S		S			S		S
4	S			M		M		M			S	

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	40
2	Applying the knowledge acquired from the course	30
3	Analysis and Evaluation	30

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9

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		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course
	End of Course survey			End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Model Question Paper:

DIPLOMA IN ENGINEERING

CHEMISTER-I (DCY-131)

Time: 3 Hours **Maximum Marks: 60**

Instructions to candidates:

- Attempt over all 5 questions selecting one question from each unit.
- All questions carry equal marks.

Guidelines for Question Paper Setting:

1. The question paper must be prepared based on the blue print without changing the weigh age of model fixed for each unit.
2. The question paper pattern provided should be adhered to
3. The paper should have 10 questions in all, wherein it will have 2 questions from each unit.
4. Student shall be asked to attempt in all 5 questions, 1 Question from each unit.

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5 Student shall be given Internal choice in every Unit.

6 Questions should not be set from the recapitulation topics.

Course Title: **CHEMISTRY-II**		Course Code	: **DCY132**
Semester	: **I**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **3:0:0**	Credits	: **3 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: **Diploma in Engineering**			

Pre-requisites:

Basic Knowledge of Chemistry at secondary level.

Course Objectives:

1 This course supposed to give the knowledge of Water Technology.
2 To give the knowledge of Lubricants.
3 To gain the knowledge about Cement.
4 To analyse about Corrosion.
5 To give the knowledge of Polymers.

Course Content:

Topic and Contents	Hours	Marks
UNIT-1: WATER TECHNOLOGY	08	20
Introduction –soft and hard water – causes of hardness – types of hardness disadvantages of hard water – degree of hardness (ppm) – softening methods – permutit process – ion exchange process – numerical problems related to degree of hardness –drinking water –		

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municipal treatment of water for drinking purpose – Osmosis, Reverse Osmosis - advantages of Reverse osmosis.		
UNITS-2: LUBRICANT	07	20
Definition, purpose and types of lubrication, names of common lubricants and uses, Flash point, Fire point, Pour point, Cloud point, selection of lubricant		
UNITS-3: CEMENT	07	20
Portland cement: Raw materials, Composition and Manufacture, Setting and Hardening of cement, function of gypsum, Cement Mortar, Cement concrete, Lime mortar, plaster of paris		
UNIT-4: CORROSION	07	20
Definition, Causes of Corrosion and methods of prevention, Refractory's- properties and use of Boron Carbide and Carborandirm, Asbestors, Glass, Ceramics, Cork (preliminary idea only). Paints: Composition, types (Snowchem, distemper) Varnishes: Definition, types, difference from paint, uses, characteristics. Metallic coating: Galvanisation, Electroplating, Tin plating. Lacquers.		
UNIT 5: POLYMERS	07	20
Definition & classification of Synthetic polymers Synthetic plastic: Thermoplastic plastic and Thermosetting plastic- their differences with examples, preparation and uses of Polythene, PVC, Polypropylene, Polystyrene, Teflon, Bakelite, Orlon, Saran. Synthetic rubber: Buna–S, Buna–N, Neoprene, Butyl, rubber, silicone, Vulcanization of rubber. Synthetic Fibres: Nylon, Terylene, Rayon**.**		
TOTAL	**36**	**100**

Reference:

1.S. S. Dara Environmental chem. & pollution control S. Chand Publication

2.Dr. Aloka Debi A Text Book of Env. Engg. Dhanpat Rai Publishing Co.

3.Jain & Jain Engg. Chem. Dhanpat Rai Publishing Co.

Reference Books:

Jain & Jain Engg. Chem. Dhanpat Rai Publishing Co.

Dr. Aloka Debi A Text Book of Env. Engg. Dhanpat Rai Publishing Co.

Shrieve Atkins Industrial Chemstry

Bahl & Bahl A Text Book of Organic Chemistry S. Chand Publication

M. M. Uppal Engg. Chemistry

S. N. Poddar & S. Ghosh General & Inorganic. Chemistry Book Syndicate Pvt. Ltd.

Harish Kr. Chopra Anupama Parkar Engg. Chemistry

Course outcomes:

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On successful completion of the course, the student will be able to:

1 The course content gives full knowledge of basic of Water.
2 To know about Lubricants.
3 Students will be able to differentiate between Paint and Varnish.
4 Students easily know about Polymers.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S					S					M	
2			S				M			M		
3		M			S				S		S	
4	S			M				M				S

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	40
2	Applying the knowledge acquired from the course	30
3	Analysis and Evaluation	30

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSESSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8

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		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course
	End of Course survey			End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Model Question Paper:

DIPLOMA IN ENGINEERING

CHEMISTRY- II (DCY-132)

Time: 3 Hours **Maximum Marks: 60**

Instructions to candidates:

- Attempt over all 5 questions selecting one question from each unit.
- All questions carry equal marks.

Guidelines for Question Paper Setting:

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1 The question paper must be prepared based on the blue print without changing the weigh age of model fixed for each unit.

2 The question paper pattern provided should be adhered to

3 The paper should have 10 questions in all, wherein it will have 2 questions from each unit.

4 Student shall be asked to attempt in all 5 questions, 1 Question from each unit.

5 Student shall be given internal choice in every Unit.

6 Questions should not be set from the recapitulation topics.

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Course Title: **CHEMISTRY LAB-I**		Course Code	: **DCY171**
Semester	: **I**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **0:0:3**	Credits	: **2 Credits**
Type of course	: **Practical**	Total Contact Hours	: **30**
Continuous Internal Evaluation	: **60 Marks**	SEE	: **40 Marks**
Programmes: **Diploma in Engineering**			

Pre-requisites:

Basic Knowledge of Chemistry at secondary level.

Course Objectives:

1 This course supposed to give the knowledge of Units and Dimension.
2 To give the knowledge of elasticity.
3 To gain the knowledge about liquid.
4 To analyse gravity and velocity of satellite.
5 To give the knowledge of Heat.

Course Content:

LIST OF EXPERIMENTS	
01.	To identify the following Basic Radicals by dry and wet tests – Pb +2 , Cu +2, Al+3, Fe+3, Zn+2, Ni+2 Ca+2 Mg+2, Na+, K+, NH4+2
02.	To identify the following Acid Radicals by dry and wet tests – Cl- , CO3-2 , SO4-2, S-2 , NO3-3 To identify an unknown water soluble salt containing one basic and one acid radical as mentioned above.
03.	To perform titration of (N/10) approximate solution of an alkali with an unknown solution of an acid supplied.
04.	To determine Iron content in Mohr's salt by standard K2Cr2O7 solution.
05.	Preparation of Potash Alum.
06.	Determination of amount of Cu++ ions by Iodometric titration.
07.	High volume air sampler.
08.	Applications of buffer solutions.
09.	Composition and uses of following Alloys: Brass, German silver, Nichrome
10.	Explain Lewis theory of acids and bases and its limitations.

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Reference:

1. Engineering Chemistry II (Hindi) Mathur and Agarwa.l
2. Chemistry of Engineering Materials C.V. Agarwal.
3. Engineering Chemistry P.C. Jain and Monika.
4. Engineering Chemistry M.M. Uppal.
5. Engineering Chemistry V.P.Mehta Jain Bros. Jodhpur.
6. Practical Chemistry for Engineers Virendra Singh.
7. Hand book of Technical Analysis Bannerji Jain Bros.Jodhpur.
8. Engineering Chemistry-I(Hindi) Mathur & Agrawal.
9. Inorganic Chemistry Shivhare & Lavania.
10. Organic Chemistry Kumar & Mehnot.
11. Practical Engineering Chemistry Dr Renu Gupta & Dr Sapana Dubey.
12. A Text book of Engineering Chemistry S. K. Jain & K. D. Gupta.
13. Engineering Chemistry Dr. K.L. Menaria & Dr Praveen Goyal

Course outcomes:

On successful completion of the course, the student will be able to:

1 The course content gives full knowledge of basic of chemistry (atomic structure, atomic weight etc.)

2 To know about avogadro no, salt etc.
3 Students will be able to differentiate between organic and inorganic compound.
4 Students easily know about electro chemistry.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S		S	S		S		S		S		S
2		S	S		S		S		S	S	M	
3	S			S		M	M					
4								S	S			

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

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Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	40
2	Applying the knowledge acquired from the course	30
3	Analysis and Evaluation	30

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course
	End of Course survey			End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

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Course Title: **CHEMISTRY LAB-II**		Course Code	: **DCY172**
Semester	: **I**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **0:0:3**	Credits	: **2 Credits**
Type of course	: **Practical**	Total Contact Hours	: **30**
Continuous Internal Evaluation	: **60 Marks**	SEE	: **40 Marks**
Programmes: **Diploma in Engineering**			

Pre-requisites:

Basic Knowledge of Chemistry-I.

Course Objectives:

1 This course supposed to give the knowledge of Units and Dimension.
2 To give the knowledge of elasticity.
3 To gain the knowledge about liquid.
4 To analyse gravity and velocity of satellite.

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5 To give the knowledge of Heat.

Course Content:

LIST OF EXPERIMENTS	
01.	Introduction to volumetric analysis.
02.	Preparation of Standard Na_2CO_3 solution.
03.	Estimation of HCl solution using Std. Na_2CO_3 solution.
04.	Estimation of NaOH using Std. HCl solution.
05.	Determination of acidity of water sample.
06.	Determination of total hardness of water using Std. EDTA method.
07.	Estimation of Chlorides present in water sample.
08.	Determination of pH using pH meter.
09.	Estimation of total solids present in water sample.
10.	Explain the mechanism of rusting of iron.

Reference:

1 Engineering Chemistry II (Hindi) Mathur and Agarwa.l
2 Chemistry of Engineering Materials C.V. Agarwal.
3 Engineering Chemistry P.C. Jain and Monika.
4 Engineering Chemistry M.M. Uppal.
5 Engineering Chemistry V.P.Mehta Jain Bros. Jodhpur.
6 Practical Chemistry for Engineers Virendra Singh.
7 Hand book of Technical Analysis Bannerji Jain Bros.Jodhpur.
8 Engineering Chemistry-I(Hindi) Mathur & Agrawal.
9 Inorganic Chemistry Shivhare & Lavania.
10 Organic Chemistry Kumar & Mehnot.
11 Practical Engineering Chemistry Dr Renu Gupta & Dr Sapana Dubey.
12 A Text book of Engineering Chemistry S. K. Jain & K. D. Gupta.
13 Engineering Chemistry Dr. K.L. Menaria & Dr Praveen Goyal

Course outcomes:

On successful completion of the course, the student will be able to:

1 The course content gives full knowledge of basic of chemistry (atomic structure, atomic weight etc.)
2 To know about avogadro no, salt etc.
3 Students will be able to differentiate between organic and inorganic compound.
4 Students easily know about electro chemistry.

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Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S		S		M				M			M
2		S		S			M			S		M
3	S					M					M	
4		M				S		S			S	

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	40
2	Applying the knowledge acquired from the course	30
3	Analysis and Evaluation	30

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9

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		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course
	End of Course survey			End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

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Course Title: **MATHEMATICS-I**		Course Code	: **DMA131**
Semester	: **I**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **3:0:0**	Credits	: **3 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: **Diploma in Engineering**			

Pre-requisites:

Basic Knowledge of Math at secondary level.

Course Objectives:

1 This course supposed to give the knowledge of Algebra.
2 To give the knowledge of trigonometry.
3 To gain the knowledge about Matrix.
4 To analyse coordinate geometry.
5 To give the knowledge of Circle, Parabola and ellipse.

Course Content:

Topic and Contents	Hours	Marks
UNIT-1: ALGEBRA	06	20
Complex Numbers, Algebra of complex numbers. Conjugate of a complex number. Modulus and Amplitude of a complex number. Triangular inequalities. Square root of a complex number.		
UNITS-2: TRIGONOMETRY	08	20
Trigonometrical ratios of allied angles $[\sin(90^0 \pm A),\ \sin(180^0 \pm A)\ etc.]$. Sum and Difference formulae and their applications. Product formulae. T-Ratios of multiple and sub-multiple angles (2A, 3A, A/2). Solution of Trigonometrical equations.		
UNITS-3: MATRICES AND DETERMINANTS	08	20
Definition and properties of Determinants. Definition and types of Matrices, Transpose of a matrix, Minors and Cofactors, Adjoint of a matrix , Inverse of matrix Cramer`s rule, Solution of simultaneous linear equations by Inverse matrix method. Characteristic matrix Characteristic equation, Eigen values and Eigen vectors, Cayley Hamilton theorem(Verification only).		
UNIT-4: COORDINATE GEOMETRY	08	20

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Distance formula, Ratio formula. Coordinates of Centroid, In-centre, Ortho-centre and Ex-centre of a triangle, Area of a triangle. Equation of a straight line in General form, Slope form, Intercept form, Perpendicular form. Equation of a line passing through one point and passing through two points, Angle between two lines. Perpendicular distance of a line from a point.		
UNIT 5: CONIC SECTION, PARABOLA, ELLIPSE AND HYPERBOLA	06	20
Circle : Definition and equation of a circle in General and standard forms, Equation of a circle in diametric form, Equation of Tangent and Normal at a point.(Simple problems) **Parabola** : Definition and equation of a parabola in standard form, Equation of Tangent and Normal at a point.(Simple problems) **Ellipse and Hyperbola** : Definition and equation in standard forms, Equation of Tangent and Normal at a point.(Simple problems)		
TOTAL	**36**	**100**

Reference:

1. Mathematics XI & XII by NCERT, New Delhi
2. Mathematics XI & XII by Rajasthan Board , Ajmer
3. Coordinate Geometry by Bhargava, Agrawal
4. Algebra XII by Bhargava, Agrawal
5. Plane Trigonometry by Bhargava, Agrawal
6. Elements of Matrices and Determinants by Sharma, Gokhroo, Saini
7. Conic Section by Gokhroo, Bhargava
8. Coordinates Geometry by RBD Publication

Course outcomes:

On successful completion of the course, the student will be able to:

1 The course content gives full knowledge to learn about algebra and trigonometry.
2 Find the solution of problem of trigonometry.
3 Students will be able to solve problem on coordinate geometry.
4 Students easily know about circle, parabola and ellipse.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S		S			S		M		S	
2			S		S			S		M		S
3	S			S		S					S	

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4		S			S			S		M		

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	20
2	Applying the knowledge acquired from the course	40
3	Analysis and Evaluation	40

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9

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INDIRECT ASSESSMENT	Student feedback	Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course
	End of Course survey		End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Model Question Paper:

DIPLOMA IN ENGINEERING

BASIC MATHEMATICS- I (DMA-131)

Time: 3 Hours **Maximum Marks: 60**

Instructions to candidates:

- Attempt over all 5 questions selecting one question from each unit.
- All questions carry equal marks.

Guidelines for Question Paper Setting:

1 The question paper must be prepared based on the blue print without changing the weigh age of model fixed for each unit.

2 The question paper pattern provided should be adhered to

3 The paper should have 10 questions in all, wherein it will have 2 questions from each unit.

4 Student shall be asked to attempt in all 5 questions, 1 Question from each unit.

5 Student shall be given Internal choice in every Unit.

6 Questions should not be set from the recapitulation topics.

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Course Title: **MATHEMATICS-II**		Course Code	: **DMA132**
Semester	: **I**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **3:0:0**	Credits	: **3 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: **Diploma in Engineering**			

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Pre-requisites:

Basic Knowledge of Math at secondary level.

Course Objectives:

1 This course supposed to give the knowledge of Function.
2 To solve the problem of Differential calculus.
3 To solve the problem of Maxima and Minima.
4 To analyse Integral Calculus.
5 To solve the problem of Differential Equation.

Course Content:

Topic and Contents	Hours	Marks
UNIT-1: FUNCTION	07	20
Definition, Domain, Co domain and Range of a function. Algebra of functions. Different kinds of functions. Concept of Limit, Left hand limit and Right hand limit, Limit of standard functions (Simple problems), Continuity and Differentiability at a point (Simple problems).		
UNITS-2: DIFFERENTIAL CALCULUS-I	08	20
Derivative of Sum, Difference, Multiplication and Division of two functions, Differentiation of function of a function, Logarithmic differentiation, Differentiation of Implicit functions, Differentiation of Parametric functions, Differentiation by trigono metrical transformations, Differentiation of a function with respect to other function. Second order derivative.		
UNITS-3: DIFFERENTIAL CALCULUS-II	08	20
Geometrical meaning of $\frac{dy}{dx}$. Tangents and Normal. Angle of intersection between two curves. Derivative as a Rate measurer, Errors and Approximations. Maxima and Minima of function with one variable.		
UNIT-4: INTEGRAL CALCULUS	08	20
Integral as anti-derative. Integration of Sum and Difference of functions. Integration by substitution, Integration by partial fractions, Integration by parts. Integration of Rational and irrational functions. Definite Intgral and its properties.		
UNIT 5: DIFFERENTIAL EQUATIONS	06	20
Differential equations of first order and first degree : variable separable, homogeneous form , linear form, reducible to linear form, exact form , reducible to exact form. Linear differential equations of higher order with constant coefficients.		
TOTAL	**36**	**100**

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Reference:

1. Mathematics XI & XII by NCERT, New Delhi
2. Mathematics XI & XII by Rajasthan Board , Ajmer
3. Differential Calculus by Bansal, Bhargava, Agrawal
4. Integral Calculus by Bansal, Bhargava, Agrawal
5. Elements of Differential Equations by Gokhroo, Saini, Agrawal
6. Differential Equations Vol. I by Bansal, Dhami
7. Differential Equations Vol. I by RBD Publication
8. Differential Calculus by RBD Publication

Course outcomes:

On successful completion of the course, the student will be able to:

1 The course content gives full knowledge to learn about Maxima and Minima.
2 Find the solution of problem of Differential Calculus.
3 Students will be able to solve problem on Integral Calculus.
4 Students easily know about Differential Function.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S		S			M				M		S
2		M			S		M				M	
3		S		S				M		S		S
4		M							S			M

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	20
2	Applying the knowledge acquired from the course	40

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3	Analysis and Evaluation	40

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course
	End of Course survey			End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

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Model Question Paper:

DIPLOMA IN ENGINEERING

BASIC MATHEMATICS-II (DMA-132)

Time: 3 Hours **Maximum Marks: 60**

Instructions to candidates:

- Attempt over all 5 questions selecting one question from each unit.
- All questions carry equal marks.

Guidelines for Question Paper Setting:

1 The question paper must be prepared based on the blue print without changing the weigh age of model fixed for each unit.

2 The question paper pattern provided should be adhered to

3 The paper should have 10 questions in all, wherein it will have 2 questions from each unit.

4 Student shall be asked to attempt in all 5 questions, 1 Question from each unit.

5 Student shall be given internal choice in every Unit.

6 Questions should not be set from the recapitulation topics.

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Course Title: **APPLIED MECHANICS**		Course Code	: **DME134**
Semester	: **I**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **3:0:0**	Credits	: **3 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: **Diploma in Engineering**			

Pre-requisites:

-

Course Objectives:

1 -

Course Content:

Topic and Contents	Hours	Marks
UNIT-1: FORCE	08	20
Definition, Units and Different Types of Forces. Coplanar Forces: Resolution of Forces, Law of Parallelogram of Forces, Resultant of		

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two or more Forces, Basic Conditions of Equilibrium, Lami's Theorem (No Proof), Jib Crane and Law of Polygon of Forces (Only Statement).		
UNITS-2: FORCES AND MOMENT	07	20
Moment: Definition, Units & Sign Convention, Principle of Moments, Application of Equilibrium Conditions for non-concurrent Forces. **Application of Principles of Forces & Moments**: Levers & their Types, Reactions of Simply Supported Beams (Graphical & Analytical Method),Steel Yard, Lever Safety Valve and Foundry Crane.		
UNITS-3: CENTRE OF GRAVITY	07	20
Concept, Centroid, Calculation of C.G. of Regular Bodies and Calculation of C.G. of Plain Geometrical Figures. Friction: Types of Friction, Laws of Friction, Angle of Friction, Angle of Repose, Friction on Horizontal and Inclined Plains, Application of Laws of Friction Related to Wedge, Ladder and Screw Jack.		
UNIT-4: SIMPLE MACHINES	07	20
Basic Concepts, Loss in Friction, Inclined Plane, Simple & Differential Wheel and Axle (Neglecting Rope thickness), Screw Jack, Lifting Crabs, Systems of Pulleys, Worm and Worm Wheel. **Rectilinear Motion**: Concept, Motion under Constant Velocity, Motion under Constant Acceleration, Velocity-time graph and its uses.		
UNIT 5: MOTION UNDER GRAVITY	07	20
Concept, Vertical Motion, Smooth Inclined Plane. **Projectiles**: Concept, Range, Maximum Height and Time of Flight, Equation of Trajectory, Calculation of Velocity of Projectile at Certain Height And at Certain instant.		
TOTAL	**36**	**100**

Reference:

1. Engineering Mechanics by Domkundwar & Domkundwar
2. Engineering Mechanics by D S Kumar
3. Engineering Mechanics by R K Rajput
4. Engineering Mechanics by R. Doughlas Gregory
5. Engineering Mechanics by Bhattacharya

Course outcomes:

On successful completion of the course, the student will be able to:

1 -

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Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1												
2												
3												
4												

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	40
2	Applying the knowledge acquired from the course	30
3	Analysis and Evaluation	30

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9

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		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course
	End of Course survey			End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Model Question Paper:

DIPLOMA IN ENGINEERING

APPLIED MECHANICS (DME-134)

Time: 3 Hours **Maximum Marks: 60**

Instructions to candidates:

- Attempt over all 5 questions selecting one question from each unit.
- All questions carry equal marks.

Guidelines for Question Paper Setting:

2 The question paper must be prepared based on the blue print without changing the weigh age of model fixed for each unit.

3 The question paper pattern provided should be adhered to

4 The paper should have 10 questions in all, wherein it will have 2 questions from each unit.

5 Student shall be asked to attempt in all 5 questions, 1 Question from each unit.

6 Student shall be given internal choice in every Unit.

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7 Questions should not be set from the recapitulation topics.

Course Title: **ENGINEERING DRAWING LAB-I**		Course Code	: **DME171**
Semester	: **I**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **0:0:3**	Credits	: **2 Credits**
Type of course	: **Practical**	Total Contact Hours	: **30**
Continuous Internal Evaluation	: **60 Marks**	SEE	: **40 Marks**
Programmes: **Diploma in Engineering**			

Pre-requisites:

Course Objectives:

1 -

Course Content:

LIST OF EXPERIMENTS	
01.	Introduction of Drawing Instruments.
02.	**Lines, Lettering and Dimensioning** • Types of Line. • Lettering – Single Stroke, Italics. • Various Systems of Placing the Dimensions.
03.	**Geometrical Construction and Engineering Curves** • Regular Polygons of Given Side. • Conic sections – Construction of Ellipse, Parabola, Hyperbola. • Construction of Cycloid, Epicycloid and Hypocycloid. • Construction of Involute, Archimedian Spiral and Cylindrical Helix.
04.	**Scales** • Type of Scales (Reducing and Enlarging). • Representative Fraction. • Plain and Diagonal Scales.
05.	**Theory of Orthographic Projections** • Introduction of Projections, Reference Planes and Projectors. • Angle of Projections (First Angle and Third Angle Projections). • System of Rotations. • Projection of Points in Different Quadrants.
06.	**Projection of Lines**

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	• Parallel to Both the Planes. • Parallel to One and Perpendicular to Other Planes. • Parallel to One and Inclined to Other Planes. • Inclined to Both the Planes. • True Length of a Line and its Apparent and True Inclinations
07.	**Projection of Planes** • Projection of Triangular, Square, Rectangular, Pentagonal, Hexagonal and Circular Planes. • Plane Parallel to One & Perpendicular to Other. • Plane Perpendicular to Both the Planes. • Plane Perpendicular to One and Inclined to Other Plane.
08.	**Projection of Solids** • Projection of Cube, Prism, Pyramid, Cylinder and Cone. • Projection of Solid whose Axis is Perpendicular to One and Parallel to Other plane. • Projection of Solid Whose Axis is parallel to One and Inclined to Other Plane. • Projection of Solid Whose Axis is Parallel to both the Planes (excluding inclined to both the planes).
09.	**Conversion of Pictorial Views into Orthographic Views** • Orthographic Projections of Simple Solid Object from Pictorial / Isometric view.
10.	**Section of Solids and Development of Surfaces** • Introduction of Sectional Planes. • Sectional Plane Perpendicular to one Reference Plane and Parallel to other. • Sectional Plane Perpendicular to one and Inclined to other. • Section of all types of Geometrical Solids. viz, Prism, Pyramid, Cone and Cylinder. • Apparent Section and True Section. • Development of Surfaces of Regular Solids viz, Prism, Pyramid, Cone and Cylinder. • Sectional Plan, Sectional Elevation and Sectional Side View and Development of Surface of Solid after Section.

Reference:

1. Engineering Drawing N D Bhatt
2. Machine Drawing N D Bhatt

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3. Engineering Graphics V. Laxmi Narayan
4. Machine Drawing V. Laxmi Narayan
5. Engineering Drawing P S Gill
6. Machine Drawing M L Mathur
7. Engineering Drawing (Hindi) B K Goyal
8. Mechanical Engineering Drawing (Hindi) Gupta & Kumar
9. Engineering Drawing A C Parkinson

Course outcomes:

On successful completion of the course, the student will be able to:

1 -

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S			S			M				M	
2		S				S			M			S
3			M		M			S		S		
4												

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	40
2	Applying the knowledge acquired from the course	30
3	Analysis and Evaluation	30

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Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

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Course Title: **ENGINEERING DRAWING LAB-II**		Course Code	: **DME172**
Semester	: **I**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **0:0:2**	Credits	: **1 Credits**
Type of course	: **Practical**	Total Contact Hours	: **20**
Continuous Internal Evaluation	: **60 Marks**	SEE	: **40 Marks**
Programmes: **Diploma in Engineering**			

Pre-requisites:

Basic knowledge Engineering Drawing Lab-I

Course Objectives:

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Students will learn how to project an object into larger scale and lower scale. They will also learn how we fix one metal into another metal through rivets and screw. They will also gain the knowledge on how to draw a section plan of a house.

Course Content:

LIST OF EXPERIMENTS	
01.	**Isometric Projection** 1. Isometric Axes, Isometric Scale, Isometric Lines and Isometric Planes. 2. Isometric View and Isometric Projection of Plane (Square, Rectangular, Pentagonal Hexagonal, Circular). 3. Isometric View and Isometric Projection of Prism, Pyramid, Cone, Cylinder, Sphere, their Frustum and Combination of these Solids.
02.	**Sections and Conventions** 1. Conventional Method of Representing Full, Half, Removed, Revolved, Partial and Offset Section. 2. Section Lines for Different Material as per ISI Recommendations.
03.	**Rivets and Riveted Joints Regular Polygons of Given Side.** 1. Different Types of Rivets -Snap Head, Pan Head with Tapered Neck, Rounded Counter Sunk Head, Flat Counter Sunk Head. 2. Lap Joint - Single Riveted, Double Riveted (Chain Riveting and Zigzag Riveting). 3. Butt Joint - Single Riveted, Double Riveted Chain Riveting and Zigzag Riveting (using Single and Double Cover Plates).
04.	**Screw Threads and Fasteners Type of Scales (Reducing and Enlarging)-I** 1. Classification of Threads. 2. Profiles and uses of - Metric, BSW, Square, ACME, Knuckle, Sellers Threads. 3. Machine Screw – Fillister, Flat Counter Sunk, Rounded Counter Sunk, Cup and Socket.
05.	**Screw Threads and Fasteners Type of Scales (Reducing and Enlarging)-I** 1. Set Screws – Oval, Conical, Flat and Cup Pointed. 2. Hexagonal Bolt and Nut, Stud and Collar Stud.
06.	**Foundation Bolt and Locking**

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	1. Drawing and uses of Rag, Lewis and Eye Bolt. 2. Locking by Simple Lock Nut, Split Pin and Spring Washer, Castle Nut, Locking by Plate
07.	**Keys and Pulleys** 1. Drawing and uses of Various Types of Keys - Saddle Key - Hollow and Flat, Sunk - Rectangular, Square, Key with Gib Head, Woodruff Key. 2. Pulley - Straight Arms flat Belt Pulley, V-Belt Pulley.
08.	**Shaft Couplings** 1. Muff Coupling. 2. Protected Type Flange Coupling.
09.	**Bearings** 1. Simple Bush Bearing.
10.	**Building Drawing** 1. Introduction of Orientation and Sun Chart Diagram of Residential Building. 2. Section of a Wall Including Foundation. 3. Sectional Plan of One Room and Toilet from Given Sketch.

Reference:

10. Engineering Drawing N D Bhatt
11. Machine Drawing N D Bhatt
12. Engineering Graphics V. Laxmi Narayan
13. Machine Drawing V. Laxmi Narayan
14. Engineering Drawing P S Gill
15. Machine Drawing M L Mathur
16. Engineering Drawing (Hindi) B K Goyal
17. Mechanical Engineering Drawing (Hindi) Gupta & Kumar
18. Engineering Drawing A C Parkinson

Course outcomes:

On successful completion of the course, the student will be able to:

2 Design a plan of a house or any building.
3 Know where to use rivets or screws.
4 Know how many types of bolts and nuts are there so that they may not get confused in industry.

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Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S			S		M			M		
2		M		S		S			M		S	
3			S					M				S
4												

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	40
2	Applying the knowledge acquired from the course	30
3	Analysis and Evaluation	30

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	

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		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

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Course Title: **WORKSHOP PRACTICE-I**		Course Code	: **DME174**
Semester	: **I**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **0:0:2**	Credits	: **1 Credits**
Type of course	: **Practical**	Total Contact Hours	: **30**
Continuous Internal Evaluation	: **60 Marks**	SEE	: **40 Marks**
Programmes: **Diploma in Engineering**			

Pre-requisites:

N/A

Course Objectives:

Students will learn how to perform carpentry shop in industry also learn how to learn how to weld one component to another metal also learn how to cast a metal.

Course Content:

LIST OF EXPERIMENTS	
01.	**CARPENTRY SHOP** Timber, definition, engineering applications, seasoning and preservation Plywood and ply boards. Measuring and Marking Tools, cutting tools used in carpentry & safety Measures. **List of jobs to be made in the Carpentry shop** 1. T – Lap joint 2. Bridle joint
02.	**FOUNDRY SHOP** Moulding tools and Moulding Boxes and other requirements like furnace etc Moulding Sands, constituents and characteristics,

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	Pattern definition, materials types, core prints, Role of gate, runner, riser, core and chaplets, Causes and remedies of some common casting defects like blow holes, cavities, inclusions **List of jobs to be made in the Foundry Shop** 1. Mould of any pattern 2. Casting of any simple pattern
03.	**WELDING SHOP-I** Definition of welding, brazing and soldering processes and their applications • Oxyacetylene gas welding process, equipment and techniques, types of flames and their Applications. Manual metal arc welding technique and equipment, AC and DC welding Electrodes: Constituents and functions of electrode coating, welding positions • Types of welded joints, common welding defects such as cracks, undercutting, slag inclusion and boring **List of jobs to be made in the Welding shop** 1. Gas welding practice by students on mild steel flat. 2. Lap joint by gas welding.
04.	**WELDING SHOP-II** 1. MMA welding practice by students. 2. Square butt joint by MMA welding.
05.	**WELDING SHOP-III** 1. Lap joint by MMA welding. 2. Demonstration of brazing.
06.	**SHEET METAL SHOP-I** Name, Functions & Specification of common Sheet Metal Tools like Slakes, Hammes, Hard Sstrips, Purchase, Groovers, and Rivet Sets. List of jobs to be made in the Sheet Metal Joints: 1. Single & Double Hem Joints 2. Wire Edge
07.	**SHEET METAL SHOP-II** 1. Lap Joint 2. Utility Jobs
08.	**FITTING AND SMITHY SHOP-I** Files, materials and classification. Specification files use of Marking & Measuring Tools. Forging, forging principle, materials, Operations like drawing, upsetting, bending and forge welding, □Use of forged parts. List of tools used in Marking & Measuring for Smithy Shop. **List of jobs to be made in the Fitting And Smithy Shop** 1. Finishing of two sides of a square piece by filing

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	2. Tin smithy for making mechanical joint and soldering of joint
09.	**FITTING AND SMITHY SHOP-II** 1. To cut a square notch using hacksaw and to drill three holes on PCD and tapping. 2. Job Preparation in forging shop involving basic operations.
10.	**PLUMBIN SHOP** Classification of pipes according to Material and use of I.S.I. specification of pipes. Introduction to cement & PVC Pipes: and their uses. List of Tools & Equipment used in Plumbing Shop 1. Cutting & Trending on G.I. Pipe

Reference:

1 Workshop Technology and Practice By Hazara Chowdhary Vol I & Vol II
2 Workshop Technology and Practice By B.S. Raghuvanshi
3 Workshop Technology By : Chapman Vol I ,II & III
4 Workshop Technology (Hindi) Tahil
5 Workshop Technology (Hindi) Machnani
6 Domestic Devises & Application by KB Bhala

Course outcomes:

On successful completion of the course, the student will be able to:

1 Weld one metal into another metal without affecting parent metal
2 Cast the metal to form a new shaped casting metal
3 Perform carpentry work in industry.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S			M			S			S		
2		M	S		M	S			M			M
3			M		S			M			S	
4												

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

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Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	40
2	Applying the knowledge acquired from the course	30
3	Analysis and Evaluation	30

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

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Course Title: **WORKSHOP PRACTICE-II**	Course Code : **DME175**
Semester : **I**	Core / Elective : **Core**
Teaching Scheme in Hrs (L:T:P) : **0:0:3**	Credits : **2 Credits**

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Type of course	: **Practical**	Total Contact Hours	: **30**
Continuous Internal Evaluation	: **60 Marks**	SEE	: **40 Marks**
Programmes: **Diploma in Engineering**			

Pre-requisites:

NA

Course Objectives:

Student will learn how to cut the wood safely with the help of marking tools. Students wil also learn how to weld one metal from other metal and how to cut sheet metal.

Course Content:

LIST OF EXPERIMENTS	
01.	**CARPENTRY SHOP-I** Timber, definition, engineering applications, seasoning and preservation Plywood and ply boards. Measuring and Marking Tools, cutting tools used in carpentry & safety Measures. **List of jobs to be made in the Carpentry shop** 1. Preparation of Cross-Half Lap Joint. 2. Preparation of Dovetail Joint
02.	**CARPENTRY SHOP-II** 1. Preparation of Mortise and Tenon Joint 2. Preparation of Mitre Joint
03.	**CARPENTRY SHOP-III** 1. Demonstration of Job on 2. Wooden Polishing Work.
04.	**WELDING AND SHEET METAL SHOP-I** Introduction to Welding and its Importance in Engineering Practices, Common Materials that can be Welded. Gas Welding Theory : Gas Welding Equipment Adjustment of different types of Flames, Practice in Handling Gas Welding Equipment. Electric arc Welding Theory (AC and DC), Safety Precautions while using Electric arc Welding. Practice in Setting Current and Voltage for Striking Proper arc. Common Welding Defects and Inspection, various type of Joints, end Edge Preparation. Explain Soldering, Brazing and Tipping of Tools, Gas Cutting. 1. Preparation of a Butt Joint by Gas Welding. 2. Preparation of Lap Joint by Electric arc Welding. 3. Preparation of T-Joint by Electric arc Welding.
05.	**WELDING AND SHEET METAL SHOP -II**

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	1. Demonstration on Brazing by the Instructor. 2. Demonstration on Soldering. 3. Demonstration on Gas Cutting.
06.	**WELDING AND SHEET METAL SHOP-III** 1. Preparation of a Soap Tray & Mug. 2. Preparation of Funnel.
07.	**FITTING SHOP-I** 1. Marking Filing & Hack Sawing Practice.
08.	**FITTING SHOP-II** 1. Production of Utility Job involving Marking, Filling and Hack Sawing.
09.	**FITTING SHOP-III** 1. Production of Utility Job involving Marking, Filling and Hack Sawing Drilling and Tapping
10.	**PLUMBING SHOP-I** Classification of Pipes According to Materials and use I.S.I. Specification for Pipes. Introductions to Cement and PVC Pipes and their uses. 1. Exercise on PVC Pipe Fitting. 2. Repair of Taps and Cocks.

Reference:

1 Workshop Technology and Practice By Hazara Chowdhary Vol I & Vol II
2 Workshop Technology and Practice By B.S. Raghuvanshi
3 Workshop Technology By : Chapman Vol I ,II & III
4 Workshop Technology (Hindi) Tahil
5 Workshop Technology (Hindi) Machnani
6 Domestic Devises & Application by KB Bhala

Course outcomes:

On successful completion of the course, the student will be able to:

1 Pack the product under wooden package perfectly
2 Weld one metal to another metal without giving damage to parent metal
3 Work on the fitting of pipes under any industry.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S		S		M		M			S		
2		M		S		S			S			M
3				M				S			M	

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4												

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	40
2	Applying the knowledge acquired from the course	30
3	Analysis and Evaluation	30

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		

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	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Course Title: **Computer & Information Technology Fundamental**		Course Code	: **DCP131**
Semester	: **I**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **3:0:0**	Credits	: **3 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: **Diploma in Engineering**			

Pre-requisites:

Basic Knowledge of Computer at secondary level.

Course Objectives:

1 This course supposed to give the knowledge of Computer and it's fundamental.
2 To give the knowledge of CPU and ALU.
3 To gain the knowledge about Windows.
4 To analyse Processing of Computer.
5 To give the knowledge of Microsoft Office.

Course Content:

Topic and Contents	Hours	Marks
UNIT-1: COMPUTER: AN INTRODUCTION	07	20
Generation of Computers & Types : PC, PC/XT, PC/AT, Main Frame, Super, Lap Top, Pam Top, Data representation Bit, Nibble, Byte, Word		

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Number System : Decimal, Binary, Hexadecimal & their Conversions, Arithmetic Operations ,Binary Number System, 1s , 2s Compliment, Coding Technique : BCD, EBCDIC, ASCII, Hardware, Software, Firmware, Free ware, Human ware Computer Languages and Translators: Machine, Assembly, High Level Language, Scripting Language, Object Oriented Language, Platform Independent Language, Translators: Assembler, Interpreter, Compiler.		
UNITS-2: INTRODUCTION TO COMPUTER: CENTRAL PROCESSING UNIT (CPU)	07	20
Memory Unit, Input/ Out Devices : Keyboard, Mouse (Optical), Digitizer, Scanner, Camera, Monitor (CRT, TFT) , Printers, Plotters, Bar Code Reader , Secondary Storage Devices : Floppy, Hard Disk, CD, DVD, Flash Drive, Block Diagram Showing Interconnection of Computer Parts Operating System : Definition of Operating System (OS) , Types of OS Single user, Multi user, Multi Programming , Time Sharing , Multi Processing		
UNITS-3: INTRODUCTION TO WINDOWS XP: 7	07	20
Introduction to Windows Environment , Parts of Windows Screen Icon, Menu, Start Menu, Minimizing, Maximizing, Closing Windows Explorer, Recycle Bin, Clipboard, My Computer, My Network Places, Control Panel: Adding New Hardware and Software, Display, Font, Multimedia, Mouse, International System, Accessories: Paint, Media Player, Scan disk, System Information.		
UNIT-4: INFORMATION CONCEPTS AND PROCESSING	07	20
Definition of Data, Information, Need of Information, Quality of Information , Concepts of Data Security, Privacy, Protection Computer Virus and their types, Scanning & Removing Virus , Computer and Communication: Need of Data Transmission Data Transmission Media, Baud rate and Bandwidth, Digital and Analog Transmission ,Serial and Parallel Data Transfer, Protocols, MODEM. Networking of Computers: LAN, WAN, MAN, Blue tooth ,Topologies: Bus, Star, Ring, Hybrid ,Introduction to Ports : RS232, IEEE 488, PS2, USB, UTP.		
UNIT 5: INFORMATION PROCESSING	08	20
Word processor, Introduction to MS-Word , Starting MS-Word Special Features of MS-Word , Using Help , Opening Document, Typing and Editing , Copying, Inserting, Moving, Deleting Copying from One Document to Others , Undo, Redo, Spell Check, Find and Replace ,Formatting ,Characters and Fonts , Spacing Removing Characters Formatting , Inserting Symbols Paragraphs. Page Setting ,Auto text and Auto Correct , Introduction to Macro , Electronic Spread Sheet , Power Point: Introduction to Power Point , Creating a Presentation/Slide , Adding Animation in Slide Running a Slide Show.		
TOTAL	**36**	**100**

Reference:

1. Computer Fundamental V.K. Jain, Standard Pub. & Distributors

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2. PC Software for Windows made simple R.K. Taxali, TMH
3. Mastering Windows XP TMH
4. BPB Computer Course BPB Editorial Board, BPB in Hindi
5. Introduction to Networking NANCE, PHI
6. First Course in Computer Science Sanjeev Saxena, Vikas Publishing House
7. First Look Microsoft Office 2003 Murray, PHI
8. Web Based Application Development Ivan Beyross, TMH using HTML, DHTML, Javascript Pearl/ CGI

Course outcomes:

On successful completion of the course, the student will be able to:

1 The course content gives full knowledge to learn about Computer and its Basics.
2 Students will be able to know about CPU and ALU.
3 Students will be able to make word file, report file etc.
4 Students easily know XP and Windows 7.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S			S			M		S		S	
2		S		S		S		S		M		
3	M		S		S							S
4		S		S		S	S			S		

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	40
2	Applying the knowledge acquired from the course	40
3	Analysis and Evaluation	20

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Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course
	End of Course survey			End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Model Question Paper:

DIPLOMA IN ENGINEERING

COMPUTER & IT FUNDAMENTAL (DCP-131)

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Time: 3 Hours **Maximum Marks: 60**

Instructions to candidates:

- Attempt over all 5 questions selecting one question from each unit.
- All questions carry equal marks.

Guidelines for Question Paper Setting:

1 The question paper must be prepared based on the blue print without changing the weigh age of model fixed for each unit.

2 The question paper pattern provided should be adhered to

3 The paper should have 10 questions in all, wherein it will have 2 questions from each unit.

4 Student shall be asked to attempt in all 5 questions, 1 Question from each unit.

5 Student shall be given internal choice in every Unit.

6 Questions should not be set from the recapitulation topics.

Course Title: **COMPUTER & INFORMATION TECHNOLOGY**	Course Code : **DCP171**

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FUNDAMENTAL LAB			
Semester	: **I**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **0:0:2**	Credits	: **1 Credits**
Type of course	: **Practical**	Total Contact Hours	: **20**
Continuous Internal Evaluation	: **60 Marks**	SEE	: **40 Marks**
Programmes: **Diploma in Engineering**			

Pre-requisites:

Basic Knowledge of Computer at secondary level.

Course Objectives:

1 This course supposed to give the knowledge of Computer and it's fundamental.
2 To give the knowledge of CPU and ALU.
3 To gain the knowledge about Windows.
4 To analyse Processing of Computer.
5 To give the knowledge of Microsoft Office.

Course Content:

LIST OF EXPERIMENTS	
01.	Study of Computer Components Practice of Computer Booting Process in XP.
02.	Practice of using My Computer, Windows Explorer, Practice of using Control Panel, Practice of My Network Places.
03.	Practice of CD and DVD Writing.
04.	Practice of Paint, Installation of Windows XP by using NTFS File System, Demonstration of Network.
05.	Visit to Internet Site.
06.	Creating e-mail Account, Sending and Receiving e-mails.
07.	Sending e-mail with Attachment & Signature, Searching Web Page/ Site using Search Engine.
08.	Exercise Based on MS-Word: Exercise Based on Power Point : Creating Slide.
09.	Exercise Based on Ms-Excel.
10.	Exercise Based on Power Point.

Reference:

1. Computer Fundamental V.K. Jain, Standard Pub. & Distributors.
2. PC Software for Windows made simple R.K. Taxali, TMH.
3. Mastering Windows XP TMH.
4. BPB Computer Course BPB Editorial Board,BPB in Hindi .
5. Introduction to Networking NANCE, PHI.
6. First Course in Computer Science Sanjeev Saxena, Vikas Publishing House.

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7. First Look Microsoft Office 2003 Murray, PHI.
8. Web Based Application Development Ivan Beyross, TMH using HTML, DHTML, Javascript Pearl/ CGI.

Course outcomes:

On successful completion of the course, the student will be able to:

1 The course content gives full knowledge to learn about Computer and its Basics.
2 Students will be able to know about CPU and ALU.
3 Students will be able to make word file, report file etc.
4 Students easily know XP and Windows 7.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S		S		S		M		S	S		S
2		S		S		S		M			S	
3	S		S		M							
4						S			S	S		

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	40
2	Applying the knowledge acquired from the course	40
3	Analysis and Evaluation	20

Course Assessment and Evaluation:

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The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

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Course Title: **BASIC ELECTRICAL & ELECTRONICS ENGINEERING LAB**		Course Code	: **DEE172**
Semester	: **II**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **0:0:3**	Credits	: **2 Credits**
Type of course	: **Practical**	Total Contact Hours	: **30**
Continuous Internal Evaluation	: **60 Marks**	SEE	: **40 Marks**
Programmes: **Diploma in Engineering**			

Pre-requisites:

Basic knowledge of Circuit parameters, AC and DC supply.

Course Objectives:

1 This course supposed to give the knowledge of how the circuit parameters behave with D.C. and A.C. supply.
2 Analyse the Applications of Kirchhoff's Law.
3 Analyse how the R, L and C behave in AC circuits.
4 Evaluate the Different types of capacitors.
5 Analyse the problems faced in Design procedure of iron core small transformers.
6 Create the basic concept of Battery.

Course Content:

LIST OF EXPERIMENTS

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01.	Verification of Ohm's law using Resistive Circuit and Analog Meters
02.	Measurement of Amplitude & Frequency of a Signal using CRO
03.	Testing of Electronic, Component such as Capacitor, Inductor, Diode and Transistor
04.	Measurement of Voltage, Current and Resistance using Analog & Digital Multi meter.
05.	Study of following Tools used in Electronic Workshop 1. Component Lead Cutter 2. Wire Strippers 3. Soldering Iron & Soldering Station 4. De-Solder Pump
06.	Identification and Testing of following type of Connectors 1. Rack and Panel 2. Printed Circuit Edge 3. Coaxial 4. Tape & Ribbon 5. Plate
07.	Identification of following Resistors and finding their Values 1. Carbon and Metal Film 2. Variable Resistance Log and Linear 3. Semi Variable Preset of One Turn & Multi turn
08.	Identification of following Switches and Study of their Working Mechanism 1. Toggel 2. Bandswiteh 3. Rotary 4. Push to on and off 5. Press to on and off
09.	Soldering of different passive component combination on general purpose PCB.
10.	Sketching of different Electronic Components Symbol on Drawing Sheet.

Reference:

1. Electrical Workshop M.L. Gupta.
2. Domestic Devices & Appliances K.B. Bhatia.
3. Electrical Workshop S.L. Uppal.
4. Electrical Component & Shop Practice K.R. Nahar.
5. Maintenance of Electrical Equipments K. S. Janwal.
6. Hand Book of Philips Component.

Course outcomes:

On successful completion of the course, the student will be able to:

1 The course content gives full knowledge to learn Linear Programming.
2 Find the solution of problem dependent on Project Scheduling.

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3 Solve the problems related to Transportation.
4 Enable students to solve difficulties face in Numerical method and transform Calculus.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1												
2												
3												
4												

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	40
2	Applying the knowledge acquired from the course	30
3	Analysis and Evaluation	30

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
ASSIGNMENTS	CIE	Attendance	Student	Every lab	10	Attendance Register	

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		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

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SURESH GYAN VIHAR UNIVERSITY

GYAN VIHAR SCHOOL OF ENGINEERING AND TECHNOLOGY

SYLLABUS OF DIPLOMA IN ELECTRICAL ENGINEERING

EDITION – 2021-22

Head, Department of Diploma Engg.
Gyan Vihar School of Engg. & Tech.
JAIPUR

JUSTIFIED REASONS TO CHANGE THE SYLLABUS FOR COMING SESSION- 2021-22

1) Replace the Unit-III "Stability" from Power system protection and analysis (DEE337) with "Circuit Breakers" because stability also come in Electrical Machine-II (DEE341)
2) Add a topic Power Angle curve & Transfer reactance to the Unit-IV "Stability" OF Electrical Machine-II (DEE341) because this topic was in Unit-III of PSPA and delteted.
3) According to the student feedback, there is a subject "ANALOG&DIGITAL ELECTRONICS (DEE 336)" in VI semester, it is a combined syllabus of two different subjects & having very large syllabus. And shifted from semester VI to Semester III.
4) To understand each topic in detail, we are requested to separate these two subjects.
5) So according to that request & after Verify the syllabus of different government as well private universities, we are requested to DAPC committee to permit us for relevant changes.
6) The approval via mail is also attached here.
7) Replace the experiment-2 of Switch Gear Protection Lab i.e. based on IDMT relay with Buchholz relay of transformer, transformer differential protection (experimet-8) with Oil test of transformer, electromagnetic IDMT relay (experiment-4) with Frequency relay, Over voltage (experiment-3) with auxiliary relay and impedance relay (experiment-7) with percentage biased differential relay.
8) Next change is according to the industry feedback, that the subject "CIRCUIT THEORY (DEE 338)" is in IV semester & it is a basic subject of Circuit Analysis which should be taught in just starting of II year IVsem.
9) So according to this & after bear approval of DAPC committee & BOS members, we shifted this subject in III sem.
10) The subject "Electronics Device and Circuits"is currently in III sem, but it is further taught after basic knowledge of gates in digital electronics.
11) So after approval of DAPC committee, we shifted that subject in IV sem.
12) Content of Unit-IV (Oscillator) of Electronics Device and Circuits (DEE 232) has been Split into Unit-V with Hartley oscillator, Cut of Figure, Sustain Oscillation and Designing of Oscillation
13) According to self, Students and industries Suggestion.
14) Subject Electrical Measurement and Instrumentation (DEE 233) and Lab Electrical Measurement and Instrumentation Lab-I which was in Sem-III has been shifted to Sem-IV.
15) Subject Electrical Machine-I and Lab Electrical Machine Lab-I which was earlier in Sem-IV has been shifted to Semester V
16) Subject Electrical Machine-II and Electrical Machine Lab-II which was earlier in Sem-V have been shifted to Sem VI

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17) According to self, Students and industries Suggestion.
18) Delete common topic comes two time in Estimation and coasting lab-I (DEE279) and add electric wiring of multi story building.

To,
The Convener BOS
SGVU, Jaipur
The syllabus of Diploma in Electrical Engineering has been updated for the edition 2021-22. Kindly find enclosed the details for further guidance and approval

1. The syllabus has been revised as per the needs of Industry and trends in premier academic institutions after 1 year.
2. It is to bring to your notice that a student of electrical branch is not supposed to study Electrical subjects only, via our syllabi we have to provide a global perspective to the student.
3. Details of the courses added and removed:-

- In the subject Advanced Mathematics of semester III unit - 4 Laplace transform Calculus is updated Properties of Laplace Transform and formulae, Unit Step function, Dirac Delta function, Heaviside function, Laplace transform of periodic functions.
- Finding inverse Laplace transform by different methods, convolution theorem
- In the subject Basic Economics and social science (For Diploma All) (DHS231) Unit -1 Introduction and unit -3 Concept of demand and supply have updated.
- New Course Introduced in Diploma EE

Prior (Year)	Post(Year)
2019-20 (DEE 238)	**2021-22 (DEE242)**
Advanced Circuit Theory	**SOLAR POWER TECHNOLOGIES**

BHOOPENDRA SHARMA
COURSE CO-ORDINATO

DR. RASHID HUSSAIN
HOD (DIPLOMA)

Nagendra

Prof. (Dr.) Nagendra M. Swaroop
Associate Dean Academics
Suresh Gyan Vihar University, JAIPUR

Principal
Gyan Vihar School of Engg. & Tech.
Jaipur

Head, Department of Diploma Engg.
Gyan Vihar School of Engg. & Tech.
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GYAN VIHARSCHOOL OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF DIPLOMA IN ELECTRICAL ENGINEERING (3 Year Course)
PROGRAMME OUTCOMES OF DIPLOMA IN ELECTRICAL ENGINEERING

1. Identify, formulate and analyze Electrical Engineering problems and derive conclusions using first principles of mathematics.

2. Design Electrical systems, components or processes to meet desired needs within realistic constraints considering social, cultural issues. To obtain an ability to function in multi-disciplinary teams and to foster Entrepreneurship.

3.Apply contextual knowledge to understand social, safety and legal issues relevant to engineering profession To recognize of the need for and an ability to engage in life-long learning.

4. Understand the impact of Electrical Engineering solutions on society and environment for sustainable development.

5. Identify, formulate and solve complex problems to achieve demonstrated conclusions using mathematical principles and engineering sciences.

6. Apply principles of engineering activities & project management in multidisciplinaryEnvironment.

7. Engage in life-long learning in context of technological advances to apply techniques, skills and modern engineering tools necessary for devising innovative projects.

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Course Code	Course Name	Credits	Contact Hrs/Wk.			Exam Hrs.	Weightage (in%)	
			L	T/S	P		CE	ESE
	University Core							
MA231	Advance Mathematics	3	3	0	0	3	40	60
PC201	Proficiency in Co-Curricular Activity	2	0	0	0	0	100	
EM102	Employability Skills II	1	0	2	0	2	60	40
	Program Core							
DEE231	Basic Electrical Engineering	3	3	0	0	3	40	60
DEE232	Electronics Devices and Circuit	3	3	0	0	3	40	60
DEE239	Digital Electronics	3	3	0	0	3	40	60
DEE281	Digital Electronics Lab	2	0	0	3	2	60	40
DEE273	Basic Electrical Engineering lab-I	2	0	0	3	2	60	40
DEE274	Electronics Devices and Circuit Lab	2	0	0	3	2	60	40
	University Elective							
	Consumer Affairs	2	2	0	0	2	60	40
DHS231	Basic Economics & Social Science	2	2	0	0	3	40	60
	Program Elective							
DEE234	Design of Electrical Installation-I	3	3	0	0	3	40	60
DCS221	Office Automation Tool Lab-I	2	0	0	2	2	60	40

GYAN VIHAR SCHOOL OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF DIPLOMA IN ENGINEERING
DIPLOMA IN ELECTRICAL ENGINEERING (3 Year Course)

Year: II **Edition-2021** **Semester: III**

Year: II **Edition-2021** **Semester: IV**

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Course Code	Course Name	Credits	Contact Hrs/Wk.			Exam Hrs.	Weightage (in%)	
			L	T/S	P		CE	ESE
	University Core							
PC301	Proficiency in Co-Curricular Activity	2	0	0	0	0	100	
ES101/102	Environmental Studies	2	2	0	0	2	60	40
EM202	Employability Skills IV	1	2	0	0	2	60	40
DEP301	Industry Summer Internship Project	2	0	0	3	2	60	40
	Program Core							
DEE340	Electrical Machines-I	3	3	0	0	3	40	60
DEE332	Transmission and Distribution	3	3	0	0	3	40	60
DEE334	Fundamental of Control System	3	3	0	0	3	40	60
DEE371	Power System Lab-II	2	0	0	3	2	60	40
DEE378	Electrical Machines Lab-I	2	0	0	3	2	60	40
DEE373	Electrical Design & Estimating Lab	2	0	0	3	2	60	40
	University Elective							
DHS301	Industrial Management	2	2	0	0	3	40	60
	Program Elective							
DEE335	Design of Electrical Installation-II	3	3	0	0	3	40	60
DCP371	Computer Programming Lab	2	0	0	2	2	60	40
DEE333	Power Electronics-II	3	3	0	0	3	40	60

Year: III **Edition-2021** **Semester: V**

Year: III **Edition-2021** **Semester: VI**

Course Code	Course Name	Credits	Contact Hrs/Wk.			Exam Hrs.	Weightage (in%)	
			L	T/S	P		CE	ESE
	University Core							
PC202	Proficiency in Co-Curricular Activity	2	0	0	0	0	100	
EM201	Employability Skills – III	1	0	2	0	2	60	40
	Program Core							
DEE240	Electrical Instrument & Measurement-I	3	3	0	0	3	40	60
DEE236	Generation of Electric Power	3	3	0	0	3	40	60
DEE237	Circuit Theory	3	3	0	0	3	40	60
DEE238	Power Electronics-I	3	3	0	0	3	40	60
DEE281	Electrical Instrument & Measurement Lab-I	2	0	0	3	2	60	40
DEE276	Power Electronics Lab-I	2	0	0	3	2	60	40
DEE277	Electrical Measurement and Instrumentation Lab-II	2	0	0	3	2	60	40
DEE278	Workshop Lab-I	2	0	0	3	2	60	40
	University Elective							
DHS232	Entrepreneurship	2	2	0	0	3	40	60
	Swachh Bharat Abhiyan	2	2	0	0	2	60	40
	Program Elective							
DEE279	Estimation & Costing Lab-I	2	0	0	3	3	60	40
DEE242	Solar Power Technology	3	3	0	0	3	40	60

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Course Code	Course Name	Credits	Contact Hrs/Wk.			Exam Hrs.	Weightage (in%)	
			L	T/S	P		CE	ESE
	University Core							
PC302	Proficiency in Co-Curricular Activity	2	0	0	0	0	100	
DEP302	Industry Association Project	4	0	0	3	2	60	40
	Program Core							
DEE376	Estimation & Costing Lab-II	2	0	0	3	2	60	40
DEE341	Electrical Machines-II	3	3	0	0	3	40	60
DEE379	Electrical Machines Lab-II	2	0	0	3	2	60	40
DEE375	Switch Gear & Protection Lab	2	0	0	3	2	60	40
	University Elective							
DEE377	MAT Lab	2	0	0	3	2	60	40
	Disaster Management	2	2	0	0	2	60	40
	Program Elective							
DEE338	Advance Circuit Theory	3	3	0	0	3	40	60
DEE339	Energy Management	3	3	0	0	3	40	60
DEE337	Power System Protection and Analysis	3	3	0	0	3	40	60

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SURESH GYAN VIHAR UNIVERSITY

DETAILED SYLLABUS

DEPARTMENT OF DIPLOMA IN ELECTRICAL ENGIEERING

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Course Title: **OFFICE AUTOMATION LAB**		Course Code	: **DCS221**
Semester	: **III**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **0:0:3**	Credits	: **2 Credits**
Type of course	: **Practical**	Total Contact Hours	: **30**
Continuous Internal Evaluation	: **60 Marks**	SEE	: **40 Marks**
Programmes: **Diploma in Computer Science**			

Pre-requisites:

Basic computer Knowledge

Course Objectives:

1. Learn operating system Installation
2. Can Install Hard disk, RAM, CD, ROM, CPU and other computer components.
3. Can work with MS-word, and use MS word features
4. Learn MS word Mail options.
5. Can work with MS-Excel, and use MS Excel features.

Course Content:

Installation of Operating Systems.
Introduction to control panel, Add remove hardware and software,
Installation of Hard disk, RAM,CD, ROM,CPU, Mother Board, Keyboard, Mouse,
Ms-Word Basics: Working with MS Word; Menus Commands; Toolbars & Buttons; Shortcut Menus, Wizards & Templates; Creating a New Document
Ms-Word Lab 2:Spell Check, Thesaurus, Find & Replace; Headers & Footers; inserting-Page Number, Pictures, File, Auto texts, Symbols etc.
Ms-Word lab 3 Working with Columns, Tabs & Indent; Creation & Working with Tables including conversion to and from text; Margins & Space management in Document; adding References and Graphics.
Ms-Word lab 4: Mail Merge, Envelops& Mailing Labels. Importing and exporting to and from various formats.
MS Excel Lab 1: Working with Ms Excel; concepts of Workbook & Worksheets; using Wizards; Various Data Types; Using Different features with Data, Cell and Texts; Inserting
Removing & Resizing of Columns & Rows; Working with Data & Ranges; different Views of Worksheets; Column Freezing, Labels, Hiding, Splitting etc.
Ms Power Point: Working with MS Power Point; Creating a New Presentation; Working with

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Presentation & Presentation of Slide Show, Printing Presentation.

Reference:

Lab manual

Course outcomes:

On successful completion of the course, the student will be able to:

1. Install operating system.
2. Install Hard disk, RAM, CD, ROM, CPU and other computer components.
3. Work with MS-word, and use MS word features
4. Use MS word Mail options.
5. Work with MS-Excel, and use MS Excel features.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S	S	S		M						S
2	S		S	S	M		M	M				M
3	S	S	S	S								S
4	S	S	S		M							M
5	S	S		S		M	M	M			M	

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
T A S		Attendance	Student	Every lab	10	Attendance	

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	CIE					Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	20
3	Analysis and Evaluation	45

Course Title: **COMPUTER PROGRAMMING LAB**		Course Code	: **DCP371**
Semester	: **V**	Core / Elective	: **Elective**
Teaching Scheme in Hrs (L:T:P)	: **0:0:1**	Credits	: **2Credits**
Type of course	: **Practical**	Total Contact Hours	: **30**
Continuous Internal Evaluation	: **60Marks**	SEE	: **40Marks**
Programmes: **Diploma in Electrical Engineering**			

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Pre-requisites:

Knowledge of Basic Computer, Operating Systems and their application.

Course Objectives:

1. This course aims at imparting knowledge about specific computer aspects, which areof practical importance for an engineer in consumer and industrial applications.
2. Apply the Purpose and essential of programming.
3. Evaluate the Program using structure.
4. Analyse the Simple programs using pointers.
5. Create the basic concept of recursive functions.

Course Content:

LIST OF EXPERIMENTS	
01.	Simple input program integer, real character and string. (Formatted & Unformatted)
02.	Conditional statement programs (if, if-else-if, switch-case)
03.	Looping Program (Top Tested Loops)
04.	Looping Program (Bottom Tested Loops)
05.	Program based on one dimensional array.
06.	Program based on multi-dimensional array.
07.	Program using Function (With and without)
08.	Program based on structure.
09.	Program based on Recursion.
10.	Program based on unions.

Course outcomes:

On successful completion of the course, the student will be able to:

1. Find the solution of problem dependent on Flowcharts and algorithm development.
2. Determine the Need of programming languages.
3. Solve the problems related to Design Conditional and control statements.
4. Enable students to use application of Arrays, 2D array, user defined functions.

Mapping Course Outcomes with Program Outcomes:

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Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S				M						S	
2		S						M				
3	M		S									
4	S	S								S		
5		M		S			S					

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	30
2	Applying the knowledge acquired from the course	35
3	Analysis and Evaluation	35

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
ASSIGNMENTS	CIE	Attendance	Student	Every lab	10	Attendance Register	

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		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Course Title: **DIGITAL ELECTRONICS LAB**		Course Code	:**DEE281**
Semester	: **III**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **0:0:3**	Credits	: **2Credits**
Type of course	: **Practical**	Total Contact Hours	: **30**
Continuous Internal Evaluation	: **60Marks**	SEE	: **40Marks**
Programmes: **Diploma in Electrical Engineering**			

Pre-requisites:

Knowledge of Basic PN Junction, Number System in Digital, logical operation, Boolean algebra, semiconductor properties (intrinsic and extrinsic).

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Course Objectives:

6. This course aims at imparting knowledge about specific electronics aspects, which are of practical importance for an engineer in consumer and industrial applications.
7. Apply the application of basic PN diode &Zener Diode.
8. Analyse the different types of BJT & FET.
9. Evaluate the Differential amplifier as OP-AMP.
10. Analyse the Logic Gates & Arithmetic Operations.
11. Create the basic concept of Combinational & Sequential Circuits.

Course Content:

LIST OF EXPERIMENTS	
01.	Realization of NOT, OR, AND, NOR, EX-OR, and EX-NOR gates using NAND gate.
02.	Realization of NOT, OR, AND, NOR,EX-OR, and EX-NOR gates using NOR gate.
03.	Implementing and verifying Boolean Expression using K-map
04.	Implementing Half Adder and Full Adder using logic gates
05.	Implementing Half Subtractor and Full Subtractor using logic gates
06.	Verification of truth table of Flip-Flop: Clocked RS FF using NAND Gates
07.	To Implementation of 4x1 multiplexer using logic gates
08.	Verification of truth table of Flip-Flop: Clocked RS FF using NOR Gates
09.	To study and verify NAND as a universal gate.
10.	To design and verify operation of half subtractor

Course outcomes:

On successful completion of the course, the student will be able to:

5. Increasing use of electronic gadgets in control of analog electronics makes this course indispensable for having an insight into trouble-shooting techniques.
6. Find the solution of problem dependent on Schottky&Zener diode.
7. Determine the variable characteristics & applications of BJT & FET.
8. Solve the problems related to Operational Amplifier.
9. Enable students to use application of Logic Gates and Sequential and Combinational Circuits.

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Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S				M						S	
2		S						M				
3	M		S									
4	S	S								S		

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	30
2	Applying the knowledge acquired from the course	35
3	Analysis and Evaluation	35

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	

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		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Course Title:**BASIC ELECTRICAL ENGINEERING**		Course Code	:**DEE231**
Semester	: **III**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **3:0:0**	Credits	: **3Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40Marks**	SEE	: **60Marks**
Programmes: **Diploma in Electrical Engineering**			

Pre-requisites

Knowledge of Basic Physics at Sec. and Sr. Sec. Level.

Course Objectives:

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12. This course supposed to give the knowledge of how the circuit parameters behave with D.C. and A.C. supply.
13. Analyse the Applications of Kirchhoff's Law.
14. Analysehow the R, L and C behave in AC circuits.
15. Evaluate the Different types of capacitors.
16. Analyse the problems faced in Design procedure of iron core small transformers.
17. Create the basic concept of Battery.

Course Content:

Topic and Contents	Hours	Marks
UNIT-1:DC CIRCUITS	08	20
Resistance, Inductance, Capacitance, Ohm's Law, Resistance in series and parallel. Kirchhoff's Law: • KCL (Kirchhoff'sCurrent Law) • KVL (Kirchhoff's Voltage Law) Applications of Kirchhoff's Law.		
UNITS-2: AC CIRCUITS	08	20
Alternating quantity and its Equation, Maximum, Average and RMS values, Form factor. Behavior of R, L and C in AC circuits: • Series R-L-C circuit • Parallel R-L-C circuit • Series Parallel R-L-C circuit. Power factor, Dielectric loss		
UNITS-3: CAPACITANCE	08	20
Capacitor, Capacitance of an isolated sphere, Parallel plate capacitor, Special cases of parallel plate capacitor, Cylindrical capacitor. Capacitor in series and parallel, Capacitor with compound dielectric, Energy stored in capacitor, Charging and discharging of a capacitor, time constant, Different types of capacitor used in various electrical applications.		
UNIT-4:TRANSFORMER	06	20

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Principle of transformer, Voltage, current and turn ratio relationship, Construction details of Core, Shell and Auto Transformer, Design procedure of iron core small transformers and numerical problems. Constructional details of transformers winding machine.		
UNIT 5: BATTERY	06	20
Types of storage batteries, Construction and Working of Lead acid batteries, Discharging and Charging of Lead acid batteries, Ampere and Watt hour Efficiencies.		
TOTAL	**36**	**100**

Reference:

1. Electrical Engineering (Hindi & English) K. D. Sharma
2. Electrical Technology Vol. -I B. L. Theraja
3. Electrical Engineering Part-I D. R. Nagpal
4. Electrical Technology J. B. Gupta
5. Basic Electrical Engineering. Nagrath& Kothari

Course outcomes:

On successful completion of the course, the student will be able to:

10. The course content gives full knowledge to learn how R, L and C reacts with DC and AC circuit.
11. Find the solution of problem dependent on designing of small iron core transformer.
12. Solve the problems related to Kirchhoff's Law and Capacitance.
13. Enable students to solve difficulties face by small units on basis of batteries.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1		S			M		S		M		S	
2	S			M			S		S			
3	M	S			S					S		
4		M		S				S				

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	40

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2	Applying the knowledge acquired from the course	30
3	Analysis and Evaluation	30

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course
	End of Course survey			End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Course Title: **ELECTRONICS DEVICES AND CIRCUIT**		Course Code	:**DEE232**
Semester	: **III**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **3:0:0**	Credits	: **3Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **36**

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Continuous Internal Evaluation : **40Marks**	SEE : **60Marks**
Programmes: **Diploma in Electrical Engineering**	

Pre-requisites:

Knowledge of Basic Physics at Sec. and Sr. Sec. Level.

Course Objectives:

18. This course supposed to give the knowledge of Semiconductor diode and filters used in rectifiers.
19. Analyse the Applications of bi-polar junction transistor.
20. Analysethe Concept of power amplifiers.
21. Evaluate the Basic concept of feedback and types of feedback.
22. Analyse the problems faced in Boolean algebra.

Course Content:

Topic and Contents	Hours	Marks
UNIT-1: SEMI CONDUCTOR DIODE	08	20
Basic Introduction of P-N junction Diode, Semiconductor diode as half wave rectifier, its efficiency and ripple factor, Semiconductor diode as full wave rectifier, Bridge rectifier, Overall comparison between half wave and other full wave rectifiers, Peak inverse voltage (PIV), Use of filter circuit in rectifiers: • L filter • C filter • LC section filter • π Section filter		
UNITS-2: BI-POLAR JUNCTION TRANSISTOR	08	20
Concept of transistor, Types of transistor and their working in forward and reverse bias, Constants of transistor (α,β,ϒ), Analysis of transistor amplifier, load line, Operating point and biasing. Input - output characteristics in CB, CC and CE configuration Low frequency small signal hybrid equivalent circuit of transistor Derivation of voltage, current and power gain, input and output impedance of CE configuration.		

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UNITS-3: POWER AMPLIFIER	06	20
Concept of power amplifiers , Gain at low, mid and high frequency range, cut off frequencies , Types of power amplifier: • Class A power amplifier, output power analysis • Push-pull amplifier. • Class - B power amplifier		
UNIT-4:FEED BACK	08	20
Basic concept of feedback and types of feedback, Advantages and disadvantages of negative feedback for gain, stability, frequency and nonlinear distortion. Voltage series, shunt and current series and shunt feedback circuit,		
UNIT 5: OSCILLATORS	06	20
Use of positive feedback for oscillators. Barkhausen criteria, Principles of RC phase shift, Wein bridge oscillator Hartley oscillator, Cut of Figure, Sustain Oscillation and Designing of Oscillation		
TOTAL	**36**	**100**

Reference:

1. Electronic Principles V.K.Mehta
2. Electronics Devices & Circuits Sanjeev Gupta
3. Integrated Electronics Millman&Halkias (TMH)
4. Digital Principles & Application Malvino Leach
5. Digital Electronics T.C. Bartee
6. Modern Digital Electronics R.P.Jain

Course outcomes:

On successful completion of the course, the student will be able to:

14. The course content gives full knowledge to learn how Semiconductor diode used in rectification.
15. Find the solution of problem dependent on BJT and its voltage, current and power gain.
16. Solve the problems related to Power Amplifier.

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17. Enable students to solve difficulties face by feedback for gain, stability, frequency and nonlinear distortion.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	M	S			S			M				
2		S		M			S			M		
3	S	M				S			S			
4	S	S			S						S	

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	40
2	Applying the knowledge acquired from the course	35
3	Analysis and Evaluation	25

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSESSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8

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		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course
	End of Course survey			End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Course Title: **DIGITAL ELECTRONICS**		Course Code	:**DEE239**
Semester	: **III**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **3:0:0**	Credits	: **3Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40Marks**	SEE	: **60Marks**
Programmes: **Diploma in Electrical Engineering**			

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Pre-requisites:

Knowledge of Basic Physics at Sec. and Sr. Sec. Level.

Course Objectives:

1. To provide an overview of the different number systems, their representation, basic logic gates & Boolean algebra.
2. To provide the method of implementation of different logic families and comparison on basis of their characteristics
3. To demonstrate the SOP/POS representation of Boolean functions. The minimization of these functions can be done by using various properties or using Kmap approach.
4. To provide basis of the designing of various combinational circuits using basic gates.

Course Content:

Topic and Contents	Hours	Marks
UNIT-1: NUMBER SYSTEMS	08	20
Introduction Decimal, Binary, Octal, Hexadecimal Number, Conversion of number system: Decimal-to-Binary, Decimal-to-Octal, Decimal-to-Hexadecimal, Octal-to-Binary, Binary-to-Octal, Hexadecimal-to-Binary, Binary-to-Hexadecimal, Hexadecimal-to-Octal and Octal-to-Hexadecimal, BINARY ARITHMETIC: Binary Addition, Subtraction, Introduction 1's Complement, & 2's Complement Conversion binary number to 2's Complement Conversion 2's Complement, BCD-to-Binary Conversion, Binary-to-BCD Conversion, BCD Addition, BCD Subtraction GRAY CODE: Binary-to-Gray Code, Gray-to-Binary Code Conversion		
UNITS-2: BOOLEAN ALGEBRA AND LOGIC SIMPLIFICATION	08	20
BASIC BOOLEAN OPERATIONS: Boolean Addition (Logical OR), Boolean Multiplication (Logical AND), Logical NOT, THEOREMS OF BOOLEAN ALGEBRA: Complementation Laws, Commutative Laws, Associative Laws, Distributive Law, De Morgan's Theorem, LOGIC GATE: Types of Logic Gates, NAND & NOR Gate as a Universal Gate, Converting Boolean Expressions to Logic Diagram, Converting Logic to Boolean Expressions, CONVERTING LOGIC DIAGRAMS TO NAND / NOR LOGIC: NAND-NAND Logic, NOR-NOR Logic		
UNITS-3: KARNAUGH MAP	08	20

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Introduction Sum-of-Products (SOP), Product-of-Sum (POS), Boolean Expressions and Truth Table, Calculation of total inputs using SOP & POS, K map upto 2,3 & 4, variables. Simplification of logic functions with K-map Minterm, Maxterm Multiplexers, K-map Simplification With Don't Care Conditions		
UNIT-4: COMBINATIONAL CIRCUITS	06	20
Introduction of Combinational Circuit, ADDERS: Half-Adder, Full-Adder, SUBTRACTORS: Half-Subtractor, Full-Subtractor, MULTIPLEXER: Applications of Multiplexers, 2-to-1 Multiplexer, 4-to-1 Multiplexer, DEMULTIPLEXER: 1-to-2 Demultiplexers, 1-to-8 Demultiplexers, DECODER, Applications of Decoder, ENCODERS, Octal-to-Binary Encoder, Decimal-to-BCD Encoder, 7 Segment		
UNIT 5: SEQUENTIAL CIRCUITS	06	20
Introduction of Sequential Circuits, LATCHES AND FLIP-FLOPS, General Block Diagram of a Latch or Flip-flop, Difference between Latches and Flip-flops, S-R LATCH: S -R Latch using NOR Gates, S -R Latch using NAND Gates, FLIP-FLOPS: S-R Flip-Flop, J-K Flip-Flop, D-Flip Flop, T Flip-Flop, Register, Counter, Asynchronous and Synchronous Counter SHIFT REGISTER COUNTERS, Ring Counter,		
TOTAL	**36**	**100**

Reference:

1. Morries mano-digital electronics
2. Ghoshal, "Digital Electronics", Cengage Learning(2012)
3. Millman Taub, "Pulse and digital Switching waveforms" ,TMH(1984)

Course outcomes:

On successful completion of the course, the student will be able to:

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1. Students will be able to know the basics of digital electronics which are used in digital system applications and determine the philosophy of number systems and codes.
2. Students will understand the implementation of different gates.
3. Students will be able to simplify the logic expressions using Boolean laws and postulates and design them by using logic gates and minimize the logic expressions using map method and tabular method.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S			M			S		S		
2	M	S			S		S				M	
3	S	S		S				S				
4	S	S				S				S		

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	40
2	Applying the knowledge acquired from the course	35
3	Analysis and Evaluation	25

Course Assessment and Evaluation:

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The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course
	End of Course survey			End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Course Title: **DESIGN OF ELECTRICAL INSTALLATION-I**	Course Code :**DEE234**

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Semester	: **III**	Core / Elective	: **Elective**
Teaching Scheme in Hrs (L:T:P)	: **3:0:0**	Credits	: **3Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40Marks**	SEE	: **60Marks**
Programmes: **Diploma in Electrical Engineering**			

Pre-requisites:

Knowledge of Basic Electrical, Circuit Parameters, Network theorems, PN Junction.

Course Objectives:

23. This course aims at imparting knowledge about specific electronics aspects, which are of practical importance for an engineer in consumer and industrial applications.
24. Apply the Purpose and essential of estimating and costing.
25. Analyse the Need of Earthing.
26. Evaluate the plan estimation of 1-phaseand 3-phase electrical load.
27. Analyse the calculation of material cost using PWD B.S.R.
28. Create the basic concept of Sub station.

Course Content:

Topic and Contents	Hours	Marks
UNIT-1: WIRING MATERIALS AND ACCESSORIES	06	20
Different electrical symbols, Brief description, general specification and approximate cost of different types of: • wire and cable • Switches, socket outlets • Ceiling roses, lamp holders • Plugs Conduits and it accessories: • Distribution boards and boxes • Fuses, MCB, isolators, E.L.C.B. and energy meters • Incandescent, Fluorescent and discharge lamps • D.C. and A.C. motors and starters		
UNITS-2: GENERAL PRINCIPLE OF ESTIMATING AND COSTING	08	20

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Purpose and essential of estimating and costing: • Preparation of list of materials • Market survey, price list and net prices • Calculation of material and labor cost, contingencies, supervision, overhead charges, profit and total cost. • Purchase process: quotations, comparative statement, purchase order, tender order, security money		
UNITS-3: EARTHING & SERVICE CONNECTION	08	20
Need of earthing, Pipe and plate earthing, Schedule of material and accessories, costing and estimates. General rules and regulation: • Overhead and underground service connection • Schedule of material and accessories for single phase and three-phase service connection • Costing of material and work		
UNIT-4:PLAN ESTIMATION OF 1-PHASEAND 3-PHASE ELECTRICAL LOAD	06	20
Installation plan, Single line-wiring diagram, Calculation of conductor size, Design for main switch boards and distribution board, Calculation of number of circuits, List of material required for following and preparation of estimate, calculation of material cost using PWD B.S.R.: • Single storey& Multi storey building • Small workshop • Agricultural pump • Institution or office building		
UNIT 5: SUB STATION	08	20
Classification of substations: • Indoor and Outdoor substation • Pole mounted substation • Platform type substation • Industrial substation • Selection of site for distribution substation • Estimation of material required for distribution substation		
TOTAL	**36**	**100**

Reference:

1. Electrical Estimating & Costing S.L.Uppal
2. Electrical Estimating & Costing J.B.Gupta
3. Installation, Design & Drawing J.B. Gupta

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4. Electrical Engg. Drawing Surjeet Singh
5. Electrical Estimating and Costing TTTI Madras

Course outcomes:

On successful completion of the course, the student will be able to:

18. Increasing use of Fuses, MCB, isolators, E.L.C.B. and energy meters.
19. Find the solution of problem dependent on Calculation of material and labor cost.
20. Determine the Need of Earthing, Pipe and plate Earthing.
21. Solve the problems related to Design for main switch boards and distribution board.
22. Enable students to use application of Estimation of material required for distribution substation.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S				S		S		M		
2	S	S		S			S				S	
3	M	S			S				M			
4	S	S			S			S				S
5	S	S				S						

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	40
3	Analysis and Evaluation	25

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Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course
	End of Course survey			End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

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Course Title: **ELECTRICAL MEASUREMENT & INSTRUMENTATION**		Course Code	: **DEE240**
Semester	: **IV**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **3:0:0**	Credits	: **3Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40Marks**	SEE	: **60Marks**
Programmes: **Diploma in Electrical Engineering**			

Pre-requisites:

Knowledge of Basic Physics at Sec. and Sr. Sec. Level.

Course Objectives:

29. This course supposed to give the knowledge of basic concept of measurement.
30. Analyse the Applications of measuring instruments.
31. Analysethe Concept of DC & AC Bridges.
32. Evaluate the Basic concept of CRO for voltage and current measurement.
33. Analyse the problems faced in active and passive transducer.

Course Content:

Topic and Contents	Hours	Marks
UNIT-1:BASIC CONCEPT OF MEASUREMENT	08	20
Introduction, Classification of Instruments-Absolute Instruments, Secondary Instrument, Deflection and Null type Instruments, Characteristics of measuring devices: • Accuracy, Resolution, Precision. ✓ Error (Gross, Systematic and Random error) Arithmetic Mean, Average Deviation, Standard Deviation, Variance, Sensitivity, Linearity, Reliability.		
UNITS-2: MEASURING INSTRUMENTS	08	20

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Classification of measuring instruments, General consideration of torques employed in indicating type instrument (deflection torque, controlling torque, damping torque) Construction and working of voltmeter and ammeter: • Moving iron type • Moving coil type • Rectifier type • Dynamometer type.		
UNITS-3: RESISTANCE MEASUREMENT& BRIDGES	08	20
Classification of Resistance: • Low Resistance • Medium Resistance • High Resistance Measurement of Resistances: • Ammeter Voltmeter Method • Wheatstone Bridge Method • Kelvin's double bridge method. Types of AC & DC Bridges.		
UNIT-4:CRO	06	20
Electron gun, Deflecting Plates, Screen of CRO, Measurement using CRO: • Voltage Measurement • Current Measurement • Phase and Frequency measurement.		
UNIT 5: TRANSDUCERS	06	20
Concept of Primary and Secondary transducers, Difference between active and passive transducer,Difference between analog and digital transducer. Strain, Stress, Temperature, Pressure,Potentiometers**,** Strain gauge (resistance and semiconductor type)		
TOTAL	**36**	**100**

Reference:

1. Electrical Measurement & Instruments J .B. Gupta
2. Electrical Measurement E. W. Golding

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3. Electrical Measurement D. R. Nagpal
4. Electrical and Electronics Measurement and Instrumentation A. K. Sawhney.
5. Instrumentation and System Rangan& Sharma

Course outcomes:

On successful completion of the course, the student will be able to:

1. The course content gives full knowledge to learn how measuring instrument can also give some error.
2. Find the solution of problem dependent on indicating type instrument.
3. Solve the problems related to resistance measurement & bridges.
4. Enable students to solve difficulties face by CRO & Transducer.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S			M			S		S		
2	M	S			S		S				M	
3	S	S		S				S				
4	S	S				S				S		

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

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Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	40
2	Applying the knowledge acquired from the course	35
3	Analysis and Evaluation	25

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course
	End of Course survey			End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

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CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Course Title:**GENERATION OF ELECTRIC POWER**		Course Code	:**DEE236**
Semester	: **IV**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **3:0:0**	Credits	: **3Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40Marks**	SEE	: **60Marks**
Programmes: **Diploma in Electrical Engineering**			

Pre-requisites:

Knowledge of Basic Power Generation, difference between AC & DC, Effect of atmosphere on transmission lines, difference between supply and distribution.

Course Objectives:

34. This course supposed to give the knowledge of electrical energy generation and transmission.
35. Analyse the power generation in Thermal and Hydro power plants.
36. Analyse the different types power generation by wind & solar plants.
37. Evaluate the different types of supply and distribution system.
38. Analyse the methods of voltage and reactive power compensation.
39. Create the basic concept of overhead transmission line and its parameters.

Course Content:

Topic and Contents	Hours	Marks
UNIT-1:INTRODUCTION OF ELECTRICAL ENERGY	06	20

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Electrical energy demand and electrical energy growth in India, Electrical energy growth in India Electrical energy sources: • Fossil fuels and nuclear fuels Present status of electrical demand in Rajasthan.		
UNITS-2: THERMAL & HYDRO POWER STATION	08	20
Thermal: Selection of plant location, Block diagram of plant and its working, Coal handling plant, Draft system, Boilers, Ash handling plant, Turbine, Economizer, Super heater and reheater, Air preheater. Hydro: Selection of site, Advantages and disadvantages of hydro power plant, Element of hydro power plant and their functions, Dam, Storage reservoir, Fore bay, Surge tank, Pen stocks, Spill way.	04 04	
UNITS-3: WIND & SOLAR ENERGY	08	20
Introduction to wind energy Merits and demerits of wind energy, Wind power and energy pattern factor, Wind machine. Unit of solar power and solar energy, Historical review and future prospects, Schematic diagram of a solar thermal power plant, Merits and limitation of solar PV system	04 04	
UNIT-4:ECONOMIC FACTORS	08	20
Economic Dispatch problem, Fuel curve, Heat curve, Langrangian Function, Loss Equation. Economic Factors: • Plant Load factor • Plant Capacity factor • Plant Use Factor • Reserve Capacity • Diversity Factor		
UNIT 5: COMBINED OPERATION OF POWER STATIONS	06	20

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Types and advantage of interconnection, Base load, peak load and load allocation among different power station, Real and reactive power control of turbo alternator, Reactive power requirements during peak and off peak hours		
TOTAL	**36**	**100**

Reference:

1. Generation of Electrical Energy B.R. Gupta
2. Power Plant Engg. Domkundwar
3. A course in Electrical Power Soni, Gupta, Bhatnagar
4. Energy technology S.Rao& B.B. Parulekar
5. Non-conventional Energy Sources A.N. Mathur&N.S.Rathore
6. Non-conventional Energy Sources G.D.Rai

Course outcomes:

On successful completion of the course, the student will be able to:

23. The course content gives full knowledge to learn economic aspects of generation and transmission of electrical energy.
24. Find the solution of problem dependent on electrical power demand.
25. Determine the variable source of electrical power (Solar, Wind)
26. Solve the problems related to Underground and Overhead transmission lines.
27. Enable students to use application of different power stations and load allocation among different power station.

Mapping Course Outcomes with Program Outcomes:

Course	Programme Outcomes

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outcomes	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S		S			S			M		
2	M	S			S		S	S			S	
3	S	S		S			M				S	
4	S	S	S		S				S	S		
5	M	S		S			S				S	

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	40
2	Applying the knowledge acquired from the course	35
3	Analysis and Evaluation	25

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9

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		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course
	End of Course survey			End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Course Title: **CIRCUIT THEORY**		Course Code	:**DEE237**
Semester	: **IV**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **3:0:0**	Credits	: **3Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40Marks**	SEE	: **60Marks**
Programmes: **Diploma in Electrical Engineering**			

Pre-requisites:

Knowledge of Basic Electrical and Magnetic material, Physics of Secondary Level and Sr. Sec Level.

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Course Objectives:

40. This course supposed to give the knowledge of Network parameters, Network theorem and their effects.
41. Analyse the different Network Theorems in AC and DC Circuits.
42. Analyse the Resonance condition in AC circuit.
43. Evaluate the transients occurs due to different types of input signals.
44. Analyse the Two post network and their applications.
45. Create the basic concept of different input functions with their respective application.

Course Content:

Topic and Contents	Hours	Marks
UNIT-1:NETWORK PARAMETERS	06	20
Active and passive, Linear and non-linear, Unilateral and bilateral, Lumped and distributed, Time varying and time invariant parameters Voltage and current sources (ideal and practical),Dependent and Independent sources, Source conversion techniques. Analysis of Network by Kirchhoff's Laws: • KVL, KCL • Nodal and Mesh Analysis		
UNITS-2: NETWORK THEOREMS	08	20
Node and mesh analysis, Star-delta transformation**,** Superposition theorem**,** Reciprocity theorem**,** Thevenin's theorem**,** Norton's theorem**,** Maximum power transfer theorem**,** Millman's theorem**,** Tellegen's theorem.	02 06	
UNITS-3: GRAPH THEORY	08	20
Concept of a Network Graph, Terminology used in Network Graph, Relation between Twigs & Links, Different types of matrix: • Incidence Matrix • Reduced Incidence Matrix • Tie- Set Matrix Cut- Set Matrix	03 05	
UNIT-4:CIRCUIT TRANSIENTS	08	20

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Introduction to Laplace transform and inverse Laplace transformations, Laplace transformation of following functions: • Unit impulse function • Unit step function • Exponential function • Ramp function • Sinusoidal function • Derivative & Integral function Circuit transients without Source Condition.	04 04	
UNIT 5: TWO PORT NETWORK	06	20
Z-parameters, Y-parameters, H-parameters, G-parameters ABCD-parameters, Inter connection and Inter relation among z, y, h and ABCD parameters, Special types of network such as T, π, Bridge - T, Parallel-T and Lattice.		
TOTAL	**36**	**100**

Reference:

1. Electrical Circuit Theory Arumugam&Premkumaran
2. Electrical Networks Soni& Gupta
3. Electrical Network Analysis UmeshSinha
4. Electrical Network Analysis G.K.Mithal
5. Text Book of Circuit Theory G.S. Verma
6. Electrical Circuit M.E. Valvenkerberg

Course outcomes:

On successful completion of the course, the student will be able to:

28. The course content gives full knowledge to learn Network parameters and their application.
29. Find the solution of problem dependent on electrical circuit voltage, current and power calculation.
30. Determine the aspects of active and passive network parameters.
31. Solve the problems related to circuit transients.
32. Enable students to use application of two port network and resonance.

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Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S			S			S		S	S	
2	S	M		M	S		S			S	S	S
3	S	S		S				S				
4	S	M					S				S	
5	S	S		S		S						

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	30
2	Applying the knowledge acquired from the course	45
3	Analysis and Evaluation	25

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSESSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8

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		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course
	End of Course survey			End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Course Title: **POWER ELECTRONICS - I**		Course Code	:**DEE238**
Semester	: **IV**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **3:0:0**	Credits	: **3Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40Marks**	SEE	: **60Marks**

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Programmes: **Diploma in Electrical Engineering**

Pre-requisites:

Knowledge of Basic Electrical and Magnetic material, Physics of Secondary Level and Sr. Sec Level.

Course Objectives:

46. This course supposed to give the knowledge of Semiconductor Devices and their applications.
47. Analyse the Silicon Controlled Rectifier and its use.
48. Analyse the Protection technique of SCR.
49. Evaluate the Single and Three Phase Converter with different loads.
50. Analyse the Power factor improvement methods by three phase converter.
51. Create the basic concept of Step up and Step down Choppers.

Course Content:

Topic and Contents	Hours	Marks
UNIT-1: POWER SEMICONDUCTOR DEVICES	06	20
Construction, Principle of operation, Characteristics and applications of Power Transistor&Thyristor, Characteristics of Power devices: • GTO, DIAC, MCT, TRIAC, • Power MOSFET and IGBT Two-Transistor Model of Thyristor, Thyristor Commutation methods.		
UNITS-2: SILICON CONTROLLED RECTIFIER	08	20
Construction and characteristics, Specification and Ratings, Pulse Transformer, Optical isolators, methods of turn on, triggering circuits for SCR: R, RC, UJT relaxation oscillator. Rating extension by series and parallel connections, string efficiency Protection of SCR: • Protection against over voltage • Over current, dv/dt, di/dt • Gate protection.	05 03	
UNITS-3: CONVERTERS-I	08	20

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Single Phase half & full wave converters with: • RL & RLE load Single phase dual converters Three phase Converter: • 3-phase half wave converters • 3-phase full converters with RL load Three phase dual converters.		
UNIT-4:CONVERTERS-II	08	20
Single and three-phase semi converters with: • RL & RLE load Power factor improvement: • Extinction angle control • Symmetrical angle control • Pulse width modulation control • Sinusoidal pulse width modulation control. Inversion operation. Effect of load and source impedances.		
UNIT 5: DC-DC CONVERTERS	06	20
Step Up/Down Copper, Control strategies, Chopper Configurations, Analysis of type A Chopper Voltage, current and load commutated chopper. Multiphase Chopper.		
TOTAL	**36**	**100**

Reference:

1. Power Electronics P.C. Sen
2. Motor Control P.S Bhimbra
3. Thyristor Engineering M.S. Berde
4. Industrial Electronics G.K. Mithal
5. Thyristor Control Drive G.K. Dubey

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Course outcomes:

On successful completion of the course, the student will be able to:

33. The course content gives full knowledge to learn Power Electronics Devices.
34. Find the solution of problem dependent on triggering and efficiency of SCR.
35. Determine the different aspects of 1 and 3 Phase converter.
36. Solve the problems related to source impedance and power factor by PWM.
37. Enable students to use Control strategiesof Choppers.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S		S			S		M			
2	S	M			S	S	S				S	
3	S	S			S	M						S
4	S	S		M				S		S		
5	S	S			S	S					S	

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	35
3	Analysis and Evaluation	30

Course Assessment and Evaluation:

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The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course
	End of Course survey			End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Course Title:**ELECTRICAL ENGINEERING DRAWING**	Course Code :**DEE271**

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LAB			
Semester	: **III**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **0:0:3**	Credits	: **2Credits**
Type of course	: **Practical**	Total Contact Hours	: **30**
Continuous Internal Evaluation	: **60Marks**	SEE	: **40Marks**
Programmes: **Diploma in Electrical Engineering**			

Pre-requisites:

Knowledge of Basic Electrical terms at Sec. and Sr. Sec. Level.

Course Objectives:

52. This course supposed to give the knowledge of basic concept of Switches, Sockets, and Supporting Module etc.
53. Analyse the Applications of Non linear electrical devices.
54. Analyse the Concept of EMF and Magnetic Field.
55. Evaluate the Basic concept of different types of joints in electrical wiring.
56. Analyse the problems faced in winding of DC generator.

Course Content:

LIST OF EXPERIMENTS	
S. NO.	**NAME OF EXPERIMENT**
01.	Introduce following terms: (a) Switches (b) Control Panel (c) Diode
02.	Introduce following terms: (a) Support Module (b) Sockets (c) Cables
03.	Introduce following terms: (a) Cover Plates (b) MCB (c) Lamp Holders
04.	Introduce the following terms with their symbols, units and formulas: (a) Voltage (b) Current (c) Frequency
05.	Introduce the following terms with their symbols, units and formulas: (a) Resistor (b) Inductor (c) Capacitor
06.	Explain concept of EMF, Potential difference and difference between electric field and magnetic field with diagrams.
07.	Explain and single phase transformer.
08.	Explain and draw different types of core and shell type transformer.
09.	Explain and draw different types of winding of DC generator.
10.	Explain and draw different types of joints in electrical wiring.

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Course outcomes:

On successful completion of the course, the student will be able to:

38. The course content gives full knowledge to non linear electrical devices.
39. Find the solution of problem dependent on joints in electrical wiring.
40. Solve the problems related to single phase transformer.
41. Enable students to solve difficulties face in different types of winding of DC generator.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S				S				M		
2	M	S		S			S				S	
3	S	S			S			S		S		S
4	S	S				M						

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	30
2	Applying the knowledge acquired from the course	35
3	Analysis and Evaluation	35

Course Assessment and Evaluation:

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The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Course Title: **ELECTRICAL MEASUREMENT AND INSTRUMENTATION LAB-I**	Course Code :**DEE282**
Semester : **IV**	Core / Elective : **Core**
Teaching Scheme in Hrs (L:T:P) : **0:0:3**	Credits : **2Credits**

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Type of course	: **Practical**	Total Contact Hours	: **30**
Continuous Internal Evaluation	: **60Marks**	SEE	: **40Marks**
Programmes: **Diploma in Electrical Engineering**			

Pre-requisites:

Knowledge of Basic Electrical Instruments at Sec. and Sr. Sec. Level.

Course Objectives:

57. This course supposed to give the knowledge of different measuring instruments.
58. Analyse the Applications of ammeter and voltmeter.
59. Analysethe Concept of Power in 3-phase circuits.
60. Evaluate the Basic concept of AC and DC Bridges.
61. Analyse the problems faced in Calibration of ammeter and voltmeter.

Course Content:

LIST OF EXPERIMENTS	
S. NO.	**NAME OF EXPERIMENT**
01.	Calibration of ammeter and voltmeter.
02.	Calibration of dynamometer type wattmeter and induction type energy meter.
03.	Measurement of power in 3-phase circuits by two wattmeter method
04.	Measurement of resistance by Kelvin's double bridge
05.	Measurement of resistance by Whetstone Bridge
06.	Measurement of Earth's resistance by Earth tester
07.	Calibration of ammeter and voltmeter measurement of resistance by D.C. potentiometer
08.	Measurement of inductance by Anderson's bridge
09.	Measurement of capacitance by De-sauté's bridge
10.	Measurement of frequency using CRO

Course outcomes:

On successful completion of the course, the student will be able to:

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42. The course content gives full knowledge to learnFrequency measurement using CRO.
43. Find the solution of problem dependent on power in 3-phase circuits by two wattmeter method.
44. Solve the problems related to Calibration of ammeter and voltmeter.
45. Enable students to solve difficulties face in measurement using AC and DC Bridges.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S					S			M		
2	S	M				S			S		M	
3	S	S		S			M			S		S
4	S	S			S				S			

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	30
2	Applying the knowledge acquired from the course	35
3	Analysis and Evaluation	35

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What	To whom	When/where (Frequency in the	Max Marks	Evidence collected	Contributing to course outcomes

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				course)			
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Course Title:**BASIC ELECTRICAL ENGINEERING LAB**		Course Code	:**DEE273**
Semester	: **III**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **0:0:3**	Credits	: **2Credits**
Type of course	: **Practical**	Total Contact Hours	: **30**
Continuous Internal Evaluation	: **60Marks**	SEE	: **40Marks**
Programmes: **Diploma in Electrical Engineering**			

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Pre-requisites:

Knowledge of Basic Physics at Sec. and Sr. Sec. Level.

Course Objectives:

62. This course supposed to give the knowledge of how the circuit parameters behave with D.C. and A.C. supply.
63. Analyse the Applications of Kirchhoff's Law.
64. Analysehow the R, L and C behave in AC circuits.
65. Evaluate the Different types of capacitors.
66. Analyse the problems faced in Design procedure of iron core small transformers. Create the basic concept of Battery.

Course Content:

LIST OF EXPERIMENTS	
S. NO.	**NAME OF EXPERIMENT**
01.	Measurement of armature winding and series field winding resistance of a D.C. machine by ammeter-voltmeter method.
02.	Measurement of shunt field winding resistance of a D.C. machine by ammeter-voltmeter method.
03.	Verification of Kirchhoff's laws in D.C. circuits.
04.	Verification of Kirchhoff's laws in A.C. circuits.
05.	Verification of Kirchhoff's laws in A.C. circuits.
06.	Measurement of power and power factor of single phase R-L-C series circuit
07.	Determination of R and L of a choke coil using 3-voltmeter and an ammeter.
08.	Determination of R and C of a capacitor using 3-ammeter and a voltmeter
09.	Measurement of phase and line voltage and current in Star and Delta connection
10.	Measurement of power in 3-phase circuit (for balanced load)

Course outcomes:

On successful completion of the course, the student will be able to:

46. The course content gives full knowledge to learn how R, L and C reacts with DC and AC circuit.
47. Find the solution of problem dependent on designing of small iron core transformer.
48. Solve the problems related to Kirchhoff's Law and Capacitance.

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49. Enable students to solve difficulties face by small units on basis of batteries.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S				S			M			
2	S	M			S		S				M	
3	S	S			S				S			S
4	S	S				M		S				

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	30
2	Applying the knowledge acquired from the course	35
3	Analysis and Evaluation	35

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
TASS	CIE	Attendance	Student	Every lab	10	Attendance Register	

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		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Course Title:**ELECTRONICS DEVICES AND CIRCUIT LAB**		Course Code	:**DEE281**
Semester	: **IV**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **0:0:3**	Credits	: **2Credits**
Type of course	: **Practical**	Total Contact Hours	: **30**
Continuous Internal Evaluation	: **60Marks**	SEE	: **40Marks**
Programmes: **Diploma in Electrical Engineering**			

Pre-requisites:

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Knowledge of Basic Physics at Sec. and Sr. Sec. Level.

Course Objectives:

67. This course supposed to give the knowledge of Semiconductor diode and filters used in rectifiers.
68. Analyse the Applications of bi-polar junction transistor.
69. Analysethe Concept of power amplifiers.
70. Evaluate the Basic concept of feedback and types of feedback.
71. Analyse the problems faced in Boolean algebra.

Course Content:

LIST OF EXPERIMENTS	
S. NO.	**NAME OF EXPERIMENT**
01.	Plot V-I characteristics of P-N semiconductor diode in forward and reverse bias
02.	Plot the V-I characteristics of a zener diode and design a voltage regulator using zener diode.
03.	Observe the wave form for HWR and calculate ripple factor.
04.	Observe the wave form for FWR and calculate ripple factor.
05.	Observe the wave form for bridge rectifier and calculate ripple factor
06.	Observe the wave form for capacitor filter and find the effect of value of capacitor on ripple factor.
07.	Plot input output characteristics of P-N-P transistor in CB configuration.
08.	Plot input output characteristics of P-N-P transistor in CE configuration.
09.	Plot V-I characteristics of N-P-N transistor in CB & CE configuration
10.	Verify the truth table of NOT, AND, OR, NAND, NOR, EX-OR, EX-NOR gates

Course outcomes:

On successful completion of the course, the student will be able to:

50. The course content gives full knowledge to learn how Semiconductor diode used in rectification.
51. Find the solution of problem dependent on BJT and its voltage, current and power gain.
52. Solve the problems related to Power Amplifier.
53. Enable students to solve difficulties face by feedback for gain, stability, frequency and nonlinear distortion.

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Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S			S			S		S		
2	S	M				S			S			M
3	S	S		S			S			M		
4	S	S				S					S	

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	30
2	Applying the knowledge acquired from the course	35
3	Analysis and Evaluation	35

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
ASSIGNMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	

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		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Course Title:**ELECTRICAL MACHINES LAB-I**		Course Code	:**DEE278**
Semester	: **V**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **0:0:3**	Credits	: **2Credits**
Type of course	: **Practical**	Total Contact Hours	: **30**
Continuous Internal Evaluation	: **60Marks**	SEE	: **40Marks**
Programmes: **Diploma in Electrical Engineering**			

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Pre-requisites:

Knowledge of Basic Electrical and Magnetic material, electrical conductors, Electro Magnets, Permanent Magnets.

Course Objectives:

72. This course supposed to give the knowledge of DC Machines (DC Generator & Motor), Transformer.
73. Analyse the Magnetic Circuit, Fleming's rule of electromagnetic induction.
74. Analyse the different Speed control methods of DC Motor.
75. Evaluate the different types of losses by testing methods of DC generator and motor.
76. Analyse the different types of connection of transformer.
    Create the basic concept of single phase induction motor.

Course Content:

S.No.	LIST OF EXPERIMENTS
1.	Study of constructional features of D.C. machine and identify the terminals of D.C. shunt generator.
2.	Determination of O.C.C of D.C. shunt generator
3.	Determination of external characteristics of D.C. shunt generator.
4.	Determination of external characteristics of compound generator
5.	Study of constructional features of D.C. shunt and compound motor starter and connecting, starting and reversing the direction of D.C. shunt motor.
6.	Performing Swinburne's test on a D.C. machine
7.	Performing Hopkinson's test on a D.C. machine.
8.	Speed control of D.C. shunt motor by rheostat control (field & armature control)
9.	Study of constructional features of single phase and three phase transformers
10.	Determination of transformation ratio, regulation and efficiency of a single-phase transformer by direct loading.
11.	Open circuit and short circuit test of a single-phase transformer and determination of its equivalent circuit parameters, efficiency and regulation.
12.	Parallel operation of single-phase transformers with same voltage ratio and sharing of loads.

Course outcomes:

On successful completion of the course, the student will be able to:

54. The course content gives full knowledge to learn Fleming's rule of electromagnetic induction used in DC machines.
55. Find the solution of problem dependent on electrical power due to losses.
56. Determine the aspects of parallel operation of DC Machines.
57. Solve the problems related to different connections of transformer.
58. Enable students to use application of DC motor in day to day life.

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Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	M			S		S		S	S		
2	S	S			S		S			S		M
3	S	S		M	S			S				
4	S	S			S		S					S

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	30
2	Applying the knowledge acquired from the course	35
3	Analysis and Evaluation	35

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	

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		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Course Title:**POWER ELECTRONICS LAB-I**		Course Code	:**DEE276**
Semester	: **IV**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **0:0:3**	Credits	: **2Credits**
Type of course	: **Practical**	Total Contact Hours	: **30**
Continuous Internal Evaluation	: **60Marks**	SEE	: **40Marks**
Programmes: **Diploma in Electrical Engineering**			

Pre-requisites:

Knowledge of Basic Electrical and Magnetic material, Physics of Secondary Level and Sr. Sec Level.

Course Objectives:

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77. This course supposed to give the knowledge of Semiconductor Devices and their applications.
78. Analyse the Silicon Controlled Rectifier and its use.
79. Analyse the Protection technique of SCR.
80. Evaluate the Single and Three Phase Converter with different loads.
81. Analyse the Power factor improvement methods by three phase converter.
82. Create the basic concept of Step up and Step down Choppers.

Course Content:

LIST OF EXPERIMENTS	
01.	Study the comparison of following power electronics devices regarding ratings, performance characteristics and applications: Power Diode, Power Transistor, Thyristor, Diac, Triac, GTO, MOSFET, MCT and SIT.
02.	Determine V-I characteristics of SCR and measure forward breakdown voltage, latching and holding currents.
03.	Find V-I characteristics of TRIAC and DIAC.
04.	Find output & transfer characteristics of MOSFET and IGBT.
05.	Find UJT static emitter characteristics and study the variation in peak point and valley point.
06.	Study and test 3-phase diode bridge rectifier with R and RL loads. Study the effect of filters.
07.	Study and obtain waveforms of single-phase half wave controlled rectifier with and without filters. Study the variation of output voltage with respect to firing angle.
08.	Study and obtain waveforms of single-phase half controlled bridge rectifier with R and RL loads. Study and show the effect of freewheeling diode.
09.	Study and obtain waveforms of single-phase full controlled bridge converter with R and RL loads. Study and show rectification and inversion operations with and without freewheeling diode.
10.	Control the speed of a dc motor using single-phase half controlled bridge rectifier and full controlled bridge rectifier. Plot armature voltage versus speed characteristics.

Course outcomes:

On successful completion of the course, the student will be able to:

59. The course content gives full knowledge to learn Power Electronics Devices.
60. Find the solution of problem dependent on triggering and efficiency of SCR.
61. Determine the different aspects of 1 and 3 Phase converter.
62. Solve the problems related to source impedance and power factor by PWM.
63. Enable students to use Control strategiesof Choppers.

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Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S			S			S	M			
2	S	M			S	S	S				S	
3	M	S			S	M				S		
4	S	S			S		S					S

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	35
3	Analysis and Evaluation	30

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	

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		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Course Title:**ELECTRICAL MEASUREMENT AND INSTRUMENTATION LAB-II**		Course Code	:**DEE277**
Semester	: **IV**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **0:0:3**	Credits	: **2Credits**
Type of course	: **Practical**	Total Contact Hours	: **30**
Continuous Internal Evaluation	: **60Marks**	SEE	: **40Marks**
Programmes: **Diploma in Electrical Engineering**			

Pre-requisites:

Knowledge of Basic Physics at Sec. and Sr. Sec. Level.

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Course Objectives:

83. This course supposed to give the knowledge of basic concept of measurement.
84. Analyse the Applications of measuring instruments.
85. Analysethe Concept of DC & AC Bridges.
86. Evaluate the Basic concept of CRO for voltage and current measurement.
87. Analyse the problems faced in active and passive transducer.

Course Content:

LIST OF EXPERIMENTS	
01.	Measurement of displacement using following transducers: • Potentiometer • L.V.D.T. • Capacitive
02.	Measurement of temperature with the help of: • Thermocouple • Thermister • R.T.D.
03.	Measurement of strain with the help of strain gauge.
04.	Velocity and speed measurement by suitable transducer
05.	Study of instrument transformers & measurement of turn ratio of current transform and potential transformer.
06.	Measurement of 3-phase power (both balance & unbalance) by using Three wattmeter.
07.	Measurement of inductance by Maxwell / Owen's bridge.
08.	Determination of an unknown capacitance with the help of Schering Bridge network.
09.	Study of B-H curve.
10.	Connection of both 1-phase & 3-phase energy-meters to a single phase load and 3-phase load and measure energy.

Course outcomes:

On successful completion of the course, the student will be able to:

64. The course content gives full knowledge to learn how measuring instrument can also give some error.
65. Find the solution of problem dependent on indicating type instrument.
66. Solve the problems related to resistance measurement & bridges.
67. Enable students to solve difficulties face by CRO & Transducer.

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Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S		S	S			M		S		
2	S	M				S			M		S	
3	S	S		S	S				S			S
4	S	S			S	M			S	S		

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	30
2	Applying the knowledge acquired from the course	35
3	Analysis and Evaluation	35

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	

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		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Course Title: **WORKSHOP LAB-I**		Course Code	: **DEE278**
Semester	: **IV**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **0:0:3**	Credits	: **2Credits**
Type of course	: **Practical**	Total Contact Hours	: **30**
Continuous Internal Evaluation	: **60Marks**	SEE	: **40Marks**
Programmes: **Diploma in Electrical Engineering**			

Pre-requisites:

Knowledge of Basic Laws of Electrical Engineering, Joints, Faults, Testing and Wiring.

Course Objectives:

88. This course supposed to give the knowledge of basic concept of Joints and Wiring.

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89. Analyse the Applications of Electric heater, Electric immersion heater
90. Analysethe Concept of Table fan, Ceiling fan, Electric washing machine.
91. Evaluate the Basic concept of the construction of telephone and its circuit.
92. Analyse the problems faced in Soldering.

Course Content:

LIST OF EXPERIMENTS	
01.	Preparations of joints on multi strand insulated wire: • Twisted joint • Married joint • Plain cross joint • Duplex cross joint
02.	Preparation of wiring diagram and wiring of the following: • Sodium vapour lamp • Mercury vapour lamp • Corridor wiring • Row of lamps (decorative light)
03.	To make the positions, fix and complete the internal wiring of the fitting of a switch board, containing at least four switches, one plug and one regulator.
04.	Assembling, dismantling and fault investigation in the following domestic appliances: • Electric heater • Electric immersion heater • Room heater • Electric kettle
05.	Dismantling, identifying of various parts, finding fault, removing the fault, assembling and testing of: • Table fan • Ceiling fan • Electric washing machine • Room cooler
06.	To study type of wire which is used to house wiring.
07.	To make connection of supply and consumer board.
08.	Study of contactors and time delay relays.
09.	Soldering practice and lugs jointing.
10.	Perform the following test on 1-phase transformer: • Insulation resistance test. • Ratio test. • Polarity and phasing out test.

Course outcomes:

On successful completion of the course, the student will be able to:

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68. This syllabus has been designed to provide certain guidelines and broad principles regarding the above activities and after undergoing this course the technician shall be fit to undertake repairs and maintenance of electrical equipments.
69. Find the solution of problem dependent on Preparation of wiring diagram and wiring.
70. Solve the problems related to Study of contactors and time delay relays.
71. Enable students to solve difficulties face by internal wiring of the fitting of a switch board, containing at least four switches.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S				M							
2		S						M				
3	M			S								
4	S	S								S		

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	30
2	Applying the knowledge acquired from the course	35
3	Analysis and Evaluation	35

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
ASSIGNMENTS	CIE	Attendance	Student	Every lab	10	Attendance Register	

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		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Course Title:**ESTIMATION & COSTING LAB-I**		Course Code	:**DEE279**
Semester	: **IV**	Core / Elective	: **Elective**
Teaching Scheme in Hrs (L:T:P)	: **0:0:3**	Credits	: **2Credits**
Type of course	: **Practical**	Total Contact Hours	: **30**
Continuous Internal Evaluation	: **60Marks**	SEE	: **40Marks**
Programmes: **Diploma in Electrical Engineering**			

Pre-requisites:

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Knowledge of Basic Laws of Electrical Engineering, Joints, Faults, Testing and Wiring.

Course Objectives:

93. This course supposed to give the knowledge of basic concept of Estimation of electrical power.
94. Analyse the Applications of 3-phase over-head service connections.
95. Analyse the Concept of lighting scheme for large auditorium.
96. Evaluate the Basic concept of service connections of a small residential complex..
97. Analyse the problems faced in cost elements involved in electrical installation.

Course Content:

LIST OF EXPERIMENTS	
01.	Estimate the house wiring materials.
02.	Estimate the electrical installation of machines in small workshop.
03.	Estimate the lighting system of an auditorium, workshops etc.
04.	Estimate the electrical wiring of multistory building.
05.	Estimate service connections of a small residential complex.
06.	Estimate for giving 3-phase over-head service connections to a residential building.
07.	Design the lighting scheme for large auditorium, workshop etc.
08.	State the factors to be considered for good lighting and discuss some important factors in connection with lighting.
09.	State the various cost elements involved in electrical installation.
10.	List the precaution to be observed in different types of wiring system.

Course outcomes:

On successful completion of the course, the student will be able to:

72. This syllabus has been designed to provide certain guidelines and broad principles regarding the above activities and after undergoing this course the technician shall be fit to undertake repairs and maintenance of electrical equipment.
73. Find the solution of problem dependent on electrical installation of machines in small workshop.
74. Solve the problems related to service connections of a small residential complex.
75. Enable students to solve difficulties face by service connections of a small residential complex.

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Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S				M						S	
2		S						M				
3	M		S									
4	S	S								S		

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	30
2	Applying the knowledge acquired from the course	35
3	Analysis and Evaluation	35

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	

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		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Course Title:**POWER SYSTEM LAB**		Course Code	:**DEE280**
Semester	: **IV**	Core / Elective	: **Elective**
Teaching Scheme in Hrs (L:T:P)	: **0:0:3**	Credits	: **2Credits**
Type of course	: **Practical**	Total Contact Hours	: **30**
Continuous Internal Evaluation	: **60Marks**	SEE	: **40Marks**
Programmes: **Diploma in Electrical Engineering**			

Pre-requisites:

Knowledge of Basic Laws of Electrical Engineering, Joints, Faults, Testing and Wiring.

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Course Objectives:

98. This course supposed to give the knowledge of basic concept of Power factor Improvement Methods.
99. Analyse the Applications of phase-angle controller.
100. Analyse the Concept of faults by D.C. network analyzer.
101. Evaluate the Basic concept of the turbine used in Power station.
102. Analyse the problems faced in PILC, PVC, FRLS and XLPE cables.

Course Content:

LIST OF EXPERIMENTS	
01.	To study different types of excitation system for alternator.
02.	To simulate A.C. distributor.
03.	To study active and reactive power flow through transmission lines.
04.	To study phase-angle controller.
05.	To study the supply system from 6.6 KV/400V sub-station to a housing complex.
06.	To study various system faults by D.C. network analyzer.
07.	To prepare computer program of electric bill (with the help of slides/models).
08.	To improve P.F. using static condenser.
09.	To study different kinds of insulators and Circuit Breakers.
10.	To study PILC, PVC, FRLS, XLPE and various cables.

Course outcomes:

On successful completion of the course, the student will be able to:

76. This syllabus has been designed to provide certain guidelines and broad principles regarding the above activities and after undergoing this course the technician shall be fit to undertake repairs and maintenance of electrical equipments.
77. Find the solution of problem dependent on supply system from 6.6 KV/400V sub-station.
78. Solve the problems related to different kinds of insulators.
79. Enable students to solve difficulties face by active and reactive power flow through transmission lines.

Mapping Course Outcomes with Program Outcomes:

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Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S				M							
2		S						M				
3	M			S								
4	S	S								S		

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	30
2	Applying the knowledge acquired from the course	35
3	Analysis and Evaluation	35

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	

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		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Course Title: **ELECTRICAL MACHINES - II**		Course Code	:**DEE341**
Semester	: **VI**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **3:0:0**	Credits	: **3Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40Marks**	SEE	: **60Marks**
Programmes: **Diploma in Electrical Engineering**			

Pre-requisites:

Basics in Electromagnetic Induction Principal, Armature Reaction and its effect, Magnetic Field, Magnetic Flux and Efficiency of a Machine.

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Course Objectives:

103. Apply and evaluate trigonometric concept in AC Machines. Create the basic concept of Electrical Generation.
104. Apply the starting methods for solving the problems of I.M.
105. Analyse the power generation by Alternators.
106. Evaluate the reactive power compensation methods by S.P.M.
107. Analyse the stability of synchronous motor.
108. Create the basic concept of special machines.

Course Content:

Topic and Contents	Hours	Marks
UNIT-1: 3-PHASE INDUCTION MOTOR	08	20
(a) Working principle**:** Working principle of induction motor, Rotating magnetic field, Define the terms slip, frequency of rotor current. Construction of stator, squirrel cage rotor and phase wound rotor. Expression for starting torque. Draw torque - slip curves. **(b)** Starting & Speed control Methods:D.O.L. Starter, Soft Starter, Star-Delta Starter, Change of applied voltage, Change of frequency, Change of poles, Rheostat control.	05 03	
UNITS-2: ALTERNATORS	08	20
Constructional features, Principle of operation, Winding factors, EMF equation, Idea of leakage reactance (cylindrical rotor) and armature reaction, Synchronous reactance synchronous impedance.	04	
Phasor diagram at different power factors (cylindrical rotor), Voltage regulation, Open circuit and short circuit tests, Calculation of voltage regulation by synchronous impedance and m.m.f methods. Parallel operation of three phase alternators, Effect of variation in excitation and prime mover power on the performance of parallel connected alternators.	04	
UNITS-3: SYNCHRONOUS MOTORS	08	20

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Construction and principle of operation, Phasor diagram at no load and on load (cylindrical rotor), Power equation, Power angle characteristics, V - curves and inverted V- curves Methods of starting: Synchronous motor operation at: (i) Constant input power and variable excitation (ii) Constant excitation and Variable input power Synchronous condenser, Comparison of induction motor and synchronous motor, Application of synchronous motor.	05 03	
UNIT-4:STABILITY ANALYSIS	06	20
Transient behaviour, Reactance, Symmetrical short circuit, Swing equation, swing curve, M and H constants, Power Angle curve & Transfer reactance. Steady state stability, Transient stability, Equal area criterion of stability. Hunting phenomenon in synchronous machines		
UNIT 5: SPECIAL MACHINES	06	20
Basic principles, operation, characteristics and applications of following motors: (a) Linear induction motor (b) Stepper motor (c) A.C. Commutator Motors (d) Schrage motor (e) Repulsion motor		
TOTAL	**36**	**100**

Reference:

1. Electrical Technology volume 2 – by BL Theraja&A.K.TherajaS.Chand publication.
2. Principles of Electrical Machines by V.K.Mehtha.S.Chand publication
3. Electrical Machines by Bhattacharya. Tata McGraw Hill Co.
4. Electrical Machines – by J.B.Guptha, Kataria& Sons Publications.
5. Generation of Electrical Energy by BR Gupta. S.Chand Publication.

Course outcomes:

On successful completion of the course, the student will be able to:

80. Find the Torque-Slip Characteristics of induction machines.

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81. Find the solution of problem dependent on parallel operation of alternators.
82. Determine the difference between V and inverted V curve.
83. Solve the problems related to transient behaviour of 3-phase machines.
84. Enable students to use application of special machines for solvability of many problems.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S			S			S			S		M
2	S	M		S		S			M		S	
3	S	S			S		S			S		
4	S	M				S		S			S	
5	S		S									

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	40
2	Applying the knowledge acquired from the course	30
3	Analysis and Evaluation	30

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What	To whom	When/where (Frequency in the	Max Marks	Evidence collected	Contributing to course outcomes

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				course)			
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course
	End of Course survey			End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Course Title:**TRANSMISSION AND DISTRIBUTION**		Course Code	:**DEE332**
Semester	: **V**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **3:0:0**	Credits	: **3Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40Marks**	SEE	: **60Marks**

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Programmes: **Diploma in Electrical Engineering**

Pre-requisites:

Knowledge of Transmission and Distribution Voltages, Transmission Power Capacity and Basic of different types of power system network.

Course Objectives:

109. The course is designed to develop the understanding of the principles and working of protective switchgears.
110. Analyse the faults occurring in the power system network.
111. Analyse the economic dispatch factors for power transmission.
112. Evaluate the reactive power compensation methods (or) Ferranti effect.
113. Analyse the stability of power system network.
114. Create the basic concept of HVDC.

Course Content:

Topic and Contents	Hours	Marks
UNIT-1: D.C. & A. C. DISTRIBUTION SYSTEMS	08	20
Layout of distribution system, feeders, distributors and service mains. Radial distributor, Ring main distributor and with interconnector, Voltage drop calculation for D.C. distributor for uniform and concentrated loading: • Radial distributor fed at one end • Radial distributor fed at both end with equal and unequal voltages • Ring main distributor Methods of solving A. C. distributions problem: • Power factor referred to receiving end voltage • Power factor to respective load voltage	05 03	
UNITS-2: SWITCH GEAR AND CIRCUIT BREAKER	08	20
Principle of protection systems, Classification of Circuit Breakers (construction, setting and applications) Circuit Breakers: • ABCB • SF6 • Oil • Vacuum Line Protection, Over Voltage Protection.		
UNITS-3: UNDERGROUND & OVERHEAD DISTRIBUTION LINES	07	20

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Underground cables - types, construction, Advantages and disadvantages of underground cable, Selection of LT and HT cables, Laying of underground cables, Cable grading and its analysis Overhead Distribution line: Survey of LT lines, Planning of construction work, Methods of erection of supports, Erection of conductors - laying out conductors, Raising and setting of poles, guys, stays, Fixing of insulators and cross arms, Guarding.	05 02	
UNIT-4:SUPPLY & DISTRIBUTION SYSTEMS	07	20
Basic network of power system, Transmission and distribution voltage, effect of system voltage on size of conductor and losses, Comparison of DC 2- wire, DC 3-wire, 1-phase AC and 3-phase AC (3-wire and 4-wire) systems. Primary and secondary distribution systems, feeder, distributor and service mains. Radial and ring- main distribution systems	05 02	
UNIT 5: FEATURES & PARAMETERS OF OVERHEAD TRANSMISSION LINES	06	20
Conductor material and types of conductor, Conductor arrangements and spacing. Calculation of sag and tension, supports at different levels, effect of wind and ice loading, stringing chart and sag template, Conductor vibrations and vibration dampers. Resistance inductance and capacitance of over headlines, effect of earth, Skin and proximity Effects, Equivalent circuits and performance of short and medium transmission lines.		
TOTAL	**36**	**100**

Reference:

1. Generation of Electrical Energy B.R. Gupta
2. Power System Design M.V. Despandey
3. Electrical Power System Nagrath& Kothari
4. Switchgear & Protection Sunil S.Rao
5. A Course in Electrical Power Soni, Gupta &Bhatnagar
6. Switchgear & Protection M.Chander&Ravindranath

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Course outcomes:

On successful completion of the course, the student will be able to:

85. Find the PU impedance for electrical machines and power system parameters.
86. Find the solution of problem dependent on transmission line fault.
87. Enable students to use the switch gear and relays as their application.
88. Solve the problems related to economically dispatching of electrical power.
89. Enable students to use application of HVDC and can learn the effect of Corona.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S			S	S				S		M	
2	S	M				S	S			S		
3		S			M			S			S	
4	S	S		S					S			
5	S		S									S

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	35
3	Analysis and Evaluation	30

Course Assessment and Evaluation:

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The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course
	End of Course survey			End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

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Course Title: **ELECTRICAL MACHINES-I**		Course Code	:**DEE240**
Semester	: **V**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **3:0:0**	Credits	: **3Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40Marks**	SEE	: **60Marks**
Programmes: **Diploma in Electrical Engineering**			

Pre-requisites:

Knowledge of Basic Electrical and Magnetic material, electrical conductors, Electro Magnets, Permanent Magnets.

Course Objectives:

115. This course supposed to give the knowledge of DC Machines (DC Generator & Motor), Transformer.
116. Analyse the Magnetic Circuit, Fleming's rule of electromagnetic induction.
117. Analyse the different Speed control methods of DC Motor.
118. Evaluate the different types of losses by testing methods of DC generator and motor.
119. Analyse the different types of connection of transformer.
120. Create the basic concept of single phase induction motor.

Course Content:

Topic and Contents	Hours	Marks
UNIT-1:MAGNETIC CIRCUITS	06	20
Magnetic Circuits, Magneto motive force, Magnetic field strength, Permeability, Reluctance, Analogy between electric and magnetic circuits, B-H curve, Hysteresis, Series and parallel magnetic circuits Permanent magnet and their applications.		
UNITS-2: DC GENERATOR	08	20

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Construction of D.C. machine, Lap and wave winding, Principle of D.C. generator Excitation methods and different types of D.C. Generator: • Self Excited • Separately Excited E.M.F. equation, D.C. generator characteristics, Losses, Efficiency and condition for maximum efficiency, Concept of armature reaction, Effect of armature reaction on commutation and generated voltage Parallel operation of DC generators and load sharing.	04 04	
UNITS-3: DC MOTOR	08	20
Different types of D.C. motor, Principle of D.C. motor, Concept of back EMF, Torque, speed and power relations, Starters for D.C. shunt and compound motors, Characteristics of D.C. motor Speed control of D.C. motor • Field control • Armature control • Series parallel control Testing of D.C. machine by Direct loading, Swinburne's test, Hopkinson's test, Calculation of efficiency as a generator and motor from above test.	05 03	
UNIT-4:TRANSFORMER	08	20
Construction of single phase and three phase transformer, Principle of operation, EMF equation and Turn ratio, Idea of leakage reactance Transformer phasor diagram: • At no load • At load (Lagging, Leading and UPF) Equivalent circuit of single phase transformer, Losses, efficiency and regulation, Condition for maximum efficiency, All day efficiency, Transformer testing-By direct loading, By open circuit and short circuit test, Parallel operation of 1-phase& 3-phase transformer, Auto transformer, Open-Delta connection, Star-Star connection, Delta - Delta connection.	04 04	
UNIT 5: SINGLE PHASE INDUCTION MOTOR	06	20

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Introduction, Construction, Principle, Double revolving field theory, equivalent circuit, performance calculations, Starting methods and their types, Torque slip characteristics of various types.		
TOTAL	**36**	**100**

Reference:

1. VidyutEngg.(S.I.Units) (Hindi) K.D.Sharma
2. Electrical Engg. Part I&II(Hindi) D.R.Nagpal
3. Electrical Machines J.B.Gupta
4. Electrical Technology S.L.Uppal
5. Electrical Technology Vol.-II B.L.Theraja
6. A Basic Course in Electrical Engg. Sharma & Gupta
7. Electric Machine P.S. Bimbra
8. Electric Machine Nagrath& Kothari

Course outcomes:

On successful completion of the course, the student will be able to:

90. The course content gives full knowledge to learn Fleming's rule of electromagnetic induction used in DC machines.
91. Find the solution of problem dependent on electrical power due to losses.
92. Determine the aspects of parallel operation of DC Machines.
93. Solve the problems related to different connections of transformer.
94. Enable students to use application of DC motor in day to day life.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S			S		M			S		
2	S	M		S		S			M			S
3	S	S			S			S				
4	S	S		M					S		S	
5	M	S					S	S		S		

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	40

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2	Applying the knowledge acquired from the course	35
3	Analysis and Evaluation	25

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course
	End of Course survey			End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

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Course Title:**POWER ELECTRONICS – II**		Course Code	:**DEE333**
Semester	: **V**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **3:0:0**	Credits	: **3Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40Marks**	SEE	: **60Marks**
Programmes: **Diploma in Electrical Engineering**			

Pre-requisites:

Knowledge of Power semiconductor devices, SCR's, Rectifiers (1-phase &3- phase), Dual converter and basic of Choppers.

Course Objectives:

121. This course aims at imparting knowledge about specific electronics aspects, which are of practical importance for an engineer in consumer and industrial applications.
122. Apply the application of Single phase voltage source inverter.
123. Analyse the Variable frequency system.
124. Evaluate the 3-phase half wave cycloconverter.
125. Analyse the Speed control of motors using SCR.
126. Create the basic concept & application of controllers.

Course Content:

Topic and Contents	Hours	Marks
UNIT-1: INVERTER	06	20
Basic principle of inverter. • Series inverter • Parallel inverter Single phase voltage source inverter, Three phase bridge inverter, Current Source Inverter Applications, SMPS.		
UNITS-2: CHOPPER	08	20

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Principle of chopper operation, Control strategies, Constant frequency system, Variable frequency system, Types of chopper circuits: • First quadrant or type A chopper • Second quadrant or type B chopper • Two quadrant type A chopper (type C chopper) • Two quadrant type B chopper (type D chopper) • Four quadrant chopper (type E chopper)		
UNITS-3: CYCLOCONVERTER	08	20
Principle of cycloconverter. • 1-phase to single phase circuit step up cycloconverter,(Midpoint& Bridge type cycloconverter) • 1-phase to 1-phase step down cycloconverter, (Midpoint & Bridge type cycloconverter) • 3-phase half wave cycloconverter, 3-phase to single phase & 3-phase to Three phase cycloconverter		
UNIT-4:SPEED CONTROL OF MOTORS	08	20
Introduction, Speed control of motors using SCR for: • D.C. shunt motor and series motor • Single phase and three phase induction motor • Slip ring induction motor • Brush less DC motor		
UNIT 5: AC STABILIZER & SMPS	06	20
Types of SMPS, Protection circuits, Merits and Demerits of SMPS, Working and basic circuits of Resonator stabilizer, Electro-mechanical stabilizer, Electronic stabilizer		
TOTAL	**36**	**100**

Reference:

1. Power Electronics P.C. Sen
2. Motor Control P.S Bhimbra
3. Thyristor Engineering M.S. Berde
4. Industrial Electronics G.K. Mithal
5. Thyristor Control Drive G.K. Dubey

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Course outcomes:

On successful completion of the course, the student will be able to:

95. Increasing use of electronic gadgets in control of electrical machines makes this course indispensable for having an insight into trouble-shooting techniques.
96. Solve the problem related to application of CSI & VSI in SMPS.
97. Determine the various types of cycloconverter& their application.
98. Solve the problems related to Speed control of motors using SCR.
99. Enable students to use application of different types of Electronic stabilizer.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S			S			S			S	
2	M	S			S		S			S		M
3	S	M			S	S			S		S	
4	S	S	S									S
5	S	S		S				S				

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	35
3	Analysis and Evaluation	30

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Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course
	End of Course survey			End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

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Course Title:**FUNDAMENTAL OF CONTROL SYSTEM**		Course Code	:**DEE334**
Semester	: **V**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **3:0:0**	Credits	: **3Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40Marks**	SEE	: **60Marks**
Programmes: **Diploma in Electrical Engineering**			

Pre-requisites:

Knowledge of Poles and Zeros and basic of Imaginary and Real axis.

Course Objectives:

127. This course aims at imparting the basic concept of control systems. Now days automated industries are growing at a fast speed. A diploma holder must have knowledge of control procedure.
128. Apply the application of Open loop and Closed loop systems.
129. Analyse the stability by Routh's stability criterion.
130. Evaluate the Stability of control system by root loci.
131. Analyse the Frequency domains.
132. Create the basic concept & application of controllers.

Course Content:

Topic and Contents	Hours	Marks
UNIT-1: CONTROL SYSTEM	06	20

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Basic definition, Open loop and Closed loop systems, Transfer function, Transfer function of different R-C networks Block diagram and its reduction technique, Signal flow graph and Mason's gain formula		
UNITS-2: TIME DOMAIN ANALYSIS	08	20
Various test signals used in control system: • Step Signal • Impulse Signal • Ramp Signal • Parabolic Signal Impulse response, First order and second order system, Time domain specifications, Step response of first order and second order system Stability analysis of control system, Routh's stability criterion		
UNITS-3: ROOT LOCUS	08	20
Introduction, Rules for constructing root loci: • Root locus plots • Break away & Break in Points • Asymptotes • Centroid Evans Method, Magnitude & Angle Criterion, Effect of Zeros and Poles on root locus, Inverse Root Locus		
UNIT-4:FREQUENCY RESPONSE	08	20
Frequency domains analysis, Frequency domain specifications: • Gain margin and phase margin • Gain cross over frequency & Phase cross over frequency • Polar plots • Bode plot • Nyquist stability criterion		
UNIT 5: PID CONTROLLER	06	20
Introduction, Proportional, Integral, Differentiator Controller (P controller, PD controller, PID controller), Rate feedback (Derivative feedback) controller.		
TOTAL	**36**	**100**

Reference:

1. Control System Engg. Nagrath& Kothari

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2. Control System B.C. Kuo
3. Control System Engg. Ogata
4. Automatic Control System Hassan Saeed

Course outcomes:

On successful completion of the course, the student will be able to:

100. After studying this course the students will be capable of implementation of these principles in process industries as well as engineering industries.
101. Find the transfer function of open & closed loop system.
102. Determine the various test signals & their application.
103. Solve the problems related to transient and stability behaviour of a system.
104. Enable students to use application of different types of controllers in control system.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S			S			S		S		
2	M	S		S		S			S			S
3	S		S				S			M	M	
4		S						S			S	
5	S	S			S				S			

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

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Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	30
2	Applying the knowledge acquired from the course	40
3	Analysis and Evaluation	30

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course
	End of Course survey			End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

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Course Title: **DESIGN OF ELECTRICAL INSTALLATION-II**		Course Code	: **DEE335**
Semester	: **V**	Core / Elective	: **Elective**
Teaching Scheme in Hrs (L:T:P)	: **3:0:0**	Credits	: **3Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40Marks**	SEE	: **60Marks**
Programmes: **Diploma in Electrical Engineering**			

Pre-requisites:

Knowledge of Basic Electrical, Circuit Parameters, Network theorems, PN Junction.

Course Objectives:

133. This course aims at imparting knowledge about specific electronics aspects, which are of practical importance for an engineer in consumer and industrial applications.
134. Apply the Purpose and essential of estimating and costing.
135. Analyse the Need of Earthing.
136. Evaluate the plan estimation of 1-phaseand 3-phase electrical load.
137. Analyse the calculation of Site Installation Conditions.
138. Create the basic concept of Sub station.

Course Content:

Topic and Contents	Hours	Marks
UNIT-1: DESCRIPTION AND LAYOUT OF GRID SUBSTATION 33/11 AND 220/132 KV	06	12

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Selection of site: • Equipment used in G.S.S. with specification • Single line diagram • Estimate and costing of material required • G.S.S. Earthing		
UNITS-2: DESIGN OF A DISTRIBUTION SCHEME FOR A SMALL COLONY	08	12
Load survey: • Load curves • Rating of sub-station transformer • Conductor size • Arrangement of street lighting • Arrangement of conductors on poles • Plan of distribution route		
UNITS-3:CABLE SIZING AND SELECTION OF SINGLE PHASE AND THREE PHASE	08	12
Load Details Calculation, Cable type and Construction features: • Site Installation Conditions • Cable Selection Based on Current Rating of feeder • Base Current Ratings of feeder, Installed Current Ratings of Cable • Cable Selection and Coordination with Protective Devices Feeders load detail, Motors load detail, Voltage Drop of cable, Cable Impedances		
UNIT-4:INTERNAL ELECTRIFICATION DESIGN	06	12
Electrical Layout in residential building using Auto CAD, Selection of house wiring, Sizing and Selection of Conduit, Sizing and selection of Switch Socket. Calculation of load on circuit, Design of sub circuit (Lighting Circuit and Power Circuit). Distribution of Power Circuit, Calculation of fan, Calculation of Earthing for residential buildings		
UNIT 5:EARHING CALCULATION FOR SWITCHYARD AND POWER PLANTS	08	12
Step Voltage,Touch Voltage, Design Procedure, Calculation of Maximum Step And Mesh Voltages. Refinement of Preliminary Design, Application of		

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Equations For EmAndesUse of Computer Analysis In Grid Design.		
TOTAL	**36**	**60**

Reference:

1. Electrical Estimating & Costing S.L.Uppal
2. Electrical Estimating & Costing J.B.Gupta
3. Installation, Design & Drawing J.B. Gupta
4. Electrical Engg. Drawing Surjeet Singh
5. Electrical Estimating and Costing TTTI Madras
6. Electrical Estimating and Costing M.F. Buereslui

Course outcomes:

On successful completion of the course, the student will be able to:

105. Increasing use of Fuses, MCB, isolators, E.L.C.B. and energy meters.
106. Find the solution of problem dependent on Calculation of material and labor cost.
107. Determine the Need of Earthing, Pipe and plate Earthing.
108. Solve the problems related to Design for main switch boards and distribution board.
109. Enable students to use application of Estimation of material required for distribution substation.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	**Programme Outcomes**											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S				S							S
2	S						S			M		
3	S			S								
4		S										
5	S			M					S			

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S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	40
3	Analysis and Evaluation	25

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9

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INDIRECT ASSESSMENT	Student feedback	Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course
	End of Course survey		End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Course Title:**ANALOG & DIGITAL ELECTRONICS**		Course Code	:**DEE336**
Semester	: **VI**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **3:0:0**	Credits	: **3Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40Marks**	SEE	: **60Marks**
Programmes: **Diploma in Electrical Engineering**			

Pre-requisites:

Knowledge of Basic PN Junction, Number System in Digital, logical operation, Boolean algebra, semiconductor properties (intrinsic and extrinsic)

Course Objectives:

139. This course aims at imparting knowledge about specific electronics aspects, which are of practical importance for an engineer in consumer and industrial applications.
140. Apply the application of basic PN diode &Zener Diode.
141. Analyse the different types of BJT & FET.
142. Evaluate the Differential amplifier as OP-AMP.
143. Analyse the Logic Gates & Arithmetic Operations.

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144. Create the basic concept of Combinational & Sequential Circuits.

Course Content:

Topic and Contents	Hours	Marks
UNIT-1:GENERAL FEATURES OF ANALOG ELECTRONICS	06	20
PN junction diode, Varactor diode, Pin diode, Tunnel diode, Schottky diode-their field of application. Breakdown: Zener and avalanche Construction of Zener diode and operation of Zener diode in reverse biased condition, Characteristics and equivalent circuits, specifications		
UNITS-2: BIPOLAR & FIELD EFFECT TRANSISTOR	08	20
Construction and operation of NPN and PNP transistors. configuration and their differences: • CE (Common Emitter) • CB (Common Base) • CC (Common Collector) Transistor as simple amplifier & oscillator and their simple application. Construction, operation and VI characteristics of JFET, pinch-off voltage, drain résistance, trans conductance, amplification factor and their relationship. Differences between BJT and JFET.		
UNITS-3: OPERATIONAL AMPLIFIER	08	20
Basic differential amplifier circuit. Importance of constant source. Definition of-input offset voltage, input bias current, input impedance, input offset current, output impedance open loop voltage gain, differential mode gain, common mode rejection ratio, slew rate. Inverting & Non-Inverting amplifier, Op amp as Comparator, adder, subtractor, integrator, differentiator unity gain buffer and scale changer, Function generator (square, triangular) Schmitt trigger.		
UNIT-4:LOGIC GATES & ARITHMATIC OPERATIONS	06	20
Introduction, Basic and Universal logic gates: • OR, AND, NOT • NAND, NOR • Ex-OR, Ex-NOR Binary Addition, BCD Addition, GRAY code, EXCESS-3 code, Overflow concept, Compliment Addition &		

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Subtraction		
UNIT 5: COMBINATIONAL & SEQUENTIAL CIRCUITS	08	20
Adder (Half & Full Adder), Subtractors (Half & Full Subtractor), Parallel Adder, Multiplexer, Demultiplexer, Encoder, Decoder, Magnitude Comparators. Flip-Flops: S-R, J-K, D and T. Basics of Registers and Counters.		
TOTAL	**36**	**100**

Reference:

1. Electronic Principle / A.P. Malvino / Tata McGraw-Hill
2. Electronic Devices & Circuits / Millman&Halkias / Tata McGraw-Hill
3. Basic Electronics & Linear Circuits / Bhargava / Tata McGraw-Hill
4. Digital Electronics / Tata McGraw-Hill

Course outcomes:

On successful completion of the course, the student will be able to:

110. Increasing use of electronic gadgets in control of analog electronics makes this course indispensable for having an insight into trouble-shooting techniques.
111. Find the solution of problem dependent on Schottky&Zener diode.
112. Determine the variable characteristics & applications of BJT & FET.
113. Solve the problems related to Operational Amplifier.
114. Enable students to use application of Logic Gates and Sequential and Combinational Circuits.

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Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S				S			S			M	
2		S		S			S			M		
3	S	S				S			S			S
4	S		S							S		S
5	S	S									S	

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	40
3	Analysis and Evaluation	25

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSESSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8

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		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course
	End of Course survey			End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Course Title:**POWER SYSTEM PROTECTION AND ANALYSIS**		Course Code	:**DEE337**
Semester	: **VI**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **3:0:0**	Credits	: **3Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40Marks**	SEE	: **60Marks**
Programmes: **Diploma in Electrical Engineering**			

Pre-requisites:

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Knowledge of Basic Power Generation, difference between AC & DC links, Active & Reactive power effects.

Course Objectives:

145. This course supposed to erect low voltage lines, overhead and underground cables and substation and to erect HV and EHV lines and substation.
146. Apply the application of DC & AC distribution systems.
147. Analyse the different types of Relays.
148. Evaluate the underground & overhead distribution lines and their parameters.
149. Analyse the methods of voltage and reactive power compensation.
150. Create the basic concept of Base load, peak load and load allocation.

Course Content:

Topic and Contents	Hours	Marks
UNIT-1: PER UNIT SYSTEM AND FAULT ANALYSIS	06	20
(c) PU System, Base Impedance, Calculation of PU values of a power system network **(d)** Symmetrical and unsymmetrical faults: • L-G (Line to ground fault) • 2L-G (Double line to ground fault) • L-L (Line to line fault) • 3L (Three line fault) • 3L-G (Three line to ground fault		
UNITS-2: PROTECTION	07	20
Principle of protection systems, Basic requirement of relays, Classification of relays according to construction, usesand operating time, Types of relays (construction, setting and applications): • Thermal relay, Electromagnetic relay, Induction type relay, Differential type relay, Distance relay Protection of Alternator, Transformer.		
UNITS-3: CIRCUIT BREAKER	07	20

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Concept, Classification, Working principle, Construction, Specification & Applications of: • L.T.- Air circuit breakers (ACB), Miniature circuit breakers (M C B), Moulded case circuit breaker (M C C B), Earth leakage circuit breaker (ELCB), (More focus on LT C.B) • H.T – Air Blast Circuit Breaker, Sulpher Hexa Fluoride circuit breaker (SF6), Vacuum circuit breaker. • Comparison of fuse & MCCB		
UNIT-4:CONTROL OF VOLTAGE AND REACTIVE POWER	08	20
Introduction, Methods of voltage control: • Tap changing transformers- ✓ Offload tap&On load tap changing transformer • Shunt compensation • Series compensation • Synchronous phase modifiers • Protective schemes for series capacitors, Problems associated with series capacitors • Static VAr systems (SVS), Advantages and applications of SVS Generalized ABCD Line Constants.		
UNIT 5: HVDC AND CORONA	08	20
Types of DC links, Advantages of DC transmission, Ground return, Earth electrode, HVDC systems in India, The Phenomenon of Corona, Disruptive critical voltage, Visual critical voltage, Corona Loss, Factors and conditions affecting corona, Radio interference due to corona, Corona in Bundled conductor		
TOTAL	**36**	**100**

Reference:

1. Power System Analysis and Design B.R. Gupta
2. Electrical Power Systems Ashfaq Husain
3. Electrical Power J.B.Gupta
4. Electrical Power System C.L. Wadhwa
5. Switchgear & Protection Sunil S.Rao

Course outcomes:

On successful completion of the course, the student will be able to:

115. The course content gives full knowledge to learn economic aspects of generation, voltage regulation methods in power system and performance of EHV and HVDC transmission.

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116. Find the solution of problem dependent on Voltage Regulation of DC and AC distribution systems.
117. Determine the variable application of different types of Relays.
118. Solve the problems related to Underground and Overhead lines.
119. Enable students to use application of different power stations and load allocation among different power station.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S		S				S			S	
2		S			S				S			M
3	S			S			S			S		S
4	S		S			S					M	
5	S	S						S		S		S

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	30
2	Applying the knowledge acquired from the course	45
3	Analysis and Evaluation	25

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What	To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
T A S	Mid Term	Student	Two tests	20	Midterm	1 to 8

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	CIE	Test				Answer books	
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course
	End of Course survey			End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Course Title: **ADVANCE CIRCUIT THEORY**		Course Code	:**DEE338**
Semester	: **VI**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **3:0:0**	Credits	: **3Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40Marks**	SEE	: **60Marks**
Programmes: **Diploma in Electrical Engineering**			

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Pre-requisites:

Knowledge of Network parameters, Network theorems, Resonance (series & parallel), Two Port Network.

Course Objectives:

151. The course is designed to develop the understanding of the principles and working of 3-Phase Circuit.
152. Analyse the Graph Theory and Simplification of Electrical circuit.
153. Analyse the Active & Passive Filters and their application.
154. Evaluate the Electrical network with different synthesis technique.
155. Analyse the Transient response of passive network.

Course Content:

Topic and Contents	Hours	Marks
UNIT-1: ANALYSIS OF 3-PHASE CIRCUIT	06	20
Power relation, Advantages of 3-Phase system, Relationship between line and Phase Voltage: • In a Star Connection • In a Delta Connection Power Calculation in Balanced and Unbalanced loads: • One Wattmeter method • Two Wattmeter method Poly phase AC circuit, Magnetic Coupled Circuit.		
UNITS-2: RESONANCE	06	20
Series resonance: • Series RLC Circuit. • Variation of Inductive and capacitive reactance with change in frequency Parallel resonance: • Parallel RLC Circuit • Parallel RL & RC Circuit Quality factor, bandwidth, selectivity, half power frequencies, graphical representations, Importance of resonance.		
UNITS-3: ACTIVE & PASIVE FILTERS	08	20

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Introduction, Ideal and Practical Filter, Classification of Filters: Passive Filters • LPF, HPF • BPF, BSF (NOTCH Filter) Active Filters • Butterworth Filter • Active LPF		
UNIT-4:TRANSIENT RESPONCE OF PASSIVE CIRCUIT	08	20
Introduction, Transient response of: • Series R-L circuit D.C. & A.C excitation • Series R-C Circuit D.C. & A.C. excitation • Series R-L-C Circuit D.C. excitation • Series R-L-C Circuit sinusoidal excitation		
UNIT 5: NETWORK SYNTHESIS	08	20
Concept of Stability of a System, Hurwitz Polynomial & its properties, Procedure of testing, Reactive network, Pole Zero interpretation. L-C, R-C, L-R network synthesis: • Foster's Canonical Form • Cauer form		
TOTAL	**36**	**100**

Reference:

1. Electrical Circuit Theory Arumugam&Premkumaran
2. Electrical Networks Soni& Gupta
3. Electrical Network Analysis UmeshSinha
4. Electrical Network Analysis G.K.Mithal
5. Text Book of Circuit Theory G.S. Verma

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Course outcomes:

On successful completion of the course, the student will be able to:

120. Find the Power Relation of 3-phase networks.
121. Find the solution of problem dependent on Power Calculation.
122. Enable students to use the Active and Passive filters as their application.
123. Solve the problems related to transient response of circuit.
124. Enable students to use application of network synthesis.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1		S		S				S			S	
2	S	M			S				S			
3	S	S	S			S		S			S	M
4	S	S		S						S		S
5	S	S				S	S				S	

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	25
2	Applying the knowledge acquired from the course	45
3	Analysis and Evaluation	30

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

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Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course
	End of Course survey			End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Course Title: **ENERGY MANAGEMENT**	Course Code :**DEE339**
Semester : **VI**	Core / Elective : **Elective**

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Teaching Scheme in Hrs (L:T:P)	: **3:0:0**	Credits	: **3Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40Marks**	SEE	: **60Marks**
Programmes: **Diploma in Electrical Engineering**			

Pre-requisites:

Knowledge of Basic work at power station, high voltage lab and sub station etc.

Course Objectives:

156. To achieve the target and goals in an organisation it is essential to co-ordinate the entire system. For this purpose a diploma holder should have the knowledge of principles of electrical energy management, auditing and environmental aspects.
157. Apply the Purpose of Per Capita Energy Consumption.
158. Analyse the Energy Planning Flow for Supply Side.
159. Evaluate the Primary Energy Sources for Power Generation.
160. Analyse the Energy Audit of illumination system.
161. Create the basic concept of Combustion products of fossil fuels.

Course Content:

Topic and Contents	Hours	Marks
UNIT-1:ENERGY MANAGEMENT AND ENERGY PLANNING	06	12
• Definitions and Significance, Energy Strategy, Energy Policy and Energy Planning, Two Sides of Energy Management, Sectors of Supply Side Energy Management. • Objectives of Energy Management, Hierarchical Levels of Sup-- Side Energy Management, Trade-off between Energy and Environment, Finery- and Energy Planning. • Energy and Economy, Essential Imperatives and Steps in Supply Side Energy Planning, Energy Planning Flow for Supply Side, Essential Data for Supply-side Energy Planning. • Per Capita Energy Consumption, Essential Imperatives and Steps in User Side Energy Planning		
UNITS-2: ENERGY AND POWER MANAGEMENT	08	12

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• Overview of India's Energy and Power Sector, National Energy Strategies of India, Primary Energy Sources for Power Generation and Electric Power Sector Planning in India. • India's Nonconventional, Renewable arid Alternate Energy Planning, Rural Electrification Programs in India. • Economic Reforms in Energy and Power Sector, Energy Consumption Trends in India, Integrated Estimates, Energy Conservation Measures under 9th Five Year Plan		
UNITS-3:ENERGY AUDIT	08	12
Aim of Energy Audit, Energy flow diagram, Strategy of Energy Audit, Comparison with Standards. Energy Management Team, Considerations in Implementing Energy Conservation programs, Periodic progress review. Instruments for energy audit, Energy Audit of illumination system, Energy audit of electrical system,		
UNIT-4:ENERGY CONVERSATION	06	12
Introduction, Motivation for Energy Conservation, Principles of Energy Conservation, Energy Conservation planning. Energy Conservation in following sectors: • Industries • Electrical Generation • Transmission and distribution • Household and commercial sectors • Transport • Agriculture • Energy Conservation Legislation		
UNIT 5:ENVIRONMENTAL ASPECTS OF ENERGY AND POLLUTION CONTROL	08	12
Introduction, Terms and Definitions, Pollution from use of energy, Combustion products of fossil fuels, Particulate matter, Fabric filter and Baghouse Electro-static precipitator (ESP), Carbon Dioxide, Green house effect and Global warming, Emission of Carbon Monoxide, Pollution by Sulphur dioxide (SO2) and Hydrogen Sulphide H2S, Emission of Nitrogen Oxides. Acid Rains, Acid Snow, Acidic Fog and Dry Acidic Deposits, Acid Fog, Dry Acidic Deposition		
TOTAL	**36**	**60**

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Reference:

1. Generation of Electrical Energy B.R. Gupta
2. Energy Technology S.Rao,Dr.B.B.Parullkar
3. An Overview of Environment Engineering Kapoor

Course outcomes:

On successful completion of the course, the student will be able to:

125. Enable students for Essential Imperatives and Steps in User Side Energy Planning.
126. Find the solution of problem dependent on Energy and Economy.
127. Determine the Need of Energy audit of electrical system.
128. Solve the problems related to Design Power Generation and Electric Power Sector Planning in India.
129. Enable students to use application of Combustion products of fossil fuels, Particulate matter, Fabric filter and Baghouse.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S				S							S
2	S						S			M		
3	S			S								
4		S										
5	S			M					S			

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	40
3	Analysis and Evaluation	25

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Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course
	End of Course survey			End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

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Course Title:**POWER ELECTRONICS LAB-II**		Course Code	:**DEE371**
Semester	: **V**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **0:0:3**	Credits	: **2Credits**
Type of course	: **Practical**	Total Contact Hours	: **30**
Continuous Internal Evaluation	: **60Marks**	SEE	: **40Marks**
Programmes: **Diploma in Electrical Engineering**			

Pre-requisites:

Knowledge of Basic Laws of Electronics Engineering, Faults, Testing and Wiring.

Course Objectives:

162. This course supposed to give the knowledge of basic concept of Electronics equipments.
163. Analyse the Applications of Speed control of D.C. Shunt motor & Series Motor..
164. Analyse the Concept of A.C 3-phase induction motor.
165. Evaluate the Basic concept of TRIAC in a dimmer circuit.
166. Analyse the problems faced in various SCR firing circuits.

Course Content:

LIST OF EXPERIMENTS	
01.	Study of UJT oscillator and Draw characteristics of UJT.
02.	Speed control of D.C. Shunt motor & Series Motor.
03.	Study of various SCR firing circuits & Study of various commutation circuits.
04.	Speed control of A.C 3-phase induction motor.
05.	Use of TRIAC in a dimmer circuit & Study of TRIAC in rectifier mode.
06.	Study of single phase half wave rectifier using SCR with resistive load.
07.	Study of (single phase) SCR with inductive load.
08.	Study of (with free wheeling diode) SCR with inductive load.
09.	Study of single phase full wave rectifier using SCR with resistive load.
10.	Study of SCR with R-L load and free wheeling diode.

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Course outcomes:

On successful completion of the course, the student will be able to:

130. Increasing use of electronic gadgets in control of electrical machines makes this course indispensable for having an insight into trouble-shooting techniques.
131. Solve the problem related to application of CSI & VSI in SMPS.
132. Determine the various types of cycloconverter& their application.
133. Solve the problems related to Speed control of motors using SCR.
134. Enable students to use application of different types of Electronic stabilizer

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S				M						S	
2		S						M				
3	M		S									
4	S	S								S		

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	30
2	Applying the knowledge acquired from the course	35
3	Analysis and Evaluation	35

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Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

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Course Title:**ELECTRICAL MACHINES LAB-II**		Course Code	:**DEE379**
Semester	: **VI**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **0:0:3**	Credits	: **2Credits**
Type of course	: **Practical**	Total Contact Hours	: **30**
Continuous Internal Evaluation	: **60Marks**	SEE	: **40Marks**
Programmes: **Diploma in Electrical Engineering**			

Pre-requisites:

Basics in Electromagnetic Induction Principal, Armature Reaction and its effect, Magnetic Field, Magnetic Flux and Efficiency of a Machine.

Course Objectives:

167. Apply and evaluate trigonometric concept in AC Machines. Create the basic concept of Electrical Generation.
168. Apply the starting methods for solving the problems of I.M.
169. Analyse the power generation by Alternators.
170. Evaluate the reactive power compensation methods by S.P.M.
171. Analyse the stability of synchronous motor.
172. Create the basic concept of special machines.

Course Content:

LIST OF EXPERIMENTS	
01.	Connecting, starting and reversing the direction of rotation of 3-phase squirrel cage induction motor by using: D.O.L starter, Star-Delta starter
02.	Speed control of 3-phase induction motor by rotor resistance control.
03.	Speed control of 3-phase induction motor by stator voltage control
04.	No-load and blocked rotor tests on 3-phase induction motor and plotting of circle diagram.
05.	Study the various types of single-phase Induction motor with starting and reversing operation.
06.	Starting of synchronous motor and plotting V-curves.
07.	Determination of load characteristics of alternator at rated speed.
08.	Determination of regulation of alternator by direct loading.
09.	Determination of magnetization curve of an alternator at rated speed
10.	O.C and S.C tests on alternator and determination of regulation by synchronous impedance method.

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Course outcomes:

On successful completion of the course, the student will be able to:

135. Find the Torque-Slip Characteristics of induction machines.
136. Find the solution of problem dependent on parallel operation of alternators.
137. Determine the difference between V and inverted V curve.
138. Solve the problems related to transient behaviour of 3-phase machines.
139. Enable students to use application of special machines for solvability of many problems.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S				M						S	
2		S						M				
3	M		S									
4	S	S								S		

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	30
2	Applying the knowledge acquired from the course	35
3	Analysis and Evaluation	35

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

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Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Course Title:**ELECTRICAL DESIGN & ESTIMATING LAB**	Course Code :**DEE373**
Semester : **V**	Core / Elective : **Core**

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Teaching Scheme in Hrs (L:T:P)	: **0:0:3**	Credits	: **2Credits**
Type of course	: **Practical**	Total Contact Hours	: **30**
Continuous Internal Evaluation	: **60Marks**	SEE	: **40Marks**
Programmes: **Diploma in Electrical Engineering**			

Pre-requisites:

Knowledge of Basic Laws of Electrical Engineering, Joints, Faults, Testing and Wiring.

Course Objectives:

173. The course contents give the knowledge to learn installation design,estimating and costing principles.

174. Analyse the Design and estimate the material of electrical installation forOffice building up to 30 points.

175. Evaluate the Preparation of schedule of material and estimate for the following using PWD B.S.R.

176. Analyse the Community hall up to 40 points.

177. Create the basic concept of Three line diagram of 33/11 KV substation.

Course Content:

	LIST OF EXPERIMENTS
01.	**Design and estimate the material of electrical installation for the following (by conventional method)**. Residential building up to 40 points, Office building up to 30 points
02.	Community hall up to 40 points, Small workshop up to 10 light points and 5 power points, Motor pump set
03.	**Preparation of schedule of material and estimate for the following using PWD B.S.R.:** Residential building up to 40 points, Office building up to 30 points
04.	Community hall up to 40 points, Small workshop up to 10 light points and 5 power points, Motor pump set
05.	**Design and preparation of schedule of material of estimate for service connection:** 1-Phase Overhead, 3-Phase overhead
06.	1-Phaseunderground, 3-Phase underground
07.	**Design and estimate the list of materials for the following :** H.T. Overhead distribution main up to 20 Km., L.T. Overhead distribution main up to 5 Km
08.	Pole mounted substation, Single line diagram of 220/132 KV G.S.S. and 33/11 KV substation
09.	Three line diagram of 33/11 KV substation, Design of distribution scheme for a small colony including load survey, load charts, load curves etc.
10.	Idea of method used in RSEB to calculate the voltage regulation of LT line, G.S.S. Earthing.

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Course outcomes:

On successful completion of the course, the student will be able to:

140. Idea of method used in RSEB to calculate the voltage regulation.
141. Find the solution of problem dependent on **Design and estimate the list of materials**.
142. Determine the Single line diagram of 220/132 KV G.S.S. and 33/11 KV substation.
143. Solve the problems related to Design of distribution scheme for a small colony including load survey.
144. Enable students to use application of Pole mounted substation, G.S.S. Earthing.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S				M						S	
2		S						M				
3	M		S									
4	S	S								S		

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	30
2	Applying the knowledge acquired from the course	35
3	Analysis and Evaluation	35

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What	To	When/where	Max	Evidence	Contributing

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			whom	(Frequency in the course)	Marks	collected	to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

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Course Title:**SWITCH GEAR & PROTECTION LAB**		Course Code	:**DEE375**
Semester	: **VI**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **0:0:3**	Credits	: **2Credits**
Type of course	: **Practical**	Total Contact Hours	: **30**
Continuous Internal Evaluation	: **60Marks**	SEE	: **40Marks**
Programmes: **Diploma in Electrical Engineering**			

Pre-requisites:

Knowledge of Basic Power Generation, difference between AC & DC links, Active & Reactive power effects.

Course Objectives:

178. This course supposed to erect low voltage lines, overhead and underground cables and substation and to erect HV and EHV lines and substation.
179. Apply the application of DC & AC distribution systems.
180. Analyse the different types of Relays.
181. Evaluate the underground & overhead distribution lines and their parameters.
182. Analyse the methods of voltage and reactive power compensation.
183. Create the basic concept of Base load, peak load and load allocation.

Course Content:

LIST OF EXPERIMENTS	
01.	To study the operation of definite time overcurrent relay.
02.	To study the operation of buchholz relay
03.	To study the operation of Auxiliary relay
04.	To plot the characteristics of frequency relay
05.	To study the operation of static definite time reverse power relay
06.	To study the operation of static definite time reverse power relay
07.	To study and plot the characteristics of percentage biased differential relay
08.	To study transformer oil test
09.	To study unrestricted earth fault relays.
10.	To study the magnetisation characteristics of c.t.

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Course outcomes:

On successful completion of the course, the student will be able to:

145. The course content gives full knowledge to learn economic aspects of generation, voltage regulation methods in power system and performance of EHV and HVDC transmission.
146. Find the solution of problem dependent on Voltage Regulation of DC and AC distribution systems.
147. Determine the variable application of different types of Relays.
148. Solve the problems related to Underground and Overhead lines.
149. Enable students to use application of different power stations and load allocation among different power station.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S				M						S	
2		S						M				
3	M		S									
4	S	S								S		
5		M		S			Ss					

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	30
2	Applying the knowledge acquired from the course	35
3	Analysis and Evaluation	35

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Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

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Course Title:**ESTIMATION & COSTING LAB**		Course Code	:**DEE377**
Semester	: **VI**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **0:0:3**	Credits	: **2Credits**
Type of course	: **Practical**	Total Contact Hours	: **30**
Continuous Internal Evaluation	: **60Marks**	SEE	: **40Marks**
Programmes: **Diploma in Electrical Engineering**			

Pre-requisites:

Knowledge of Basic Laws of Electrical Engineering, Joints, Faults, Testing and Wiring.

Course Objectives:

184. This course aims at imparting knowledge about specific electronics aspects, which are of practical importance for an engineer in consumer and industrial applications.
185. Apply the Purpose and essential of estimating and costing.
186. Analyse the Need of Earthing.
187. Evaluate the plan estimation of 1-phaseand 3-phase electrical load.
188. Analyse the calculation of Site Installation Conditions.
189. Create the basic concept of Substation.

Course Content:

LIST OF EXPERIMENTS	
01.	Typical house wiring circuit, Distribution board system & tree system, methods of wiring
02.	Design electrical installation scheme for Flat/Independent bunglow / House: Draw Installation plan, single line diagram & wiring diagram Prepare material schedule & detailed estimate & costing (2 drawing sheets)
03.	Design electrical Installation scheme for any one commercial complex/Hospital/Drawing hall: Draw Installation plan, single line diagram & wiring diagram. Prepare material schedule & detailed estimate & costing
04.	Design Electrical Installation scheme for agriculture pump room /Floor mill: Draw Installation plan, single line diagram & wiring diagram. Prepare material schedule & detailed estimate & costing
05.	Design electrical Installation scheme for small unit/workshop/Machine Lab: Draw Installation plan, single line diagram & wiring diagram. Prepare material schedule & detailed estimate & costing
06.	Drawing sheet of half imperial size on Panel Wiring of the electrical laboratory / institute.
07.	Determination of rating of cables, fuses, size of conduit, Distribution Board, main switch starter
08.	Design consideration of electrical installation in small industry/workshop
09.	Deciding the number of sub circuits, Load Calculation, size of conductor &

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	switchgears
10.	Load assessment & selection & selection of size of conductor, rating of main switch, distribution board, protective switchgear (ELCB &MCB) & all wring accessories

Course outcomes:

On successful completion of the course, the student will be able to:

150. Increasing use of Fuses, MCB, isolators, E.L.C.B. and energy meters.

151. Find the solution of problem dependent on Calculation of material and labor cost.

152. Determine the Need of Earthing, Pipe and plate Earthing.

153. Solve the problems related to Design for main switch boards and distribution board.

154. Enable students to use application of Estimation of material required for distribution substation.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S				M						S	
2		S						M				
3	M		S									
4	S	S								S		
5		M		S			Ss					

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	30
2	Applying the knowledge acquired from the course	35
3	Analysis and Evaluation	35

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Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

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Course Title:**MAT LAB**		Course Code	:**DEE377**
Semester	: **VI**	Core / Elective	: **Elective**
Teaching Scheme in Hrs (L:T:P)	: **0:0:3**	Credits	: **2Credits**
Type of course	: **Practical**	Total Contact Hours	: **30**
Continuous Internal Evaluation	: **60Marks**	SEE	: **40Marks**
Programmes: **Diploma in Electrical Engineering**			

Pre-requisites:

Basics in Computer Programming, different curves of basic Electrical signals.

Course Objectives:

190. Apply and evaluate Simulation technique for the basic concept of Electrical Signals.
191. Analyse the knowledge of curves via Simulation.
192. Evaluate the different input signals used in Filters.
193. Analyse the Low Pass and High Pass filters.
194. Create the basic concept of simulation (MAT lab).

Course Content:

LIST OF EXPERIMENTS	
01.	WAP to draw the curve of the line
02.	WAP to draw the curve of Cos (x).
03.	WAP to draw the curve of exp(x).
04.	WAP to draw the curve of sine
05.	WAP to draw the curve of a line
06.	WAP to draw the curve of parabola.
07.	WAP to design an Ahebshev type-1 low pass filter.
08.	WAP a program for the chebyster type-1 high pars filter.
09.	WAP to design band reject filter.

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10.	WAP to Implements logic gates AND and OR.

Course outcomes:

On successful completion of the course, the student will be able to:

155. Find the Information of any input signal used in electrical equipments.
156. Find the solution of problem dependent on Low and High pass filters.
157. Determine the difference between Band reject and Band Pass Filters.
158. Solve the problems related to AND and OR gate.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S				M						S	
2		S						M				
3	M		S									
4	S	S								S		

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	30
2	Applying the knowledge acquired from the course	35
3	Analysis and Evaluation	35

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Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

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Course Title: **BASIC ECONOMICS AND SOCIAL SCIENCES**		Course Code	: **DPHS203**
Semester	: **III**	Core / Elective	: **Elective**
Teaching Scheme in Hrs (L:T:P)	: **2:0:0**	Credits	: **3Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **25**
Continuous Internal Evaluation	: **40Marks**	SEE	: **60Marks**
Programmes: **Diploma in Electrical Engineering**			

Pre-requisites:

Knowledge of Basic Physics at Sec. and Sr. Sec. Level.

Course Objectives:

195. This course supposed to give the knowledge of basic concept of economics.
196. Analyse the Applications and scope of Micro Economics.
197. Analysethe Concept of Demand and supply.
198. Evaluate the Basic concept of economics in social reforms in India.
199. Analyse the problems faced by Political Economy.

Course Content:

Topic and Contents	Hours	Marks
UNIT-1:Introduction	05	20
Definition meaning, nature and scope of economics. Production possibility curve, economics law and their nature. Relation between science engineering technology and economics.		
UNITS-2: Micro Economics	05	20
Definition, meaning and scope of Micro Economics. Importance and limitations.		
UNITS-3: Concept of Demand and supply	05	20
Utility Analysis, Law of Demand, Law of Supply. Meaning of demand, individual and market demand schedule, law of demand, shape of demand curve, elasticity of demand, measurement of elasticity of demand and factors affecting elasticity of demand, Law of Supply, role of demand and supply in price determination and effect of change in demand and supply prices.		
UNIT-4: Introduction to social Sciences	05	20

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Social Change: Causes and impacts, reforms in India.		
UNIT 5: Political Economy	05	20
New Economic reform, Entrepreneurship and Small scale business management.		
TOTAL	**25**	**100**

Reference:

1. Micro Economics by M. L. Sethi
2. Micro Economics by T.R Jain

Course outcomes:

On successful completion of the course, the student will be able to:

159. The course content gives full knowledge to learnnature and scope of economics.
160. Find the solution of problem dependent on Micro Economics.
161. Solve the problems related to Law of Demand, Law of Supply.
162. Enable students to solve difficulties face in social reforms and political economics.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S				S			M			
2	M	S		S				S			S	
3	S	M			S				M			
4	S	S		S			S					S

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	30

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2	Applying the knowledge acquired from the course	40
3	Analysis and Evaluation	30

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course
	End of Course survey			End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

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Course Title: **CONSUMER AFFAIRS**		Course Code	:
Semester	: **III**	Core / Elective	: **Elective**
Teaching Scheme in Hrs (L:T:P)	: **2:0:0**	Credits	: **2Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **24**
Continuous Internal Evaluation	: **60Marks**	SEE	: **40Marks**
Programmes: **Diploma in Electrical Engineering**			

Objective: This paper seeks to familiarize the students with their rights and responsibilities as a consumer, the social framework of consumer rights and legal framework of protecting consumer rights. It also provides an understanding of the procedure of redress of consumer complaints, and the role of different agencies in establishing product and service standards. The student should be able to comprehend the business firms' interface with consumers and the consumer related regulatory and business environment.

Unit 1: Conceptual Framework 5 Lectures

Consumer and Markets: Concept of Consumer, Nature of markets: Liberalization and Globalization of markets with special reference to Indian Consumer Markets, E-Commerce with reference to Indian Market, Concept of Price in Retail and Wholesale, Maximum Retail Price (MRP), Fair Price, GST, labeling and packaging along with relevant laws, Legal Metrology.

Experiencing and Voicing Dissatisfaction: Consumer buying process, Consumer Satisfaction/dissatisfaction-Grievances-complaint, Consumer Complaining Behaviour: Alternatives available to Dissatisfied Consumers; Complaint Handling Process: ISO 10000 suite

Unit 2: The Consumer Protection Law in India 5 Lectures

Objectives and Basic Concepts: Consumer rights and UN Guidelines on consumer protection, Consumer goods, defect in goods, spurious goods and services, service, deficiency in service, unfair trade practice, restrictive trade practice.

Organizational set-up under the Consumer Protection Act: Advisory Bodies: Consumer Protection Councils at the Central, State and District Levels; Adjudicatory Bodies: District Forums, State Commissions, National Commission: Their Composition, Powers, and Jurisdiction (Pecuniary and Territorial), Role of Supreme Court under the CPA with important case law.

Unit 3: Grievance Redressal Mechanism under the Indian Consumer Protection Law 5 Lectures

Who can file a complaint? Grounds of filing a complaint; Limitation period; Procedure for filing and hearing of a complaint; Disposal of cases, Relief/Remedy available; Temporary

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Injunction, Enforcement of order, Appeal, frivolous and vexatious complaints; Offences and penalties.

Leading Cases decided under Consumer Protection law by Supreme Court/National Commission: Medical Negligence; Banking; Insurance; Housing & Real Estate; Electricity and Telecom Services; Education; Defective Products; Unfair Trade Practices.

Unit 4: Role of Industry Regulators in Consumer Protection **5 lectures**

i. Banking: RBI and Banking Ombudsman
ii. Insurance: IRDA and Insurance Ombudsman
iii. Telecommunication: TRAI
iv. Food Products: FSSAI
v. Electricity Supply: Electricity Regulatory Commission
vi. Real Estate Regulatory Authority

Unit 5: Contemporary Issues in Consumer Affairs **4 Lectures**

Consumer Movement in India: Evolution of Consumer Movement in India, Formation of consumer organizations and their role in consumer protection, Misleading Advertisements and sustainable consumption, National Consumer Helpline, Comparative Product testing, Sustainable consumption and energy ratings.
Quality and Standardization: Voluntary and Mandatory standards; Role of BIS, Indian Standards Mark (ISI), Ag-mark, Hallmarking, Licensing and Surveillance; Role of International Standards: ISO an Overview

Suggested Readings:

1. Khanna, Sri Ram, Savita Hanspal, Sheetal Kapoor, and H.K. Awasthi. (2007) *Consumer Affairs,* Universities Press.
2. Choudhary, Ram Naresh Prasad (2005). *Consumer Protection Law Provisions and Procedure,* Deep and Deep Publications Pvt Ltd.
3. G. Ganesan and M. Sumathy. (2012). *Globalisation and Consumerism: Issues and Challenges*, Regal Publications
4. Suresh Misra and Sapna Chadah (2012). Consumer Protection in India: Issues and Concerns, IIPA, New Delhi
5. Rajyalaxmi Rao (2012), *Consumer is King,* Universal Law Publishing Company
6. Girimaji, Pushpa (2002). *Consumer Right for Everyone* Penguin Books.
7. E-books :- www.consumereducation.in
8. Empowering Consumers e-book,
9. ebook, www.consumeraffairs.nic.in
10. *The Consumer Protection Act, 1986 and its later versions.* www.bis.org

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Articles

1. Misra Suresh, (Aug 2017) "Is the Indian Consumer Protected? One India One People.
2. Raman Mittal, Sonkar Sumit and Parineet Kaur (2016) Regulating Unfair Trade Practices: An Analysis of the Past and Present Indian Legislative Models, Journal of Consumer Policy.
3. Chakravarthy, S. (2014). MRTP Act metamorphoses into Competition Act. CUTS Institute for Regulation and Competition position paper. Available online at www.cuts-international.org/doc01.doc.
4. Kapoor Sheetal (2013) "Banking and the Consumer" Akademos (ISSN 2231-0584)
5. Bhatt K. N., Misra Suresh and Chadah Sapna (2010). Consumer, Consumerism and Consumer Protection, Abhijeet Publications.
6. Kapoor Sheetal (2010) "Advertising-An Essential Part of Consumer's Life-Its Legal and Ethical Aspects", Consumer Protection and Trade Practices Journal, October 2010.
7. Verma, D.P.S. (2002). Regulating Misleading Advertisements, Legal Provisions and Institutional Framework. Vikalpa. Vol. 26. No. 2. pp. 51-57.

Course Title: **Swachh Bharat Abhiyan**		Course Code	:
Semester	: **IV**	Core / Elective	: **Elective**
Teaching Scheme in Hrs (L:T:P)	: **2:0:0**	Credits	: **2Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **24**
Continuous Internal Evaluation	: **60Marks**	SEE	: **40Marks**
Programmes: **Diploma in Electrical Engineering**			

UNIT-1 Introduction to Health, Hygiene, and Sanitation ; The Need for Health, Hygiene, and Sanitation Education ; Related International projects on Health and Hygiene; Overview of the Swachh Bharat ; Qualities of Healthy Living.

UNIT-2 Hygiene - Understanding of Hygiene; Desired Definition of Hygiene; The Hygiene Practices of the different categories of family in India; Role of Family, Institutions and Corporations and government in Developing Hygiene consciousness.

UNIT -3 Sanitation ; Understanding the importance of sanitation; The facilities developed for sanitation; Means adopted to promote the use of Sanitation Facilities; Sanitation Facilities provided by government under Swachh Bharat Abhiyaan.

UNIT -4 Water Storage Methods; Water Contamination ; Prevention of Water Contamination ; The Health Risks, especially due to Water Borne Diseases; Water Purification ; Importance of Safe water use; Government's role and actions taken for awareness generation for consumption of pure water and preventing contamination of Water.

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UNIT -5 Waste Management – Introduction, importance and need; Action Plans for Healthy Living introduced under Swachh Bharat Abhiyaan; Means adopted for Waste Management under Swachh Bharat Abhiyaan.

Course Title: **ENVIROMENTAL STUDIES**		Course Code	:ES101/102
Semester	: **V**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **2:0:0**	Credits	: **2Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **24**
Continuous Internal Evaluation	: **60Marks**	SEE	: **40Marks**
Programmes: **Diploma in Electrical Engineering**			

Unit-1 Man & Environment:
Definition of environment & its various components, Ecosystem concepts. Dependence of Man on nature, human population growth & its impacts on environment, Environment & human health. Environmental concerns including climate change, Global warming, Acid Rain, Ozone layer Depletion Ozone depleting substances, environmental ethics, traditional ways of utilizing various components of environment.

Unit-2 Natural Resources:
Forest resources, Dams & their effects on forests & tribal people. Water resources- floods, droughts and conflicts over water resources. Mineral Resources Petroleum, Coal use of various minerals for Human welfare, environmental effects of mining. Food resources, world food problem. Impacts of changing Agriculture practices on Environment. Energy Resources- Forms of Energy Nuclear power, Energy Resources & exploration of alternative energy sources. Land Resources- Desert, land degradation, soil erosion, desertification & soil contamination.

Unit-3 Ecosystems:
Structure & function, energy flow, food chains, food webs, Ecological pyramids. Basics of forest, grasslands, desert and aquatic ecosystem (Ponds, Streams, Lakes, Rivers, Oceans & Estuaries) Social issues with environment. Values of a tree for a life of 50 Years, Consumption impacts and ecosystem. Urban growth and ecosystem

Unit-4 Biodiversity and Conservations
Classification, Biological Diversity: Genetic, species & ecosystem diversity, Values of Biodiversity, Global, National & Local Biodiversity. Hot-spots of Biodiversity, threat to biodiversity, endangered & endemic species of India. Conservation of biodiversity: in situ & ex-situ.

Unit-5 Environment Pollution and Sustainability.
Causes, effects & control of: Air pollution, Water pollution, Soil pollution, Noise Pollution, Thermal pollution & Nuclear Hazards. Concept of pollution Solid wastes Management.

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Disaster Management Flood, Drought, Earthquake, Landslides etc. Development and reorienting Science and Technology. Sustainable developments

Suggested Readings

1. A Text Book of Environmental Studies GR Chatwal Harish Sharma Himalaya Publishing House Mumbai 2005
2. Environmental Modeling Introduction JO Smith Pete Smith Oxford University Press 2009
3. Environmental Biology, KC Agarwal Nidhi Publishers Ltd. Bikaner. 2001
4. Textbook of Environmental Studies for Undergraduate Courses 1 Edition Erach Bharucha
5. Environmental Studies Benny Joseph) 2nd Edition, 2008 Publisher: McGraw Hill Education
6. Fundamentals of Environmental Studies B R Bamniya L N Verma and Arvind Verma Yash Publishing Bikaner
7. Fundamnetal of Ecology V Edition Eugene P odum & Gary W Barrett Cenage Learning Singapore
8. The Biodiversity of India, Bharucha Erach, Mapin Publishing Pvt. Ltd, Ahmadabad 2003.
9. Hazardous Waste Incineration, RC, Brunner McGraw Hill Inc 1989,
10. Environmental Encyclopedia, Cunningham WP, Cooper TH, Gorhani E & Hepworth MT, Jaico Publishing House, Mumbai 2001.
11. Environmental Chemistry a Global Perspectives Gary W Vanloon Stephen J Duffy 2005 Oxford university Press
12. Environmental Studies from Crisis to Cure R Rajgopalan Oxford University Press, New Delhi 2005.
13. Environmental Education, C M Gupta and Renu Sharma, Aastha Prakashan Jaipur 2007.
14. Understanding Environment Kiran B Chhokar, Mamta Pandey and Meena Raghunathan Sage Publication Inc. California.
15. Environmental Studies, D L Manjunath Publisher: Pearson, 2006.
16. Environmental Chemistry, Anil K De New Age International Publishers. 2005.

Course Title: **DISASTER MANAGEMENT**		Course Code	:
Semester	: **VI**	Core / Elective	: **Electctive**
Teaching Scheme in Hrs (L:T:P)	: **2:0:0**	Credits	: **2Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **24**
Continuous Internal Evaluation	: **60Marks**	SEE	: **40Marks**
Programmes: **Diploma in Electrical Engineering**			

Unit I. Introduction to Disasters: Concepts and definitions (Disaster, Hazard, Vulnerability, Resilience, Risks)

Unit II. Disasters: Classification Causes, Impacts (including social, economic, political, environmental, health, psychosocial, etc.), Differential impacts- in terms of caste, class, gender, age, location, disability, Global trends in disasters! Urban disasters, pandemics, complex emergencies, Climate change

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Unit III. Approaches to Disaster Risk reduction: Disaster cycle - its analysis, Phases, Culture of safety, prevention, mitigation and preparedness community based DRR, Structural non-structural ensures roles and responsibilities of- community, Panchayati Raj Institutions/Urban Local Bodies (PRIs/ULBs), states, Centre, and other stake-holders.

Unit IV. Inter-relationship between Disasters and Development: Factors affecting Vulnerabilities, differential impacts, impact of Development projects such as dams, embankments, changes in Land-use etc. Climate Change Adaptation. Relevance of indigenous knowledge, appropriate technology and local resources.

Unit V. Disaster Risk Management in India Hazard and Vulnerability profile of India Components of Disaster Relief: Water, Food, Sanitation, Shelter, Health, Waste Management Institutional arrangements (Mitigation, Response and Preparedness, DM Act and Policy, Other related policies, plans, programs and legislation)

Unit VI. Project Work: (Field Work, Case Studies)

The project /fieldwork is meant for students to understand vulnerabilities and to work on reducing disaster risks and to build a culture of safety. Projects must be conceived creatively based on the geographic location and hazard profile of the region where the college is located.

Suggested Reading list

1. Alexander David, Introduction in 'Confronting Catastrophe', Oxford University Press, 2000
2. Andharia J. Vulnerability in Disaster Discourse, JTCDM, Tata Institute of Social Sciences Working Paper no. 8, 2008
3. Blaikie, P, Cannon T, Davis I, Wisner B 1997. At Risk Natural Hazards, Peoples' Vulnerability and Disasters, Routledge.
4. Coppola P Damon, 2007. Introduction to International Disaster Management,
5. Carter, Nick 1991. Disaster Management: A Disaster Manager's Handbook. Asian Development Bank, Manila Philippines.
6. Cuny, F. 1983. Development and Disasters, Oxford University Press.
7. Govt. of India: Disaster Management Act 2005, Government of India, New Delhi.
8. Government of India, 2009. National Disaster Management Policy,
9. Gupta Anil K, Sreeja S. Nair. 2011 Environmental Knowledge for Disaster Risk Management, NIDM, New Delhi , Indian Journal of Social Work 2002.Special Issue on Psychosocial Aspects of Disasters, Volume 63, Issue 2, April.
10. Kapur, Anu & others, 2005: Disasters in India Studies of grim reality, Rawat Publishers, Jaipur

Course Title:**ENTREPRENEURSHIP**		Course Code	:**DHS232**
Semester	: **IV**	Core / Elective	: **Elective**
Teaching Scheme in Hrs (L:T:P)	: **2:0:0**	Credits	: **2Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **35**

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Continuous Internal Evaluation : **40Marks**	SEE : **60Marks**
Programmes: **Diploma in Electrical Engineering**	

Pre-requisites:

Knowledge of Basic Business Market and Industry.

Course Objectives:

200. This course supposed to give the knowledge of how an entrepreneur can make his business successful.
201. Analyse the Location of Industrial Units.
202. Analysehow the size and pricing of a firm can affect the business.
203. Evaluate the Financing of Small Industries.
204. Analyse the problems faced by small enterprises.
205. Create the basic concept of Entrepreneurship.

Course Content:

Topic and Contents	Hours	Marks
UNIT-1:PROMOTION OF ENTREPRENEURSHIP	08	20
Meaning, definition and functions of an entrepreneur, qualities of a good entrepreneur; Role of Entrepreneur in economic development. Government measures for the promotion of small scale industries with special reference to Haryana. Cultural factors in developing entrepreneurship.		
UNITS-2: OWNERSHIP AND LOCATION OF INDUSTRIAL UNITS	06	20
Different forms of Industrial Organization. Theories of Industrial location. Process of preparing project reports.		
UNITS-3: SIZE OF FIRM AND PRICING	07	20

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Concept of optimum firm, factors determining optimum size, Technical, Managerial, Marketing Uncertainties and risk. Pricing Methods, Policies and procedures.		
UNIT-4:FINANCING OF SMALL INDUSTRIES	08	20
Importance and need: Commercial Banks and term lending in India; Banks and under-writing of capital issues; Brief description about the role of other financial agencies as: • Industrial Finance Corporation of India • State Financial Corporation • Industrial Development Bank of India • Unit Trust of India.		
UNIT 5: PROBLEMS FACED BY SMALL ENTERPRISES	06	20
Problems connected with Marketing: • Management of New Products • Power, Finance, Raw Material • Under-utilization of capacity Causes of under utilization; Rehabilitation of Sick Mills.		
TOTAL	**35**	**100**

Reference:

1. Entrepreneurship of Small Industries- DeshpandeManohar D. (Asian Publisher, New Delhi)
2. Environment & Entrepreneur- Tandon B.C. (Asian Publishers, New delhi)
3. The Industrial Economy of India- Kuchhal S.C. (Chaitanya, Allahabad)
4. Emerging Trends in Entrepreneurship Development Theories & Practices- Singh P. Narendra (International Founder, New Delhi)

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Course outcomes:

On successful completion of the course, the student will be able to:

163. The course content gives full knowledge to learn hoe an entrepreneur can succeed.
164. Find the solution of problem dependent on industrial units.
165. Solve the problems related to Location and pricing of industrial units.
166. Enable students to solve difficulties face by small units.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S			S	S			M			
2	S	M				S				S		
3		M		S	S			S				S
4	S	M					S				S	

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	30
2	Applying the knowledge acquired from the course	40
3	Analysis and Evaluation	30

Course Assessment and Evaluation:

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The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course
	End of Course survey			End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

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Course Title: **INDUSTRIAL MANAGEMENT**		Course Code	:**DHS302**
Semester	: **V**	Core / Elective	: **Elective**
Teaching Scheme in Hrs (L:T:P)	: **3:0:0**	Credits	: **3Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40Marks**	SEE	: **60Marks**
Programmes: **Diploma in Electrical Engineering**			

Pre-requisites:

Knowledge of Industries and their working.

Course Objectives:

206. To achieve the target and goals in an organisation it is essential to co-ordinate the entire system. For this purpose a diploma holder should have the knowledge of principles of industrial management, auditing and environmental aspects.
207. Apply the Purpose of organization and administration.
208. Analyse the Inters relation between skills and levels of management.
209. Evaluate the Scientific management.
210. Analyse the Study of different forms oflayout.
211. Create the basic concept of conflict management.

Course Content:

Topic and Contents	Hours	Marks
UNIT-1:INTRODUCTION TO INDUSTRIAL MANAGEMENT	06	12
• Brief history of industries in India, Brief definition of management, organization and administration. • Characteristics of management, Principle of management, Function of management like, planning, organization, direction, co-ordination etc.		
UNITS-2: MANAGEMENT	08	12
• Level of management, skills of management, inters relation between skills and levels of management. • Scientific management, Introduction to Schools of Management thoughts		
UNITS-3:INTRODUCTION TO ORGANIZATION	08	12

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Study of basic type of organization for ex. Line and staff organization, project organization, metrics organization, Informal organization.		
UNIT-4:INTRODUCTION TO INDUSTRIAL PSYCHOLOGY	06	12
• Motivation theory and study of Maxlow, Need, Hierarchy Theory, Planned Location, Planned Layout. • Study of different forms oflayout like line layout, process layout, product layout, combinational layout, sixth position layout etc.		
UNIT 5:INTRODUCTION TO MATERIAL MANAGEMENT	08	12
Objective of planned layout, introduction to material management, scope of material management, study of inventory control method, introduction to different types of inventory control techniques, introduction to work study, motion study etc, introduction to conflict management.		
TOTAL	**36**	**60**

Reference:

1. Khanna O.P.: Industrial Engineering.
2. T.R. Banga: Industrial Engineering & Management.
3. Mahajan: Industrial & Process Management.

Course outcomes:

On successful completion of the course, the student will be able to:

167. Enable students for Essential Imperatives and Steps in Industrial & Process Management.
168. Find the solution of problem dependent on planning &organization.
169. Determine the Need of Schools of Management thoughts.
170. Solve the problems related to Hierarchy Theory &Planned Location.
171. Enable students to use application of material management and scope of material management.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12

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1	S				S							S
2	S						S			M		
3	S			S								
4		S										
5	S			M					S			

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	40
3	Analysis and Evaluation	25

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course

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	End of Course survey		End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

EMPLOYABILITY SKILLS – II

EM 102 **C (L, T, P) = 1 (1, 0, 0)**

S.NO.	TOPIC	DETAILS	CONTACT HOURS
1	Communication	Role Play, Reading, Formal writing skills Listening, Interaction Process, Interpersonal Relationship	15
2	Attitude& Manners	Motivation, Team Building, Winning Strategy, CAN DO,	5
3	Preparation, presentation	Presentation skills, Preparation Skills,	4
4	Industry	Concept & Importance of SIP, Industrial Mentoring & Networking	1

EMPLOYABILITY SKILLS – III

EM 201 **C (L, T, P) = 1 (1, 0, 0)**

S.NO.	TOPIC	DETAILS	CONTACT HOURS
1	Communication	Negotiation & Reasoning, Interaction Process, Interpersonal Relationship	5
2	Quantitative	Number System, Ratio & Proportion, Partnership, Percentage, Profit &Loss	5
3	Reasoning,	Analytical Reasoning, Coding & Decoding, Series	5
4	Motivation	Leadership & Styles, Self Esteem, Winning strategies,	5
5	Preparation, presentation	Self Esteem, Preparation of CV, Writing Application, Placement Mantra	5

EMPLOYABILITY SKILLS – IV

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EM 202 **C (L, T, P) = 1 (1, 0, 0)**

S.NO.	TOPIC	DETAILS	CONTACT HOURS
1	Aptitude Test Preparation	Numerical, Reasoning, Logical, Verbal	10
2	Employability Enhancement	Impactful Summer Internships, Statement of Purpose, Application / Cover Letter Writing, Email Application, Online Search & Registration	5
3	Interview Skills	Telephonic Interviews, Video Interviews, Group Discussion Techniques, Mocks – Recording & Playback	6
4	Miscellaneous	Industry Related Preparation, Company Specific Preparation, Current Affairs, Business News, General Knowledge	5

Course Title: **SOLAR POWER TECHNOLOGIES**	Course Code :**DEE242**
Semester : **IV**	Core / Elective : **Core**

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Teaching Scheme in Hrs (L:T:P)	: **3:0:0**	Credits	: **3Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40Marks**	SEE	: **60Marks**
Programmes: **Diploma in Electrical Engineering**			

Pre-requisites:

Knowledge of Basic Physics at Sec. and Sr. Sec. Level.

Course Objectives:

The aim of this course is to help the student to attain the following industry identified competency through various teaching learning experiences:

- Maintain the efficient operation of various types of solar power technologies

Course Content:

Topic and Contents	Hours	Marks
UNIT-1: SOLAR ENERGY	08	20
Solar Map of India: Global solar power radiation Different types of Solar water heaters: Construction, working, specifications and installation Solar Heating systems Solar drying and different types of Solar cookers Solar lighting. Preventive maintenance of all of the above.		
UNITS-2: CONCENTRATED SOLAR POWER (CSP)	08	20
Concentrated Solar Power (CSP) plants or solar thermal electric systems Parabolic Trough: Construction, working and specifications Parabolic Dish: Construction, working and specifications Power Tower, Fresnel Reflectors: Construction, working and specifications , Solar Stirling engines Preventive maintenance of all of the above		
UNITS-3: SOLAR PV SYSTEMS	06	20
Solar PV cell: Types construction, working, Typical specifications of solar cells Solar PV working principle: Series and parallel connections of solar modules Solar Photovoltaic (PV) system: components layout and working. Solar modules, arrays and their standard specifications Roof top and streetlight solar PV systems and typical specifications Maintenance of these systems		
UNIT-4: SOLAR PV ELECTRONICS	08	20

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Solar Charge controllers: working and specifications, switchgear and cables Batteries: Different types for solar PV systems, maintenance and specifications Solar Inverters: working and specifications Signal conditioning systems: working and specifications Solar Power tracking: construction, working, tilt angle, solar radiation, I-V, P-V characteristics, maximum power point tracking (MPPT) Maintenance of these systems.		
UNIT 5: SOLAR PV OFF-GRID AND GRID TIED SYSTEMS	06	20
Solar off grid systems: layout and specifications Solar Grid tied (on grid) systems: Working principle of grid-tied dc-ac inverter, grid synchronization and active power export Net metering: main features and working. Solar-wind Hybrid systems: Layout and specifications.		
TOTAL	**36**	**100**

Reference:

1. Solanki, Chetan Singh, - Solar Photovoltaics: Fundamentals, Technologies and Applications, PHI Learning, New Delhi, ISBN: 9788120351110
1. Solanki, Chetan Singh, - Solar Photovoltaic Technology and Systems - A Manual For Technicians, Trainers and Engineers, PHI Learning, New Delhi, ISBN: 9788120347113
2. Kothari, D.P. et aL:Renewable Energy Sources and Emerging Technologies, PHI
3. David M. Buchla, Thomas E. Kissell, Thomas L. Floyd, - Renewable Energy Systems, Pearson Education New Delhi ,ISBN: 9789332586826
4. Rachel, Sthuthi, Earnest, Joshua; -Wind Power Technologies, PHI Learning
5. O.P. Gupta, Energy Technology, Khanna Publishing House, ISBN: 978-93-86173-683

Course outcomes:

On successful completion of the course, the student will be able to:

The theory, practical experiences and relevant soft skills associated with this course are to be taught
and implemented, so that the student demonstrates the following industry oriented COs associated with the above mentioned competency:

a) Maintain the solar non-electric equipment.
b) Maintain CSP plants
c) Maintain solar PV systems.
d) Maintain solar PV electronics and MPPT systems
e) Maintain off-grid and on-grid solar power plants

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S			M			S	M				
2	S		S			M				S		

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3		M			S				M			
4	S	S					M					

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	30
2	Applying the knowledge acquired from the course	35
3	Analysis and Evaluation	35

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course

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	End of Course survey		End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Course Title:**ADVANCE MATHEMATICS**		Course Code	:**MA231**
Semester	: **III**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **3:0:0**	Credits	: **3Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40Marks**	SEE	: **60Marks**
Programmes: **Diploma in Electrical Engineering**			

Pre-requisites:

Knowledge of Basic Mathematics at Sec. and Sr. Sec. Level.

Course Objectives:

212. This course supposed to give the knowledge of basic concept of Linear Programming.
213. Analyse the Applications of PERT and CPM Network.
214. Analysethe Concept of Transportation problem.
215. Evaluate the Basic concept of Laplace transform.
216. Analyse the problems faced in Numerical differentiation and Integration.

Course Content:

Topic and Contents	Hours	Marks
UNIT-1:LINEAR PROGRAMMING	08	20
Mathematical Formulation of Linear Programming problem. • Graphical method of solving Linear Programming		

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problem. • Simple method for solving Linear Programming problem. • Duality in Linear Programming problem.		
UNITS-2: PROJECT SCHEDULING	06	20
Project Scheduling by PERT and CPM Network Analysis. Sequencing Theory: • General Sequencing problem • N-jobs through 2 machines & 3 machines • 2-jobs through m machine.		
UNITS-3: TRANSPORTATION PROBLEM	08	20
Find the initial solution using: • North West Corner rule, Least Cost Method. Assignment problem: • Solving Assignment problem		
UNIT-4:TRANSFORM CALCULUS	06	20
Laplace transform with its simple properties. Properties of Laplace Transform and formulae, Unit Step function, Dirac Delta function, Heaviside function, Laplace transform of periodic functions. Finding inverse Laplace transform by different methods, convolution theorem.		
UNIT 5: NUMERICAL METHODS	08	20
Finite differences and Interpolation, Numerical differentiation and Integration. Numerical solution of ordinary differential equations		
TOTAL	**36**	**100**

Reference:

1. Advanced Mathematics for Engineers by Chandrika Prasad
2. Higher Engineering Mathematics by B.S. Grewal
3. Higher Engineering Mathematics by Y.N. Gaur and C.L. Koul
4. Higher Engineering Mathematics by K.C. Jain and M.L. Rawat

Course outcomes:

On successful completion of the course, the student will be able to:

172. The course content gives full knowledge to learnLinear Programming.
173. Find the solution of problem dependent on Project Scheduling.
174. Solve the problems related to Transportation.
175. Enable students to solve difficulties face in Numerical method and transform Calculus.

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Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S			M			S	M				
2	S		S			M				S		
3		M			S				M			
4	S	S					M					

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	30
2	Applying the knowledge acquired from the course	35
3	Analysis and Evaluation	35

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9

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INDIRECT ASSESSMENT	Student feedback	Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course
	End of Course survey		End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Course Title:**BASIC ECONOMICS AND SOCIAL SCIENCES**		Course Code	:**DHS231**
Semester	: **III**	Core / Elective	: **Elective**
Teaching Scheme in Hrs (L:T:P)	: **2:0:0**	Credits	: **3Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **25**
Continuous Internal Evaluation	: **40Marks**	SEE	: **60Marks**
Programmes: **Diploma in Electrical Engineering**			

Pre-requisites:

Knowledge of Basic Physics at Sec. and Sr. Sec. Level.

Course Objectives:

217. This course supposed to give the knowledge of basic concept of economics.
218. Analyse the Applications and scope of Micro Economics.
219. Analysethe Concept of Demand and supply.
220. Evaluate the Basic concept of economics in social reforms in India.
221. Analyse the problems faced by Political Economy.

Course Content:

Topic and Contents	Hours	Marks
UNIT-1:Introduction	05	20
Definition, Various definitions, meaning, nature and		

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	scope of economics. Production possibility curve, economics law and their nature. Relation between science engineering technology and economics. **Micro Economics:** Definition, meaning and scope of Micro Economics. Importance and limitations.		
	UNITS-2: Production & Cost	05	20
	Meaning of production and factors of production, law of variable proportion, return to scale, internal and external economics and dis-economics of scale. **Cost:** Various concept of cost, fixed cost, variable cost, average cost, marginal cost, money cost, real cost.		
	UNITS-3: Concept of Demand and supply	05	20
	Meaning of demand, individual and market demand schedule, law of demand, shape of demand curve, elasticity of demand, measurement of elasticity of demand and factors affecting elasticity of demand, Law of Supply, role of demand and supply in price determination and effect of change in demand and supply prices.		
	UNIT-4:Introduction to social Sciences	05	20
	Social Change: Causes and impacts, Reforms in India.		
	UNIT 5: Political Economy	05	20
	New Economic reform, Nature and characteristic of Indian economy, Entrepreneurship and Small scale business management. Privatization-meaning		
	TOTAL	**25**	**100**

Reference:

3. Micro Economics by M. L. Sethi
4. Micro Economics by T.R Jain

Course outcomes:

On successful completion of the course, the student will be able to:

176. The course content gives full knowledge to learnnature and scope of economics.
177. Find the solution of problem dependent on Micro Economics.
178. Solve the problems related to Law of Demand, Law of Supply.
179. Enable students to solve difficulties face in social reforms and political economics.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12

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1	S	S				S			M			
2	M	S		S				S			S	
3	S	M			S				M			
4	S	S		S			S					S

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	30
2	Applying the knowledge acquired from the course	40
3	Analysis and Evaluation	30

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		

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	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course
	End of Course survey			End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Course Title: **SOLAR POWER TECHNOLOGIES**		Course Code	:**DEE242**
Semester	: **IV**	Core / Elective	: **Elective**
Teaching Scheme in Hrs (L:T:P)	: **3:0:0**	Credits	: **3Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40Marks**	SEE	: **60Marks**
Programmes: **Diploma in Electrical Engineering**			

Pre-requisites:

Knowledge of Basic Physics at Sec. and Sr. Sec. Level.

Course Objectives:

The aim of this course is to help the student to attain the following industry identified competency through various teaching learning experiences:

- Maintain the efficient operation of various types of solar power technologies

Course Content:

Topic and Contents	Hours	Marks
UNIT-1: SOLAR ENERGY	08	20
Solar Map of India: Global solar power radiation Different types of Solar water heaters: Construction, working, specifications and installation Solar Heating systems Solar drying and different types of Solar cookers Solar lighting. Preventive maintenance of all of the above.		

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UNITS-2: CONCENTRATED SOLAR POWER (CSP)	08	20
Concentrated Solar Power (CSP) plants or solar thermal electric systems Parabolic Trough: Construction, working and specifications Parabolic Dish: Construction, working and specifications Power Tower, Fresnel Reflectors: Construction, working and specifications , Solar Stirling engines Preventive maintenance of all of the above		
UNITS-3: SOLAR PV SYSTEMS	06	20
Solar PV cell: Types construction, working, Typical specifications of solar cells Solar PV working principle: Series and parallel connections of solar modules Solar Photovoltaic (PV) system: components layout and working. Solar modules, arrays and their standard specifications Roof top and streetlight solar PV systems and typical specifications Maintenance of these systems		
UNIT-4: SOLAR PV ELECTRONICS	08	20
Solar Charge controllers: working and specifications, switchgear and cables Batteries: Different types for solar PV systems, maintenance and specifications Solar Inverters: working and specifications Signal conditioning systems: working and specifications Solar Power tracking: construction, working, tilt angle, solar radiation, I-V, P-V characteristics, maximum power point tracking (MPPT) Maintenance of these systems.		
UNIT 5: SOLAR PV OFF-GRID AND GRID TIED SYSTEMS	06	20
Solar off grid systems: layout and specifications Solar Grid tied (on grid) systems: Working principle of grid-tied dc-ac inverter, grid synchronization and active power export Net metering: main features and working. Solar-wind Hybrid systems: Layout and specifications.		
TOTAL	**36**	**100**

Reference:

1. Solanki, Chetan Singh, - Solar Photovoltaics: Fundamentals, Technologies and Applications, PHI Learning, New Delhi, ISBN: 9788120351110

1. Solanki, Chetan Singh, - Solar Photovoltaic Technology and Systems - A Manual For Technicians, Trainers and Engineers, PHI Learning, New Delhi, ISBN: 9788120347113

2. Kothari, D.P. et aL:Renewable Energy Sources and Emerging Technologies, PHI

3. David M. Buchla, Thomas E. Kissell, Thomas L. Floyd, - Renewable Energy Systems, Pearson Education New Delhi ,ISBN: 9789332586826

4. Rachel, Sthuthi, Earnest, Joshua; -Wind Power Technologies, PHI Learning

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5. O.P. Gupta, Energy Technology, Khanna Publishing House, ISBN: 978-93-86173-683

Course outcomes:

On successful completion of the course, the student will be able to:

The theory, practical experiences and relevant soft skills associated with this course are to be taught
and implemented, so that the student demonstrates the following industry oriented COs associated with the above mentioned competency:

a) Maintain the solar non-electric equipment.
b) Maintain CSP plants
c) Maintain solar PV systems.
d) Maintain solar PV electronics and MPPT systems
e) Maintain off-grid and on-grid solar power plants.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	M	S			S			M				
2		S		M			S			M		
3	S	M				S			S			
4	S	S			S						S	

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	40
2	Applying the knowledge acquired from the course	35
3	Analysis and Evaluation	25

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
T A S		Mid Term	Student	Two tests	20	Midterm	1 to 8

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	CIE	Test				Answer books	
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course
	End of Course survey			End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

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SYLLABUS OF DIPLOMA IN ENGINEERING

Edition-2021-22

DEPARTMENT OF DIPLOMA IN MECHANICAL ENGINEERING

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LIST OF COURSES OFFERED
Edition-2021-22

DEPARTMENT OF
DIPLOMA IN MECHANICAL ENGINEERING

GYAN VIHAR SCHOOL OF ENGINEERING AND TECHNOLOGY

DIPLOMA IN AUTOMOBILE ENGINEERING (3 Year Course

PROGRAMME OUTCOMES OF DIPLOMA IN MECHANICAL ENGINEERING

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The Department of Diploma in Mechanical Engineering has adopted its various Program Outcomes. These are that our students have:

-An ability to apply knowledge of mathematics, science, and engineering.

-An ability to design and conduct experiments, as well as to analyze and interpret data.

-An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.

-An ability to function on multi-disciplinary teams.

-An ability to identify, formulate, and solve engineering problems.

-An understanding of professional and ethical responsibility.

-An ability to communicate effectively.

-The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.

-A recognition of the need for, and an ability to engage in life-long learning.

-A knowledge of contemporary issues.

-An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

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DEPARTMENT OF DIPLOMA IN ENGINEERING
DIPLOMA IN MECHANICAL ENGINEERING (3 Year Course)

Year: II **Edition-2018** **Semester: III**

Year: II **Edition-2018** **Semester: IV**

Course Code	Course Name	Credits	Contact Hrs/Wk.			Exam Hrs.	Weightage (in %)	
			L	T/S	P		CE	ESE
	University Core							
MA231	Advance Mathematics	3	3	0	0	3	40	60
PC201	Proficiency in Co-Curricular Activity	2	0	0	0	0	100	
EM102	Employability Skills II	1	0	2	0	2	60	40
	Program Core							
DME231	Strength of Material	3	3	0	0	3	40	60
DME233	Material Science	3	3	0	0	3	40	60
DME237	Process In Manufacturing	3	3	0	0	3	40	60
DME271	Strength of Material Lab	2	0	0	3	3	60	40
DME273	Material Science lab	2	0	0	3	3	60	40
DME267	Process in Manufacturing-1 Lab	2	0	0	3	3	60	40
DME279	Metrology Lab	2	0	0	3	3	60	40
	University Elective							
DHS231	Basic Economic and Social Science	2	2	0	0	3	40	60
	Program Elective							
DME283	Workshop Technology Lab	2	0	0	3	3	60	40
DME285	Machine Design Lab	2	0	0	3	3	60	40

Year: III **Edition-2018** **Semester: V**

Course Code	Course Name	Credits	Contact Hrs/Wk.			Exam Hrs.	Weightage (in %)	
			L	T/S	P		CE	ESE
	University Core							
PC202	Proficiency in Co-Curricular Activity	2	0	0	0	0	100	
EM201	Employability Skills - III	1	2	0	0	2	60	40
	Program Core							
DME232	Fluid Mechanics & Machine	3	3	1	0	3	40	60
DME234	Thermodynamics and IC Engine	3	3	0	0	3	40	60
DME242	Automobile Engineering	3	3	0	0	3	40	60
DME274	Fluid Mechanics & Machine Lab	2	0	0	3	3	60	40
DME282	Automobile Engineering lab	2	0	0	3	3	60	40
DME278	Theory Of Machine Lab-1	2	0	0	3	3	60	40
DME272	Thermodynamic Lab	2	0	0	3	3	60	40
DME280	Cad Practice Lab	2	0	0	3	3	60	40
	University Elective							
DHS232	Entrepreneurship	2	2	0	0	3	40	60
	Program Elective							
DME238	Theory of Machines-I	3	3	0	0	3	40	60
DME240	Workshop Technology	3	3	0	0	3	40	60

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Year: III **Edition-2018** **Semester: VI**

Course Code	Course Name	Credits	Contact Hrs/Wk.			Exam Hrs.	Weightage (in %)	
			L	T/S	P		CE	ESE
	University Core							
PC201	Proficiency in Co-Curricular Activity	2	0	0	0	0	100	
EM202	Employability Skills IV	1	2	0	0	2	60	40
DEP301	Industry Summer Internship Project	3	0	0	3	3	100	
	Program Core							
DME340	Heat and mass transfer	3	3	0	0	3	40	60
DME333	CAD/CAM	3	3	0	0	3	40	60
DME335	Thermal Energy & Power Plant	3	3	0	0	3	40	60
DME371	Process In Manufacturing-II Lab	2	0	0	3	3	60	40
DME373	CAD lab	2	0	0	3	3	60	40
DME381	Power Generation Lab	2	0	0	3	3	60	40
	University Elective							
DHS302	Industrial Management	3	3	0	0	3	40	60
	Program Elective							
DME377	Heat & Mass Transfer Lab	2	0	0	3	3	60	40
DME379	Mechanical Vibration Lab	2	0	0	3	3	60	40
DME375	Dynamics of Machine Lab	2	0	0	3	3	60	40

Course Code	Course Name	Credits	Contact Hrs/Wk.			Exam Hrs.	Weightage (in %)	
			L	T/S	P		CE	ESE
	University Core							
PC302	Proficiency in Co-Curricular Activity	2	0	0	0	0	100	
DEP302	Industry Association Project	6	0	0	3	3	100	
	Program Core							
DME332	Refrigeration and Air Conditioning	3	3	1	0	3	40	60
DME372	Refrigeration and Air Conditioning Lab	2	0	0	3	3	60	40
DME374	CAM Lab	2	0	0	3	3	60	40
DME376	Product Design and Development Lab.	2	0	0	3	3	60	40
	University Elective							
DEE377	MAT Lab	2	0	0	3	2	60	40
	Program Elective							
DME334	Mechatronics	3	3	0	0	3	40	60
DME336	Reliability & Maintenance	3	3	0	0	3	40	60
DME342	Mechanical estimating costing & Material Handling	3	3	0	0	3	40	60

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GYAN VIHAR SCHOOL OF ENGINEERING & TECHNOLOGY
DIPLOMA IN MECHANICAL ENGINEERING (3 YEAR COURSE)
LIST OF SUBJECT (2018)

Course Code	Course Name	Credits	Contact Hrs/Wk.			Exam Hrs.	Weightage (in %)	
			L	T/S	P		CE	ESE
MA231	Advance Mathematics	3	3	0	0	3	40	60
EM102	Employability Skills II	1	0	2	0	2	60	40
DME231	Strength of Material	3	3	0	0	3	40	60
DME233	Material Science	3	3	0	0	3	40	60
DME242	Automobile Engineering	3	3	0	0	3	40	60
DME271	Strength of Material Lab	2	0	0	3	3	60	40
DME273	Material Science lab	2	0	0	3	3	60	40
DME282	Automobile Engineering lab	2	0	0	3	3	60	40
DME381	Power Generation Lab	2	0	0	3	3	60	40
DHS231	Basic Economic and Social Science	2	2	0	0	3	40	60
DME279	Metrology Lab	2	0	0	3	3	60	40
DME283	Workshop Technology Lab	2	0	0	3	3	60	40
DME285	Machine Design Lab	2	0	0	3	3	60	40
EM201	Employability Skills - III	1	2	0	0	2	60	40
DME232	Fluid Mechanics & Machine	3	3	1	0	3	40	60
DME234	Thermodynamics and IC Engine	3	3	0	0	3	40	60
DME237	Process In Manufacturing	3	3	0	0	3	40	60
DME274	Fluid Mechanics & Machine Lab	2	0	0	3	3	60	40
DME267	Process in Manufacturing-1 Lab	2	0	0	3	3	60	40
DME278	Theory Of Machine Lab-1	2	0	0	3	3	60	40
DME272	Thermodynamic Lab	2	0	0	3	3	60	40
DME280	Cad Practice Lab	2	0	0	3	3	60	40
DHS232	Entrepreneurship	2	2	0	0	3	40	60
DME238	Theory of Machines-I	3	3	0	0	3	40	60

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DME240	Workshop Technology	3	3	0	0	3	40	60
EM202	Employability Skills IV	1	2	0	0	2	60	40
DME340	Heat and mass transfer	3	3	0	0	3	40	60
DME333	CAD/CAM	3	3	0	0	3	40	60
DME335	Thermal Energy & Power Plant	3	3	0	0	3	40	60
DME371	Process In Manufacturing-II Lab	2	0	0	3	3	60	40
DME373	CAD lab	2	0	0	3	3	60	40
DME375	Dynamics of Machine Lab	2	0	0	3	3	60	40
DHS302	Industrial Management	3	3	0	0	3	40	60
DME377	Heat & Mass Transfer Lab	2	0	0	3	3	60	40
DME379	Mechanical Vibration Lab	2	0	0	3	3	60	40
DME332	Refrigeration and Air Conditioning	3	3	1	0	3	40	60
DME372	Refrigeration and Air Conditioning Lab	2	0	0	3	3	60	40
DME374	CAM Lab	2	0	0	3	3	60	40
DME376	Product Design and Development Lab.	2	0	0	3	3	60	40
DEE377	MAT Lab	2	0	0	3	2	60	40
DME334	Mechatronics	3	3	0	0	3	40	60
DME336	Reliability & Maintenance	3	3	0	0	3	40	60
DME342	Mechanical estimating costing & Material Handling	3	3	0	0	3	40	60

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Course Title: **ADVANCE MATHEMATICS**		Course Code	: **MA231**
Semester	: **III**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **3:0:0**	Credits	: **3 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: **Diploma in Electrical Engineering**			

Pre-requisites:

Knowledge of Basic Mathematics at Sec. and Sr. Sec. Level.

Course Objectives:

1. This course supposed to give the knowledge of basic concept of Linear Programming.
2. Analyse the Applications of PERT and CPM Network.
3. Analyse the Concept of Transportation problem.
4. Evaluate the Basic concept of Laplace transform.
5. Analyse the problems faced in Numerical differentiation and Integration.

Course Content:

Topic and Contents	Hours	Marks
UNIT-1: LINEAR PROGRAMMING	08	20
Mathematical Formulation of Linear Programming problem. • Graphical method of solving Linear Programming problem. • Simple method for solving Linear Programming problem. • Duality in Linear Programming problem.		
UNITS-2: PROJECT SCHEDULING	06	20
Project Scheduling by PERT and CPM Network Analysis. Sequencing Theory: • General Sequencing problem • N-jobs through 2 machines & 3 machines		

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• 2-jobs through m machine.		
UNITS-3: TRANSPORTATION PROBLEM	08	20
Find the initial solution using: • North West Corner rule, Least Cost Method. Assignment problem: • Solving Assignment problem		
UNIT-4: TRANSFORM CALCULUS	06	20
Laplace transform with its simple properties.		
UNIT 5: NUMERICAL METHODS	08	20
Finite differences and Interpolation, Numerical differentiation and Integration. Numerical solution of ordinary differential equations		
TOTAL	**36**	**100**

Reference:

1. Advanced Mathematics for Engineers by Chandrika Prasad
2. Higher Engineering Mathematics by B.S. Grewal
3. Higher Engineering Mathematics by Y.N. Gaur and C.L. Koul
4. Higher Engineering Mathematics by K.C. Jain and M.L. Rawat

Course outcomes:

On successful completion of the course, the student will be able to:

1. The course content gives full knowledge to learn Linear Programming.
2. Find the solution of problem dependent on Project Scheduling.
3. Solve the problems related to Transportation.
4. Enable students to solve difficulties face in Numerical method and transform Calculus.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S			M			S	M				
2	S		S			M				S		
3		M			S				M			
4	S	S					M					

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

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Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	30
2	Applying the knowledge acquired from the course	35
3	Analysis and Evaluation	35

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course
	End of Course survey			End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

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EMPLOYABILITY SKILLS – II

EM 102 **C (L, T, P) = 1 (1, 0, 0)**

S.NO.	TOPIC	DETAILS	CONTACT HOURS
1	Communication	Role Play, Reading, Formal writing skills Listening, Interaction Process, Interpersonal Relationship	15
2	Attitude& Manners	Motivation, Team Building, Winning Strategy, CAN DO,	5
3	Preparation, presentation	Presentation skills, Preparation Skills,	4
4	Industry	Concept & Importance of SIP, Industrial Mentoring & Networking	1

Course Title: STRENGTH OF MATERIAL		Course Code	: **DME231**
Semester	: **III**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **4:0:0**	Credits	: **3 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: **DIPLOMA IN MECHANICAL ENGINEERING**			

Pre-requisites:

Students should have knowledge on basic material properties based on senior secondary school syllabus

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Course Objectives:

The subjects is kept in diploma course so that the students of mechanical engineering discipline should know the proper use of material for common engineering problems.

Course Content:

Topic and Contents	Hours	Marks
UNIT-1: SIMPLE STRESS AND STRAINS	6	20
Simple Stress and Strains : Introduction types of loads and deformation, types of stresses and strain. Hooke's law, stress strain diagram for ferrous and non ferrous materials modulus of elasticity. rigidity and bulk modules of materials Stress in bars of varying cross sections, composite sections and compound sections Thermal stresses and strains, thermal stresses in composite sections. Poisson's ratio, volumetric strain, relation between different modulus, strain energy.		
UNITS-2: S.F. AND B.M. DIAGRAMS	8	20
S.F. and B.M. Diagrams : Definition, types of loading types of beams, shear force and bending moment sign conventions S.F. and B.M. diagrams for cantilever simply supported and overhanging beams with point or concentrated loads uniformly distributed loads and combination of point and U.D.L. Point of contra flexure, numerical problems.		
UNITS-3: SPRING and Columns and Struts	8	20
Spring: Definition types and use of springs, leaf spring, helical and spiral springs, Stiffness of a spring and maximum shear stress, defection of spring . Spring Classification based on size shape and load. **Columns and Struts:** Concept of column and struts Modes of failure Types of column; long and short Buckling loads Slenderness ratio Euler's formula (without proof) Rankine's formula		

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UNIT-4: PRINCIPLE STRESSES AND STRAIN	8	20
Principle stresses and strain:- Transformation of plane stresses, Principle stresses, Maximum shear stresses, Mohr's circle for plane stresses, Plain strain and its Mohr's circle representation, Principle strains, Maximum shear strain. Combined Loading: Components subjected to bending, torsion & axial loads.		
UNIT 5: DEFLECTION OF BEAM	6	20
Deflection of beam:- Concept of deflection of a beam. Use of standard formula for calculating deflection (for point loads, U.D.L. and their combination) Cantilever beam , Simply supported beam		
TOTAL	**36**	**100**

Reference:

- S. C. Crandall, N. C. Dahl, and T. J. Lardner, An Introduction to the Mechanics of Solids, 2nd Ed, McGraw Hill, 1978.
- E. P. Popov, Engineering Mechanics of Solids, Prentice Hall, 1990.
- I. H. Shames, Introduction to Solid Mechanics, 2nd Ed, Prentice Hall, 1989.
- S. P. Timoshenko, Strength of Materials, Vols. 1 & 2, CBS publ., 1986.

Course outcomes:

On successful completion of the course, the student will be able to:

1. Apply concepts of strength of materials to obtain solutions to real time Engineering problems.
2. Able to analyze the different types of loading and the consequent deflection.
3. Able to analyze different types of stress and strain in the beam or load applied.
4. Interpret hardness curve measured after heat treatment.
5. Find correlation between material structure and its creep.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S		M									
2		S		S			M		M		S	M
3	S		S		S	M		S		S	M	
4		M								M		S
5	S							S				S

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S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course
	End of Course survey			End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

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Course Title: MATERIAL SCIENCE		Course Code	: DME233
Semester	: **III**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: 4**:0:0**	Credits	: **3 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: **DIPLOMA IN MECHANICAL ENGINEERING**			

Pre-requisites:

Students should have knowledge on physics 1 and physics 2 tought in 1st and 2nd semester.

Course Objectives:

1. The main objective of this course is to provide the basic knowledge needed to explore the discipline of materials science and engineering.
2. To develop the knowledge of how the structure of materials is described technically, including crystallography, microstructure, defects, and phase diagrams
3. To develop the knowledge of how the properties of materials are described technically and how material failure is analyzed
4. To introduce the concepts of structure-property relationships
5. To develop knowledge in various class of materials and their applications

Course Content:

Topic and Contents	Hours	Marks
UNIT-1:	6	20
Structure of metal: Crystal structure, miller indices, lattices, imperfections, elementarytreatment of point and line defects and their relation to mechanical properties. **Deformation**: Slip, twinning, effect of cold and hot working on mechanical properties, principles of recovery, re-crystallization and gain growth.		
UNITS-2:	8	20

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Creep: Basic consideration in the selection of material for high and low temperature service,creep curve, effect of material variables on creep properties, brittle failure at low temperature. **Solidification**: Phases in metal system, lever rule, solidification of metal and alloys, solid solution, eutectic, eutectoid and inter-metallic compounds, Iron carbon equilibrium diagram, TTT-diagram.		
UNITS-3:	08	20
Heat Treatment: Principles and purpose of heat treatment of plain carbon steels, annealing, normalizing, hardening, tempering, isothermal treatment, case hardening – carburizing, nitriding etc, precipitating hardening of aluminium alloys.		
UNIT-4:	6	20
Engineering Materials: Plain Carbon steels, Effects of alloying elements, properties, uses, springs, and wear resisting steels, IS standards codes for steels. Low alloy steels. Stainless, Magnetic materials for high and low temperature service. Brasses and bronzes; Aluminium base alloys.		
UNIT 5:	8	20
Testing of Metals and Alloys : Identification tests : appearance, sound, spark, weight, magnetic, microstructure, filing **Fiber Reinforced Composites**: General characteristics, Applications, Introduction to Fibers –glass, carbon, Kevlar 49 fibers. Matrix –Polymeric, Metallic, Ceramic Matrix, Coupling agents and fillers.		
TOTAL	**36**	**100**

Reference:

- William D. Callister, Material science and Engineering and Introduction, Wiley, 2006.

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- V. Raghavan, Materials Science and Engineering, Fifth Edition, Prentice Hall Of India, 2008.
- G. E. Dieter, Mechanical Metallurgy, McGraw Hill, 1988.
- W. F. Smith, Materials Science and Engineering (SIE), Tata-McGraw Hill, 2008.
- AVNER, Introduction to Physical Metallurgy, Tata-McGraw Hill, 2008.

Course outcomes:

On successful completion of the course, the student will be able to:

1. Understand how materials are formed and their classification based on Atomic arrangement
2. Describe the mechanical behaviour of metallic systems and its Importance
3. Evaluate system for fatigue failures
4. Gain knowledge on different class of materials and their applications
5. Evaluate the failure mode of the materials and to know the steps to be taken to prevent the failures

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1		S		S								
2	S		M		M	S		S	M	M		M
3		S	S	M			M		S			
4	S							M			S	S
5	S	S										

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9

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		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course
	End of Course survey			End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Course Title: PROCESS IN MANUFACTURING		Course Code	: DME237
Semester	: **III**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: 4**:0:0**	Credits	: **3 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: **DIPLOMA IN MECHANICAL ENGINEERING**			

Pre-requisites:

Students should have the knowledge of basic of lathe machine, jigs and fixtures, work holding device etc

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Course Objectives:

1.To help students acquire knowledge about the behavior and manufacturing properties of all engineering materials and basic concepts of foundry and casting processes.
2. To teach students various methods of welding, cold and hot working and forming.
3. To enable students understand forging, molding and powder metallurgy processes in detail.

Course Content:

Topic and Contents	Hours	Marks
UNIT-1:	8	20
Metal Forming Process- Forging- Forging process, open die forging, closed die forging (drop forging), Cold and hot forging, forging defects and their remedies. Rolling- Elementary theory of rolling, types of rolling mills, rolling defects and remedies. Press forming- Types of presses, working, selection of press dies, die material, Press operations. Extrusion- Types of extrusion - Hot and Cold, Direct and Indirect. Drawing- Pipe drawing, Tube drawing.		
UNITS-2:	8	20
Metal Cutting- Elementary theory of metal cutting, chip formation, continuous chip, continuous chips with B.U.E., & discontinuous chips. Mechanism of chips formation, geometry of chip formation, forces on chip. Merchant's diagram, Tool life, Economics of tool life, Factors affecting Machinability. Gear manufacturing processes- Gears hobbing, Gear shaping. Gear shaving, gear burnishing		
UNITS-3:	8	20

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Newer Machining Processes: Mechanical Processes- Ultrasonic Machining (USM): Introduction, fundamental principles, process, advantages and Limitation, application, Abrasive jet machining (AJM) - Introduction, principles, process, advantages and Limitation, application. Electro Chemical Processes- Electro chemical machining (ECM) - Fundamental principles, process, applications. Electrical Discharge Machining (EDM) - Principle of operation, material removing rate, dielectric fluid and applications of EDM. Electro beam machining (EBM) - Introduction, principle processes and applications		
UNIT-4:	6	20
Metallic Coating Processes: Metal spraying, galvanising, Electroplating and anodising. **Plastic Process - Working principle, Advantages and limitation of following process:** Injection moulding, Blow moulding, Compressive moulding **Welding:** Principles of Welding, **Arc Welding:** TIG and MIG processes and their parameter selection, atomic hydrogen welding, welding of cast iron, welding electrode – types, composition, specification. **Resistance Welding:** Principle, equipment and processes. Thermit Welding, brazing & soldering, Internal and external welding defects, Inspection & testing of weld.		
UNIT 5:	6	20
Jigs and Fixtures: Importance and use of jigs and fixtures, Principle of location, Locating devices Clamping devices, Types of jigs-Drilling jigs, bushes (fixed, liker, slip). Types of drilling jig - Template jigs, plate jig, channel jig, leaf jig. Fixture for milling, Advantages of jigs and fixtures		
TOTAL	**36**	**100**

Reference:

1. Production Engineering : R.K. Jain
2. Manufacturing Science : Amitabha Ghosh & A.K. Mallik
3. Production Technology : Pandey.Singh
4. Manufacturing Technology : Gupta & Adithan
5. Modern Machining Methods : M.Adithan
6. Production Engineering : P.C. Sharma (S. Chand)
7. Introduction to Mfg. Process : John Schely (Mc-Graw Hill

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Course outcomes:

On successful completion of the course, the student will be able to:

1. Demonstrate an understanding of various materials and their properties employed in different manufacturing processes.
2. Understand the principles of foundry and casting.
3. Choose materials in a manufacturing process based on their properties.
4. Study in detail about the modern welding processes followed in industries.
5. Conduct experiments on various manufacturing processes and to automate them.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1												
2			M		M		S			S		S
3	S			S				M			M	
4		S				M	S					
5												

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		

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	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course
	End of Course survey			End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Course Title: PROCESS IN MANUFACTURING -1 LAB		Course Code	: DME267
Semester	: **III**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: 0**:0:2**	Credits	: **2 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **-**
Continuous Internal Evaluation	: **60 Marks**	SEE	: **40 Marks**
Programmes: **DIPLOMA IN MECHANICAL ENGINEERING**			

Pre-requisites:

Students should have knowledge on manufacturing and casting process and lathe machine.

Course Objectives:

1. To train the students in different operation on lathe machine
2. To impart skill in manufacturing process..
3. To cultivate safety aspects in handling of tools and equipment.

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Course Content:

Topic and Contents
1.To draw the layout of machine and write the description of all machine 2. To perform taper turning on a given work piece on lathe machine. 3. To study about the casting and different steps used in casting process. 4. To study about the merchant's diagram and different forces acting on chips. 5. To study about the planar machine and its different parts and operation associated with it. 6. To perform hexagonal nut cutting on milling machine on aluminium rod by using indexing plate. 7. To study about the oxyacetylene gas welding and perform a butt welding on a work piece. 8. To study about the non conventional machining process and any two machining process. 9.To perform drilling operation in any metal sheet 10. To study about the grinding machine and different operation performed in it.

Reference:

Course outcomes:

On successful completion of the course, the student will be able to:

1. Welding and soldering operations.
2. Fabrication of simple sheet metal parts.
3. Drilling operation
4. Operation on lathe machine.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1												S
2	S		M			S				S		
3				M				M		M	M	
4		S										

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S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

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Course Title: STRENGTH OF MATERIAL LAB		Course Code	: DME271
Semester	: **III**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: 0**:0:2**	Credits	: **2 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **-**
Continuous Internal Evaluation	: **60 Marks**	SEE	: **40 Marks**
Programmes: **DIPLOMA IN MECHANICAL ENGINEERING**			

Pre-requisites:

Students should have knowledge on strength of material subject.

Course Objectives:

1. To help the students gain experience in the determination of creep for various materials and understand how this property varies with time.
2. To provide students an opportunity to learn how to measure hardness of materials and analyze how heat treatment affects hardening.
3. To impart knowledge on phase development of two isomorphism metals.
4. To teach students determine phases present in a material using XRD graph.

Course Content:

Topic and Contents
1) Study of extensometers
2) Study and operation of UTM
3) Tensile test on mild steel specimen and plotting stress strain curve
4) Bending test on timber beams.
5) Compression test on common structural materials viz. timber, cast iron etc.
6) Determination of toughness of cast iron and mild steel specimen by Charpy and Izod test.
7) Hardness test by Brinell and Rockwell test.
8) Determination of deflection for various types of loading
9) Torsion test on brass and mild steel
10) Determination of stiffness of close coiled spring

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Course outcomes:

On successful completion of the course, the student will be able to:

1. Interpret hardness curve measured after heat treatment.
2. Find correlation between material structure and its creep.
3. Index XRD plot and determine phases of a material.
4. Perform non destructive failure analysis.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1		S			M				M			
2	S			S		S		M		M	S	M
3			M				S			S		
4	S	S										

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	

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	End of Course survey		End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Course Title: MATERIAL SCIENCE LAB		Course Code	: DME273
Semester	: **III**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: 0**:0:2**	Credits	: **2 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **-**
Continuous Internal Evaluation	: **60 Marks**	SEE	: **40 Marks**
Programmes: **DIPLOMA IN MECHANICAL ENGINEERING**			

Pre-requisites:

Students should have knowledge on engineering materials and technology.

Course Objectives:

1. To train students in the preparation of samples to perform characterization such as microstructure, volume fraction of phases, determination of porosity, film thickness, grain size and avoid measurement.
2. To help the students understand the microstructure of engineering materials, phase diagrams, various testing standards and acquire knowledge on the material behaviour by conducting tests.
3. To teach students how to improve the mechanical properties of materials by various methods.

Course Content:

Topic and Contents
1. To study the Engineering Materials, significance and classifications.
2. Study of crystals structures, Study of Models BCC, FCC, HCP, stacking sequence, tetrahedral and Octahedral voids
3. To calculate the effective numbers of atoms, co-ordination no.

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packing factors, c/a ratio for BCC, FCC & HCP structures.
4. To prepare metallic samples for metallographic examination and to study the principle and construction of the Metallurgical Microscope.
5. Effect of carbon percentage on hardness of steel
6. Study of Phase Diagrams: concept of phase rule: Fe-C & Cu-Zn.
7. Study of Creep, Study of anisotropy: Glass 'Fiber and Carbon' Fiber Composites.
9. Study of various types of fractures, Brittle fracture/ductile.
10. Study of Iron-Carbon Equilibrium Diagram and sketch the various structures present at room temperature.

Reference:

Course outcomes:

On successful completion of the course, the student will be able to:

1. Acquire experimentation skills in the field of metallurgy.
2. Develop theoretical understanding of the mechanical properties of materials by performing experiments.
3. Apply the knowledge of phase diagrams and testing methods in related areas.

Know how to improve structure of materials for various industrial applications.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	M				M			S			S	
2		S	M			S	M			S		
3	S			S					M			M

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
ASSIGNMENTS	CIE	Attendance	Student	Every lab	10	Attendance Register	

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		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Course Title: WORKSHOP TECHNOLOGY LAB		Course Code	: DME283
Semester	: **III**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: 0**:0:2**	Credits	: **2 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **-**
Continuous Internal Evaluation	: **60 Marks**	SEE	: **40 Marks**
Programmes: **DIPLOMA IN MECHANICAL ENGINEERING**			

Pre-requisites:

Students should have knowledge on the basic engineering drawing -1 & 2

Course Objectives:

1. To train the students in safety handling of tools, equipment and machineries.
2. To carry out exercise in metal removal process by using drilling and lathe machines.

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3. To train the student in handling lathe machine
4. To provide knowledge about the casting molding etc

Course Content:

Topic and Contents
1. To study of single point cutting tool geometry & to grind the tool to the given tool geometry. Write importance of various angles and to prepare a capacity chart of the Tool & cutter grinder. 2. Prepare a hexagonal/octagonal nut using indexing head on milling m/c and to cut bsw/ metrics internal threads on lathe (to meet with job). 3. To prepare the capacity chart for a lathe machine. 4. To cut multi-start square/metric thread. 5. To cut external metric threads & to mesh it with the nut. 6. Prepare the process chart for the job. 7. To prepare the job by eccentric turning on lathe machine drawing. 8. To study shaper machine & its mechanism and calculate its quick return ratio. 9. To prepare a job on shaper from given mild Steel rod drawing 10. To study the effect of rake angle on chip thickness ratio and the shear angle in orthogonal machining. 11. Using drill dynamometer measure the torque and thrust force in drilling and to plot the characteristics, torque, force & power v/s speed & feeds. 12. To measure effective diameter of a screw thread by three wire method. 13. To perform alignment test on a centre lathe 14. To calibrate pneumatic comparator and measure taper of a given work piece

Reference:

Course outcomes:

On successful completion of the course, the student will be able to:

1. Basic operation in drilling and lathe.
2. Basic operation in shaper machine
3. Basic operation in milling machine how to cut gear and nuts.

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4. Basic about how the selection of tool can be done for different machine and operation.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1		S										M
2			S	S			M	M	M	M	S	
3			M		M	S		S	S	M	M	
4	S	S							S			M

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

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Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Course Title: **BASIC ECONOMICS AND SOCIAL SCIENCES**		Course Code	: **DPHS231**
Semester	: **III**	Core / Elective	: **Elective**
Teaching Scheme in Hrs (L:T:P)	: **2:0:0**	Credits	: **3 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **25**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: **Diploma in Electrical Engineering**			

Pre-requisites:

Knowledge of Basic Physics at Sec. and Sr. Sec. Level.

Course Objectives:

6. This course supposed to give the knowledge of basic concept of economics.
7. Analyze the Applications and scope of Micro Economics.
8. Analyze the Concept of Demand and supply.
9. Evaluate the Basic concept of economics in social reforms in India.
10. Analyze the problems faced by Political Economy.

Course Content:

Topic and Contents	Hours	Marks
UNIT-1: Introduction	05	20
Definition meaning, nature and scope of economics.		
UNITS-2: Micro Economics	05	20
Definition, meaning and scope of Micro Economics. Importance and limitations.		
UNITS-3: Concept of Demand and supply	05	20
Utility Analysis, Law of Demand, Law of Supply		
UNIT-4: Introduction to social Sciences	05	20
Social Change: Causes and impacts, reforms in India.		
UNIT 5: Political Economy	05	20

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New Economic reform, Entrepreneurship and Small scale business management.		
TOTAL	**25**	**100**

Reference:

1. Micro Economics by M. L. Sethi
2. Micro Economics by T.R Jain

Course outcomes:

On successful completion of the course, the student will be able to:

5. The course content gives full knowledge to learn nature and scope of economics.
6. Find the solution of problem dependent on Micro Economics.
7. Solve the problems related to Law of Demand, Law of Supply.
8. Enable students to solve difficulties face in social reforms and political economics.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	**Programme Outcomes**											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S				S			M			
2	M	S		S				S			S	
3	S	M			S				M	S		
4	S	S		S			S					S

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	**Educational Component**	**Weightage (%)**
1	Remembering and Understanding	30
2	Applying the knowledge acquired from the course	40
3	Analysis and Evaluation	30

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Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course
	End of Course survey			End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Course Title: METROLOGY LAB	Course Code : DME279

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Semester	: **III**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: 0**:0:2**	Credits	: **2 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **-**
Continuous Internal Evaluation	: **60 Marks**	SEE	: **40 Marks**
Programmes: **DIPLOMA IN MECHANICAL ENGINEERING**			

Pre-requisites:

Students should have knowledge on metrology subject, metal cutting and machine tools.

Course Objectives:

1. Demonstrate the usage of metrology lab equipment.
2. Know the working principles of different instruments.
3. Familiarize different machine tools used in production floor.
4. Impart hands on experience on lathe, drilling, shaping, milling, slotting, grinding and tool and cutter grinding machines.

Course Content:

Topic and Contents
1) To study about the basics of the engineering metrology and measurements. 2) To determine the diameter of the given specimen by using the precision measuring instruments like Vernier caliper, Micrometer and comparing the results. 3)To calibrate the given Vernier Caliper using Slip Gauge 4) To calibrate the given Micrometer using Slip Gauge. 5) To determine the height of the given specimen by using the precision measuring instruments like Vernier height gauge and Vernier depth gauge and comparing the results. 6) To measure gear parameters for the given spur gear by gear tooth Vernier. 7) To measure the taper angle of the given specimen using sine bar 8) To measure the angles of given specimen using bevel protractor. 9) To measure the pitch &angle of the screw thread. 10) To measure thread parameter of a given screw thread using profile projector.

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11) To measure the displacement using Linear Variable Differential Transformer.

Reference:

Course outcomes:

On successful completion of the course, the student will be able to:

1. Apply the procedures to measure length, width, depth, bore diameters, internal and external tapers, tool angles, and surface roughness by using different instruments.
2. Measure effective diameter of Thread profile using different methods
3. Conduct different machine alignment tests
4. Demonstrate knowledge of different machine tools used in machine shop.
5. Perform step, taper turning, knurling and threading.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1												
2		S	M		M		S		S		M	
3				S				M		M		S
4							M			S		
5	S											

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	

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		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Course Title: MACHINE DESIGN LAB	Course Code : DME285
Semester: **III**	Core / Elective : **Elective**
Teaching Scheme in Hrs (L:T:P) : 0**:0:2**	Credits : **2 Credits**
Type of course : **Lecture + Assignments**	Total Contact Hours : **-**
Continuous Internal Evaluation : **60 Marks**	SEE : **40 Marks**
Programmes: **DIPLOMA IN MECHANICAL ENGINEERING**	

Pre-requisites:

Students should have the knowledge on engineering drawing and machine parts.

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Course Objectives:

1. To understand the design methodology for machine elements.
2. To analyze the forces acting on a machine element and apply the suitable design methodology.
3. To understand the various standards and methods of standardization.
4. To apply the concept of parametric design and validation by strength analysis.

Course Content:

Topic and Contents
1. Selection of material & IS coding 2. Selecting fit & assigning tolerances 3. Examples of Production considerations. 4. Problems on Knuckle and Cotter joint. 5 .Problems on Torque: Keyed joints & shaft couplings 6. Design of screw fastening 7. Bending: Beams, Levers etc. 8. Combined stresses: Shafts, brackets, eccentric loading 9. Problems on Universal Joint. 10. Problems on Bearing.

Reference:

Course outcomes:

On successful completion of the course, the student will be able to:

1. Analyze and select machine elements/components.
2. Know the applications of the various elements, materials used to make them, and methods used
3. Integrate various machine elements and components into the design of a machine or mechanical system through a design project.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S			M			S		M			S
2			M			M		M		S		
3		S			S						M	

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

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The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

EMPLOYABILITY SKILLS – III

EM 201 **C (L, T, P) = 1 (1, 0, 0)**

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S.NO.	TOPIC	DETAILS	CONTACT HOURS
1	Communication	Negotiation & Reasoning, Interaction Process, Interpersonal Relationship	5
2	Quantitative	Number System, Ratio & Proportion, Partnership, Percentage, Profit &Loss	5
3	Reasoning,	Analytical Reasoning, Coding & Decoding, Series	5
4	Motivation	Leadership & Styles, Self Esteem, Winning strategies,	5
5	Preparation, presentation	Self Esteem, Preparation of CV, Writing Application, Placement Mantra	5

Course Title: FLUID MECHANICS AND MACHINE		Course Code	: DME232
Semester	: **IV**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: 4**:0:0**	Credits	: **3 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: **DIPLOMA IN MECHANICAL ENGINEERING**			

Pre-requisites:

Students should have knowledge on the physics 1 and 2

Course Objectives:

The aim of this course is to introduce and explain basic fundamentals of Fluid Mechanics, which is used in the applications of Aerodynamics, Hydraulics, Marine Engineering, Gas dynamics etc. Also to learn fluid properties and hydrostatic law – to understand the importance of flow measurement and its applications in Industries and to obtain the loss of flow in a flow system.

Course Content:

Topic and Contents	Hours	Marks
UNIT-1:	6	20
Introduction to fluids: Definition of fluid, Difference between solid and fluid, Application of fluid dynamics **Properties of fluids:** Intensive and Extensive properties, Continuum, density, specific gravity, specific heat, viscosity, surface tension etc.		

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UNITS-2:	8	20
Fluid statics: pressure, manometer, hydrostatic forces on submerged on plane surfaces, stability of immersed and floating bodies, fluids in rigid body motion etc. **Fluid kinematics:** Lagrangian and Eulerian description of fluid flow, Velocity and Acceleration Fields, Fundamentals of flow visualization, streamlines, stream tubes, path lines, streak lines and timelines, deformation of fluid elements.		
UNITS-3:	8	20
Orifice discharging free, Jet, vena contracts, co-efficient of contraction, velocity and discharge, coefficient of resistance. Orifices and mouthpieces Nozzles and weirs. **Flow Through Pipes**: Reynolds's experiment Darcy's Weisback equation. Loss of head due to sudden enlargements, contraction, entrance, exit obstruction, bend, pipe fittings. Total and Hydraulic gradient lines, Flow through pipe line. Pipes in series, parallel Transmission of power through pipes.		
UNIT-4:	8	20
Laminar Flow: Simple solution of Navier Stokes equations. Hagen – Poiseuille flow. Plans Poiseuille flow and coutte flow. Turbulent Flow; Variation of friction factor with Reynold's number. The Prandt Mixing length hypothesis applied to pipe flow, velocity distribution in smooth pipes, Rough pipes. The Universal pipe friction laws, Colebrook. White formula. **The Boundary Layer**: Description of the boundary layer. Boundary Layer thickness boundary layer separation and control.		
UNIT 5:	6	20
Hydraulic Machines : 1.1 Description, working principle of following		

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machines 1.1.1 Hydraulic accumulator 1.1.2 Hydraulic intensifier 1.1.3 Hydraulic press 1.1.4 Hydraulic coupling and torque converter		
TOTAL	**36**	**100**

Reference:

- F. M. White, 1999, Fluid Mechanics, 4th Ed, McGraw-Hill.
- B. R. Munson, D. F. Young and T. H. Okhiishi, Fundamentals of Fluid Mechanics, 4th Ed, John Wiley, 2002.
- R. W. Fox and A. T. McDonald, 1998, Introduction to Fluid Mechanics, 5th Ed, John Wiley.
- S. W. Yuan, 1988, Foundations of Fluid Mechanics, Prentice Hall of India.

Course outcomes:

On successful completion of the course, the student will be able to:

1. To find frictional losses in a pipe when there is a flow between two places.
2. Calculate the conjugate depths in a flow.
3. Analyze the model and the prototype.
4. Find the dependent and independent parameters for a model of fluid flow.
5. Explain the various methods available for the boundary layer separation.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1		S										
2			M				S		S		M	
3				M	M	S				M		
4		M						S			S	S
5	S			S								

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What	To	When/where	Max	Evidence	Contributing

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			whom	(Frequency in the course)	Marks	collected	to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course
	End of Course survey			End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Course Title: THERMODYNAMICS AND IC ENGINES	Course Code : DME234
Semester : **IV**	Core / Elective : **Core**

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Teaching Scheme in Hrs (L:T:P)	: 4**:0:0**	Credits	: **3 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: **DIPLOMA IN MECHANICAL ENGINEERING**			

Pre-requisites:

Students should have the basic knowledge on thermodynamics.

Course Objectives:

1. To enable the students understand the principles, working and performance of IC engines
2. To introduce students to the working of compressors, steam nozzles and various refrigeration and air-conditioning systems.
3. To teach students the principles of waste heat recovery and thermal storage systems.

Course Content:

Topic and Contents	Hours	Marks
UNIT-1:	8	20
Basic Concept and Gas Laws : Thermodynamics, property-Intensive and Extensive, system - open, closed and isolated ,Energy - Internal energy, potential energy, kinetic energy, heat, work, specific heat, enthalpy, Boyle's law, Charles's law, Joule's law, Characteristics gas equation, gas constant, mol, universal gas constant and molar specific heats **Laws of Thermodynamics**: Zeroth law of thermodynamics ,First law of thermodynamics, Second law of thermodynamics Concept of entropy, Constant volume, constant pressure, isothermal, adiabatic polytrophic processes, throttling and free expansion, work done during these processes.		
UNITS-2:	8	20

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Availability : Available and unavailable energy , Effectiveness , Irreversibility in flow and non-flow process. **Formation of Steam and its Properties :** Generation of steam at constant pressure, various stage of steam- wet steam, dry steam saturated steam, dryness fraction, super heated steam, degree of super heat. Critical point, triple point, thermodynamic properties of steam - specific volume, specific enthalpy, specific internal energy, specific entropy. **Gas Power Cycles:** Otto cycle, Diesel cycle, Dual combustion cycle, Atkinson cycle, Joule / Brayton cycle , Air standard efficiency		
UNITS-3:	6	20
Principles of Internal Combustion Engines : Introduction and Classification of I.C Engines, Working principle of four stroke and two stroke cycle and their comparison, Working and special features of petrol and diesel engines and their comparison and applications, I.C. engine terms - Bore, stroke, dead centers, crank throw, compression ratio, clearance volume, piston displacement and piston speed, Valve timing diagrams (Theoretical & Actual), firing order, Super charging of I.C. engines		
UNIT-4:	6	20
Petrol Engines : Concept of Carburetion, Air fuel ratio , Simple carburettors and its limitations, Description of Solex carburettors, Multi point fuel injection system, Mechanical and electrical feed pump, Description of coil ignition system and Magneto ignition system **Diesel Engines**: Description and working of Fuel feed pump, Injection of fuel, air and airless injection and fuel injectors, Introduction to swirl and open combustion chambers		
UNIT 5:	8	20
Cooling, Lubrication and Governing : Necessity of		

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engine cooling ,properties of coolants , Methods of cooling and their merits and demerits Function of Lubrication, lubrication systems of I.C. Engines Properties of lubricants, Governing methods of I.C. Engines. **I.C. Engines Performance:** Introduction to basic performance parameters, Measurement of brake power by rope brake, prony brake and hydraulic dynamometer, Measurement of Indicated power by engine indicator and Morse test method. Energy balance sheet of I.C. engines and finding various efficiencies		
TOTAL	36	100

1. Thermal Engineering (Hindi) Verma & Gulecha
2. Thermal Engineering Vol.1 Mathur & Mehta.
3. Thermal Engineering R.K.Purohit.
4. Thermal Engineering R.S. Khurmi

Course outcomes:

On successful completion of the course, the student will be able to:

1. Solve problems on internal combustion engines and prepare heat balance sheet.
2. Get an insight of various components and principles of engines, compressors etc.
3. Design refrigeration and air-conditioning system for a particular application.
4. Demonstrate the knowledge of waste heat recovery and thermal storage.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1		S						S				
2	S		M	S		S			S		S	
3					M					M		M
4		S		M			M					

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What	To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes

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DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course
	End of Course survey			End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Course Title: AUTOMOBILE ENGINEERING		Course Code	: DME242
Semester	: **IV**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: 4**:0:0**	Credits	: **3 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: **DIPLOMA IN MECHANICAL ENGINEERING**			

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Pre-requisites:

Students should have knowledge upon dynamics of machine and design of machine elements.

Course Objectives:

1. To broaden the understanding of students in the structure of vehicle chassis and engines.
2. To introduce students to steering, suspension, braking and transmission systems.
3. To introduce students to engine auxiliary systems like heating, ventilation and air-conditioning.
4. To teach students about the importance of alternate fuels and modifying the engine suitably.

Course Content:

Topic and Contents	Hours	Marks
UNIT-1:	8	20
1. Introduction: Classification of Automobiles Chassis and body 1.3 Components of vehicle – basic structure, power unit, transmission system, accessories, superstructure. (Basic functions and arrangements) 1.4 Layout of conventional type vehicle (front engine rear wheel drive) 1.5 Vehicle dimensions – wheel base, wheel track, front & rear overhang, overall dimensions, minimum ground clearance, minimum turning radius.		
UNITS-2:	8	20

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	Transmission Systems : Transmission requirements, general arrangement of clutch, gear box and rear axle transmission, general arrangement of rear engines and vehicles with live axles. General arrangement of Dead axle and axle-less transmission, De-Dion drive, arrangement of front engine and front wheel drives, four wheel drive transmission. **Clutches**: Principle of friction clutch, single and multiplate clutches, centrifugal clutch. Friction materials. Bonding materials. Fluid fly wheel clutch.		
	UNITS-3:	8	20
2.	**Frame and Body:** 2.1 Frame 2.1.1 Function of frame, loads or frame 2.1.2 Frame construction, sub-frame 2.1.3 Defects in frame chassis repair and alignment 2.1.4 Frame less construction 2.2 Body 2.2.1 Types and construction (parts of body) 2.2.2 Main features – strength, stiffness, space air drag, stream lining , weight, vibration, protection against weather, corrosion, safety and economy considerations. 2.2.3 Body alignment 2.2.4 Bumpers – types and functions **Steering System** : Steering geometry, Ackermann steering, Center point steering, Power steering.		
	UNIT-4:	6	20

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Suspension : Independent suspension; Perpendicular arm type, Parallel arm type. Dead axle suspension. Live axle suspension, air suspension, shock absorbers. **Wheels, Tyres and Brakes** : Wheel and tyre requirements, tyre dynamics, mechanical and hydraulic brakes, shoe arrangements and analysis, disc brakes, braking effectiveness relationship for 4 wheel drive.		
UNIT 5:	6	20
Automotive Air Conditioning: Introduction, Loads, Air conditioning system Components, Refrigerants, Fault Diagnosis. **Automotive Safety**: Safety requirements, Safety Devices, Air bags, belts, radio ranging, NVS (Night Vision System) GPS (Global Positioning System) etc.		
TOTAL	**36**	**100**

Reference:

1. Automobile Engineering, R.K.Sharma
2. Automobile Engineering, Kirpal Singh, Vol. 1 & 2
3. Automotive Chassis and Body, P.L.Kohli, Vol.1 & 2
4. Vehicle Engine and Technology, Heisler, ELBS

Course outcomes:

On successful completion of the course, the student will be able to:

1. Develop chassis and identify suitable engine for different applications
2. Formulate steering, braking and suspension systems
3. Select a suitable conventional and automatic transmission system
4. Identify the usage of Electrical vehicles / Hybrid vehicles and power plants

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	M		M		S			S		S		
2		S		S		M	S		M		M	
3	S	M	S		S		M	S	S	S		M
4				S		M						

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

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The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course
	End of Course survey			End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

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Course Title: Automobile Engineering Lab		Course Code	: DME282
Semester	: **IV**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: 0**:0:2**	Credits	: **2 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **-**
Continuous Internal Evaluation	: **60 Marks**	SEE	: **40 Marks**
Programmes: **DIPLOMA IN MECHANICAL ENGINEERING**			

Pre-requisites:

Students should have basic knowledge about vehicles parts and components.

Course Objectives:

1. To train the students in assembling and disassembling of engine parts.
2. To impart skill in different system like fuel system, steering system etc
3. To cultivate safety aspects in turbochargers superchargers etc.

Course Content:

Topic and Contents
1 Disassembling and assembling of multi-cylinder petrol and diesel engines and study of their parts.
2. To disassemble and assemble a 2-stroke petrol engine.
3. To disassemble and assemble a 4-stroke motor cycle engine and study of various engine parts.
4. Load test on a single cylinder 4-stroke diesel engine using a rope brake dynamometer and calculate volumetric and thermal efficiency and draw a heat balance-sheet.
5. Study of carburettors and MPFI system and disassembling and assembling of their parts.
6. To calculate valve timing of a multi-cylinder petrol engine and valve tappets adjustment.
7. Disassemble all the parts of a fuel injection pump and its parts

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study.
8. To disassemble the governor and study its various parts.
9. To study about the turbocharger and super charger.
10. Study about the construction of different types of automobile wheels and tyres and draw their sketches.

Reference:

Course outcomes:

On successful completion of the course, the student will be able to:

1. Student will know how to assemble and disassemble engine parts.
2. Student will know about the different types of system like braking system, steering system
3. Student will know about the mechanism of clutches
4. Students will know the mechanism of gear box.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S						M					
2			M	S		S			M		M	
3		S		M			S	S		S		
4	M				M							S

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	

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		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Course Title: FLUID MECHANICS AND MACHINE LAB		Course Code	: DME274
Semester	: **IV**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: 0**:0:2**	Credits	: **2 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **-**
Continuous Internal Evaluation	: **60 Marks**	SEE	: **40 Marks**
Programmes: **DIPLOMA IN MECHANICAL ENGINEERING**			

Pre-requisites:

Proper knowledge about the fluid mechanics and hydraulics.

Course Objectives:

1. To enable students understand the properties of fluid, types of fluid and types of flow.
2. To teach students about flow measuring devices such as orifice meter and venture.
3. To help the students acquire knowledge about flow through pipes.

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Course Content:

Topic and Contents
1. Determine Metacentric height of a given body. 2. Determine C_d, C_v & C_c for given orifice. 3. Determine flow rate of water by V-notch. 4. Determine velocity of water by pitot tube. 5. Verify Bernoulli's theorem. 6. Determine flow rate of air by Venturi meter 7. Determine flow rate of air by orifice meter 8. Determine head loss of given length of pipe. 9. Determine flow rate of air by nozzle meter.

Reference:

Course outcomes:

On successful completion of the course, the student will be able to:

1. Analyze various flow problems and fluid characteristics.
2. Determine the losses of flow through various mediums like pipes.
3. Apply the concept of fluid mechanics to design various systems.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S							S			
2			M		M	S		M				S
3	S			S			M			S		

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What	To whom	When/where (Frequency in the	Max Marks	Evidence collected	Contributing to course outcomes

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				course)			
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Course Title: THEORY OF MACHINE -1 LAB		Course Code	: DME278
Semester	: **IV**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: 0**:0:2**	Credits	: **2 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **-**
Continuous Internal Evaluation	: **60 Marks**	SEE	: **40 Marks**
Programmes: **DIPLOMA IN MECHANICAL ENGINEERING**			

Pre-requisites:

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Students should have knowledge on theory of machine –I subject.

Course Objectives:

1) Students will learn the inversion of bar in chain mechanism.
2) Students will gain knowledge how governors work.
3) Students will understand the basics of cam and follower

Course Content:

Topic and Contents
1. Study of inversions of four bar chain mechanism 2. Study of inversions of single slider crank chain mechanism (a) crank slotted lever mechanism (b) Whitworth quick return motion mechanism 3. Dynamic force analysis of single cylinder four stroke engine. 4. Study of flywheel 5. Study of governor 6. Study of different cam and follower 7. Study of different gear trains 8. Study of power transmission methods 9. Study of different types of break and dynamometer 10. Study of types of vibration and their measurement methods 11. Study of dynamic balancing procedure of rotating parts

Reference:

Course outcomes:

On successful completion of the course, the student will be able to:

1) Know how to do the balancing of rotating parts.
2) Know how to operate brakes and dynamometer.
3) Know how the force analysis is done in single cylinder four stroke engines.
4) Know the working of flywheel and governor in vehicle.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12

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1	S											
2			M		M	S		M		M		S
3		S							S		S	
4	S			M		S						

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

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Course Title: **ENTREPRENEURSHIP**		Course Code	: **DHS232**
Semester	: **IV**	Core / Elective	: **Elective**
Teaching Scheme in Hrs (L:T:P)	: **2:0:0**	Credits	: **2 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **35**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: **Diploma in Electrical Engineering**			

Pre-requisites:

Knowledge of Basic Business Market and Industry.

Course Objectives:

11. This course supposed to give the knowledge of how an entrepreneur can make his business successful.
12. Analyze the Location of Industrial Units.
13. Analyze how the size and pricing of a firm can affect the business.
14. Evaluate the Financing of Small Industries.
15. Analyze the problems faced by small enterprises.
16. Create the basic concept of Entrepreneurship.

Course Content:

Topic and Contents	Hours	Marks
UNIT-1: PROMOTION OF ENTREPRENEURSHIP	08	20
Meaning, definition and functions of an entrepreneur, qualities of a good entrepreneur; Role of Entrepreneur in economic development. Government measures for the promotion of small scale industries with special reference to Haryana. Cultural factors in developing entrepreneurship.		
UNITS-2: OWNERSHIP AND LOCATION OF INDUSTRIAL UNITS	06	20
Different forms of Industrial Organization. Theories of Industrial location. Process of preparing project reports.		
UNITS-3: SIZE OF FIRM AND PRICING	07	20

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Concept of optimum firm, factors determining optimum size, Technical, Managerial, Marketing Uncertainties and risk. Pricing Methods, Policies and procedures.		
UNIT-4: FINANCING OF SMALL INDUSTRIES	08	20
Importance and need: Commercial Banks and term lending in India; Banks and under-writing of capital issues; Brief description about the role of other financial agencies as: • Industrial Finance Corporation of India • State Financial Corporation • Industrial Development Bank of India • Unit Trust of India.		
UNIT 5: PROBLEMS FACED BY SMALL ENTERPRISES	06	20
Problems connected with Marketing: • Management of New Products • Power, Finance, Raw Material • Under-utilization of capacity Causes of under utilization; Rehabilitation of Sick Mills.		
TOTAL	**35**	**100**

Reference:

1. Entrepreneurship of Small Industries- Deshpande Manohar D. (Asian Publisher, New Delhi)
2. Environment & Entrepreneur- Tandon B.C. (Asian Publishers, New delhi)
3. The Industrial Economy of India- Kuchhal S.C. (Chaitanya, Allahabad)
4. Emerging Trends in Entrepreneurship Development Theories & Practices- Singh P. Narendra (International Founder, New Delhi)

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Course outcomes:

On successful completion of the course, the student will be able to:

9. The course content gives full knowledge to learn hoe an entrepreneur can succeed.
10. Find the solution of problem dependent on industrial units.
11. Solve the problems related to Location and pricing of industrial units.
12. Enable students to solve difficulties face by small units.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S			S	S			M			
2	S	M				S				S		
3		M		S	S			S				S
4	S	M					S				S	

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	30
2	Applying the knowledge acquired from the course	40
3	Analysis and Evaluation	30

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Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course
	End of Course survey			End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Course Title: THEORY OF MACHINE-1	Course Code : DME238
Semester : **IV**	Core / Elective : **Elective**

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Teaching Scheme in Hrs (L:T:P)	: 4**:0:0**	Credits	: **3 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: **DIPLOMA IN MECHANICAL ENGINEERING**			

Pre-requisites:

Students should have the knowledge on engineering mechanics.

Course Objectives:

1. To familiarize students with basic types of mechanisms, joints and degrees of freedom to perform position, velocity and acceleration analysis using graphical and analytical methods.
2. To provide students an understanding of different types of mechanisms.
3. To teach the basics of synthesis of simple mechanisms.
4. To teach students the kinematic analysis of cam-follower motion and gear train configurations.

Course Content:

Topic and Contents	Hours	Marks
UNIT-1:	6	20
General concepts, Velocity and Acceleration Analysis: Introduction of Simple mechanism, Different types of Kinematics pair, Grublers rule for degree of freedom, Grashof's Criterion formability determination Inversions of 3R-P, 2R-2P chains, Kinematic analysis of planar mechanism by graPrentice Hall Indiacal and vectorial analysis.		
UNITS-2:	8	20
1.1 **Cams:** Classification, Cams with uniform acceleration and retardation, SHM, Cylcloidal motion, oscillating followers. **Vibrations:** Causes of vibrations in machine, their effects and method of reducing them 1.2 Free or natural vibration 1.3 Forced vibration 1.4 Damped vibration.		
UNITS-3:	8	20

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	Gears: Geometry of tooth profiles, Law of gearing, involute profile, interference, helical, spiral and worm gears, simple, compound gear trains. Epicyclic gear trains – Analysis by tabular and relative velocity method, fixing torque. **Gear trains**: Simple, compound, reverted and epicyclic gear trains, analytical, tabular, graphical and vector methods for velocity ratio. **Dynamic Analysis:** Slider-crank mechanism, turning moment computations		
	UNIT-4:	8	20
2.	**Inertia force analysis**: Velocity and acceleration of slider crank and four bar mechanism, inertia force, piston thrust and forces on connecting rod, Turning moment diagram and flywheel **Friction:** 2.1 Friction of collars and pivots 2.2 Friction clutches-plate clutch and centrifugal clutch 2.3 Friction in journal bearings 2.4 Rolling friction		
	UNIT 5:	6	20
3.	**Governors (o derivation & numerical) :** 3.1 Introduction and classification 3.2 Methods of governing (Quality, Quantity and hit and miss governing) 3.3 Dead wt governors (watt , porter and proell) 3.4 Spring control governors (hartnell and Wilson hartnell) 3.5 Concept of sensitivity, stability, isochronism , hunting, effort and power. **Dynamic Analysis:** Slider-crank mechanism, turning moment computations		
	TOTAL	**36**	**100**

Reference:

- J. E. Shighley and J.J. Uicker, Theory of Machines and Mechanisms, McGraw Hill, 1995

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- A. K. Mallik, A. Ghosh, G. Dittrich, Kinematic analysis and synthesis of Mechanisms, CRC, 1994.
- A. G. Erdman and G. N. Sandor, Mechanism Design, Analysis and Synthesis Volume 1, PHI, Inc., 1997

Course outcomes:

On successful completion of the course, the student will be able to:

1. Demonstrate an understanding of the concepts of various mechanisms and pairs.
2. Do velocity and acceleration analysis of simple mechanisms.
3. Design a layout of cam for specified motion.
4. Synthesis simple mechanisms for function, path generation and body guidance
5. Demonstrate an understanding of principle of gears.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1									M			
2			M			S						S
3		S					S				M	
4				S				M		S		
5	S											

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9

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		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course
	End of Course survey			End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Course Title: THERMODYNAMIC LAB		Course Code	: DME272
Semester	: **IV**	Core / Elective	: **Elective**
Teaching Scheme in Hrs (L:T:P)	: 0**:0:2**	Credits	: **2 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **-**
Continuous Internal Evaluation	: **60 Marks**	SEE	: **40 Marks**
Programmes: **DIPLOMA IN MECHANICAL ENGINEERING**			

Pre-requisites:

Students should have the knowledge on thermodynamics subject.

Course Objectives:

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1. To give students the understanding of the working of different components of steam power plant and the thermodynamic cycle on which it works.
2. To equip students with the knowledge of the initiation of combustion in Internal Combustion Engines, their classification, basic operating cycle and the functioning of various parts like carburettor and fuel injection pump.
3. Definition of absolute and relative humidities and the representation of psychometric process on T-s diagram.
4. making students understand the working of a reversed heat engine (both refrigerator and heat pump).
5. Differentiate between various types of cooling towers and analyse their working.

Course Content:

Topic and Contents
1. Study and trial on solar water heating system. 2. Report on visit to wind power generation plant / biogas plant / hydraulic power plant. 3. Trace the flue gas path and water-steam circuit with the help of boiler model and write a report. 4. Study or Report on visit to sugar factory / Dairy / steam power plant with specifications of boiler and list of mountings and accessories.. 5. Study of separating and throttling calorimeter. 6. Study of steam turbine. 7. Study of different types of I.C. engines (four strokes and two strokes C.I. and S.I.) 8. Study of various systems of I.C. engines. a. Fuel supply system b. Cooling system c. Ignition system d. Government system. e. Lubrication system 9. Study of a. Fuel pump b. Fuel injector c. Carburetor. 10. Study and compare various heat exchangers such as radiators, evaporators, condensers, plate heat exchangers etc. 11. Numerical on vapor processes and ideal gas processes (minimum two problems on each)

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Reference:

Course outcomes:

On successful completion of the course, the student will be able to:

1. Explain the working of Steam power plant.
2. Distinguish between S.I/C.I, Two- stroke and Four-stroke Internal Combustion Engines.
3. Estimate relative humidity using adiabatic saturator and compare different Hygrometers.
4. Calculate Coefficient of Performance of Vapor compression refrigeration system for Reversed Carnot, Ideal and Actual cycles.
5. Explain the working and estimate the heat transfer rates in a forced draft cooling tower.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	M	S						M				
2				S		S				M		M
3		S	M						S			
4					M		M				S	S
5	S											

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		

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	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Course Title: WORKSHOP TECHNOLOGY		Course Code	: DME240
Semester	: **III**	Core / Elective	: **Elective**
Teaching Scheme in Hrs (L:T:P)	: 4**:0:0**	Credits	: **3 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: **DIPLOMA IN MECHANICAL ENGINEERING**			

Pre-requisites:

-

Course Objectives:

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To help students acquire knowledge about the behaviour and manufacturing properties of all engineering materials and basic concepts of foundry and casting processes.
2. To teach students various methods of welding, cold and hot working and forming.
3. To enable students understand forging, molding and powder metallurgy processes in detail.

Course Content:

Topic and Contents	Hours	Marks
UNIT-1:	8	20
Elements of metal cutting processes: Elements of tool geometry, cutting tool materials and applications. **Lathe**: Various types of lathe: Centre lathe, facing lathe, gap-bed lathe, capstan and turret lathe, CNC lathe, major difference between CNC lathe and conventional lathe. Major sub-assemblies of a lathe: Bed, headstock, tail stock, carriage consisting of saddle, cross-slide, compound slide, tool post and apron. Work holding devices: self centring three jaw chuck, independent four jaw chuck, collets, face plates, dog carriers, centres and mandrels.		
UNITS-2:	6	20
Lathe contd... Driving mechanisms, apron mechanism, thread cutting mechanism and calculations, features of half-nut engagement – disengagement, indexing dial mechanism. Operations on lathe: taper turning, related calculations, thread cutting, facing, under-cutting, drilling, boring, parting-off, knurling, chamfering.		
UNITS-3:	6	20
Drilling Machines: Constructional features of bench drilling machine, radial drilling machine, multi-spindle drilling machine, feed mechanism, work holding devices, Tool – holding devices. Different drilling operations: Drilling, reaming, counter boring and countersinking etc., estimation of drilling time.		

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UNIT-4:	8	20
Milling Machines: Types of general purpose milling machines: horizontal, vertical and universal. Types of milling cutters and their applications, different milling operations, work holding devices: vice, clamps, chucks, dividing head and its use, simple, compound and differential indexing. Indexing calculations and machining time calculations. Introduction to machining centres		
UNIT 5:	8	20
Grinding Machines: Different types of grinding machines: cylindrical, surface and centre-less grinding machines, basic constructional features and mechanisms, specifications, different grinding operations, honing, lapping and super-finishing processes.		
TOTAL	**36**	**100**

Reference:

1. P.N. Rao, "Manufacturing Technology: Metal Cutting & Machine Tools", Tata McGraw Hill, Delhi, 2004.
2. B.S. Raghuwanshi, "Workshop Technology", Vol.2, Dhanpat Rai & Sons, 2003.
3. Hazra Chandhari S.K., "Elements of Workshop Technology", Vol.2, Media Promoters,

Course outcomes:

On successful completion of the course, the student will be able to:

1. Demonstrate an understanding of various materials and their properties employed in different manufacturing processes.
2. Understand the principles of foundry and casting.
3. Choose materials in a manufacturing process based on their properties.
4. Study in detail about the modern welding processes followed in industries.
5. Conduct experiments on various manufacturing processes and to automate them.

Mapping Course Outcomes with Program Outcomes:

Course	Programme Outcomes

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outcomes	1	2	3	4	5	6	7	8	9	10	11	12
1		S								S		
2	S				S			S				M
3			M	M		M						
4					M		S		M		S	
5		S										

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course
	End of Course survey			End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

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Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Course Title: CAD PRACTICE LAB		Course Code	: DME280
Semester	: **IV**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: 0**:0:3**	Credits	: **2 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **-**
Continuous Internal Evaluation	: **60 Marks**	SEE	: **40 Marks**
Programmes: **DIPLOMA IN AUTOMOBILE ENGINEERING**			

Pre-requisites:

Students should have basics knowledge of engineering drawing.

Course Objectives:

1. Introduce students to the complexity of engineering practice and to follow the development of an idea from its conception to the construction of a prototype.
2. Develop the technical skills necessary to generate an engineering drawing and an engineering assembly using a modern CAD system.
3. Develop a 'hands on' experience through shop training and the construction of a physical artefact.
4. Introduce the elements of engineering communications, including graphical representation of artifacts, teamwork, written reports, and oral presentations.
5. Introduce uncertainty as an element of engineering practice, including material properties, process performance, and market demands.
6. Obtain a basic understanding of various engineering materials and the manufacturing techniques used to produce these materials into useful products.

TOPIC ANALYSIS

Sl. No.	Topic	
1	Introduction	
2	Getting started	

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3 4 5 6 7 8 9 10 12 13 14 15	Drawing objects Object selection and drawing aids Controlling drawings and display Creating Text Editing object / entities Dimensions Hatching Blocks Printing/plotting of drawing 2D Drawing Introduction to 3D modeling Creating objects in 3D Tests **NOTE- ABOVE PRACTICALS SHOULD PERFORM BY USING AUTOCAD SOFTWARE**	

Course outcomes:

On successful completion of the course, the student will be able to:

1. Students are able to read engineering drawings with different views, including orthographic views, hidden lines and cross sectional views. They understand the description of surface roughness, lay waviness and the representations of tolerances and surface finish on engineering drawings.
2. Students can create 3D models of engineering objects, engineering drawings with different views, and an assembly of the objects that make up engineered systems, using a CAD system.
3. Students are able to use basic hand tools in a safe manner [3]
4. Students are able to move from CAD to CAM and use numerically controlled machines to produce simple artifacts
5. Students are able to design a consumer device based upon market demands, through QFD analysis, concept selection, and function analysis.
6. Students understand basic machining processes.
7. Students are able to apply the statistics and probability in an elementary way. They can use the normal distribution and tables of the cumulative distribution to predict probabilities. They understand applications in geometric dimensioning and tolerances.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S											
2												
3				M						S		
4			S						S			

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5	S				M							
6								S				M
7	S											M
8												M
9		S										M

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Course Title: Heat & mass transfer		Course Code	: **DME340**
Semester	: **V**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **4:0:0**	Credits	: **3 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: **DIPLOMA IN MECHANICAL ENGINEERING**			

Pre-requisites:

Students should have the proper knowledge from the heat and mass transfer.

Course Objectives:

1. To help students acquire knowledge about the theory of metal cutting, mechanism of machining and the parameters that influence the machining processes.
2. To teach different operations involved in various machines such as turning, shaping, slotting, milling, grinding etc.

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3. To teach students different gear generation methods and principles of nontraditional machining processes
4. To explain the different instruments for linear and angular measurements, surface finish etc.,

Course Content:

Topic and Contents	Hours	Marks
UNIT-1:	6	20
Introduction: Heat transfer processes, conduction and radiation. thermal conductivity, thermal conductivity of solids, liquids and gases, effect of temperature on thermal conductivity.		
UNITS-2:	8	20
1. Conduction : 1.1 Fourier's law 1.2 Heat transfer by conduction through a plane & composite wall 1.3 Radial Heat transfer by conduction through a cylinder & sphere 1.4 Overall Heat transfer coefficient 1.5 Critical insulation 1.6 Heat transfer through fins 1.7 Numerical problem		
UNITS-3:	8	20

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2. Convection : 2.1 Natural convection 2.2 Forced convection 2.2.1 Direct contact type 2.2.2 Regenerator & Storage type **Heat transfer with change of phase:** Nature of vaporization phenomena; different regimes of boiling heat transfer, condensation on flat plates; drop wise condensation.		
UNIT-4:	6	20
Heat exchanger: Types of heat exchangers, arithmetic and logarithmic mean temperature differences, heat transfer coefficient for parallel, counter and cross flow type heat exchanger; effectiveness of heat exchanger, Constructional and manufacturing aspects of Heat Exchangers.		
UNIT 5:	8	20
1. Radiation : 1.1 Absorption, Reflection and transmission 1.2 Radiant energy distribution curve 1.3 Emissive power 1.4 Black body & white body 1.5 Grey body 1.6 Kirchoff 's law 1.7 Wien's displacement law 1.8 Planks law & stefan boltzman's law 1.9 Radiosity 1.10 Shape factor		
TOTAL	**36**	**100**

Reference:

1. Thermal Engineering Vol. I & Vol. II Mathur & Mehta
2. Thermal Engineering R.K. Rajput
3. Thermal Engineering R.K. Purohit

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4. Thermal Engineering — Raynor Joel
5. Elements of Heat Engineering (Vol I & II) — Patel & Karamchandani
6. Thermal Engineering — Rai & Sonrao (Satya Prakashan)
7. Heat Transfer — Arora & Domkundwar

Course outcomes:

On successful completion of the course, the student will be able to:

1. Understand the mechanisms of chip formation in machining.
2. Understand the various machining processes such as turning, drilling, boring, shaping, slotting, milling and grinding.
3. Understand the principle of gear generation and non-traditional machining processes.
4. Identify and suggest correct manufacturing process for particular application.
5. Know the principle of different metrology instruments.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S					S					
2				S		M		M		S	M	S
3		S	M		M				S			
4		S		S			S			M		S
5	S											

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9

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		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course
	End of Course survey			End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Course Title: CAD/CAM		Course Code	: DME333
Semester	: **V**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: 4**:0:0**	Credits	: **3 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: **DIPLOMA IN MECHANICAL ENGINEERING**			

Pre-requisites:

Students should have knowledge on elements of machine design.

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Course Objectives:

1. To understand the basics of CAD/CAM.
2. To gain exposure over the concepts of computer graphics.
3. To learn about the geometric issues concerned to the manufacturing and its related areas.
4. To understand the latest advances in the manufacturing perspectives.

Course Content:

Topic and Contents	Hours	Marks
UNIT-1:	6	20
Overview of Computer Graphics, Picture representation, Coordinate Systems, Output Graphics Display devices. Raster Scan Graphics : DDA for line generation and Bresenham's algorithm for line and circle generation.		
UNITS-2:	8	20
Wire frame models, Parametric representation of curves, Plane curves: line, circle, ellipse, parabola and hyperbola. Space curves: Cubic spline curve, Bezier Curve and B Spline Curves. Blending of Curves.		
UNITS-3:	8	20
Surface models and entities Parametric representation of Hermite Bicubic surfaces, Bezier surfaces and B-spline surfaces. Solid Models and entities, Solid Representation: B-rep. and CSG. Comparison between three types of models.		
UNIT-4:	8	20

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Introduction: Overview of manufacturing processes, types of manufacturing systems, the product cycle, computer's role in manufacturing, sources and types of data used in manufacturing. The Beginning of CAM: Historical Background, Basic components of NC systems, NC Procedure, NC coordinate system and machine motions, applications and economics of NC.		
UNIT 5:	6	20
Part programming- manual and computer assisted such as APT Language. Computer Controls In NC Systems: Problems with conventional NC computer numerical control, Direct numerical control, combined CNC/ DNC systems, adaptive control machining system computer process interfacing, New development and latest trends.		
TOTAL	**36**	**100**

Reference:

1. Mathematical Elements for Computer Graphics, Rogers and Admas.
2. CAD/CAM Theory and Practice, Zied Ibrahim, Tata McGraw Hill.
3. Computer Graphics (Schaum Series), Plastock and Kalley.

Course outcomes:

On successful completion of the course, the student will be able to:

1. Understand the importance of CAD/CAM principles in the Product development.
2. Develop programs related to manufacturing using codes.
3. Analyze the importance of networking in manufacturing environment.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1		S		S	M			S			M	
2			M			M	M		M	S		
3	S	S		S		S						S

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What	To	When/where	Max	Evidence	Contributing

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			whom	(Frequency in the course)	Marks	collected	to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course
	End of Course survey			End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Course Title: THERMAL ENERGY & POWER PLANT	Course Code : DME335
Semester : **V**	Core / Elective : **Core**

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Teaching Scheme in Hrs (L:T:P)	: 4**:0:0**	Credits	: **3 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: **DIPLOMA IN MECHANICAL ENGINEERING**			

Pre-requisites:

Thermodynamics, Basic Mechanical Engineering, Turbo Machine, and Internal Combustion Engine.

Course Objectives:

1. To develop an ability to apply knowledge of mathematics, science, and engineering.
2. To develop an ability to design a system, component, or process to meet desired needs within realistic constraints.
3. To develop an ability to identify, formulate, and solve engineering problems.
4. To develop an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Course Content:

Topic and Contents	Hours	Marks
UNIT-1:	6	20
Steam nozzles-Flow of steam through convergent and divergent nozzles, nomenclature of blade, enthalpy, entropy, laws of thermodynamic process and thermodynamics process .**Steam condenser-** Introduction, main element of condensing plant, types of condenser, source of air leakage and its effect.		
UNITS-2:	8	20

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Steam turbine-classification and industrial application of steam turbines, principle and operation of impulse and reaction turbine, compounding of turbines, velocity diagram, work done and efficiency of steam turbines. **Air pumps and cooling tower**-types of air pumps, description of wet and dry types air pumps, types of cooling tower, description of cooling tower.		
UNITS-3:	8	20
Introduction-Different types of conventional sources of energy, Scope of conventional energy sources in India, Status of conventional power plants in India. **Thermal power plant**-General layout and working, Factors of site selection, Methods of coal handling, Unloading devices, Ash handling system		
UNIT-4:	8	20
Hydro-Electric power plant-Advantages and application of hydroelectric power plants, Elements of hydroelectric power plant, Plant layout of low head and high head intake, Combination of Hydel – Thermal power plants. **Nuclear Power Plant**-Introduction to nuclear reactions and nuclear fuels, Site selection of nuclear power plants, Nuclear reactors : various elements of nuclear reactors, Comparison of nuclear power plant with thermal and hydel power plants.		
UNIT 5:	6	20
Diesel Power Plants-Elements of a diesel power plant, Building and general layout, Applications of diesel power plants, Limitation of diesel power plants. **Gas Turbine Plants**-Elements of cost of power, Factors affecting economics of generation and distribution of power, Various alternate energy sources – solar, biogas, wind, geothermal, tidal, Magneto hydro dynamic, thermo electric power etc		

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TOTAL	**36**	**100**

Reference:

1) Thermal engineering vol.1 & vol.2 : Mathur Mehta
2) Thermal engg : R.K.Rajput
3) Thermal engg : R.K.Purohit
4) Thermal engg : Raynor Joel
5) Power Plant Engineering : Dr. Mahesh Verma
6) Power Plant Engineering : P.K.Nag
7) Power Plant Engineering : Domkumdwar

Course outcomes:

On successful completion of the course, the student will be able to:

1. Ability to have adequacy with Design, erection and development of energy conversion plants.
2. Optimization of Energy Conversion plant with respect to the available resources.
3. Scope of alternative erection of optimized, suitable plant at the location depending upon Geographical conditions.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S			S				M				S
2		S	M		M		M		S	S		
3		M				S					M	

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSESSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8

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		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course
	End of Course survey			End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Course Title: POWER GENERATION LAB		Course Code	: DME381
Semester	: **V**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: 0**:0:2**	Credits	: **2 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **-**
Continuous Internal Evaluation	: **60 Marks**	SEE	: **40 Marks**
Programmes: **DIPLOMA IN MECHANICAL ENGINEERING**			

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Pre-requisites:

Students should have the basic knowledge on the different types of power plant and basic of thermal engineering.

Course Objectives:

1. To develop knowledge about different types of power plant
2. To gain knowledge on air preheater, cooling tower and condenser.

Course Content:

Topic and Contents
1. To study low pressure boilers and their accessories and mountings. 2. To study high pressure boilers and their accessories and mountings. 3. To study the working of impulse and reaction steam turbines 4. To prepare heat balance sheet for given boiler. 5. To find power output & efficiency of a steam turbine. 6. To find the condenser efficiencies. 7. To study cooling tower and find its efficiency. 8. To find calorific value of a sample of fuel using Bomb calorimeter. 9. Calibration of Thermometers and pressure gauges. 10. To study and find volumetric efficiency of a reciprocating air compressor. 11. To find dryness fraction of steam by separating and throttling calorimeter.

Reference:

Course outcomes:

On successful completion of the course, the student will be able to:

1. *Understand about diesel power plant*
2. *Understand about hydro power plant*
3. *Understand about steam power plant*

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4. *Understand about nuclear power plant*
5. *Understand about cooling tower boiler and different components used in power plant*

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1												
2		S			S	M		M		M		M
3	M		M				S		M		M	S
4		S		S		S		S		S		
5	S	M									S	

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	

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INDIRECT ASSESSMENT	Student feedback	Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey		End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Course Title: PROCESS IN MANUFACTURING-II LAB		Course Code	: DME371
Semester	: **V**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: 0**:0:2**	Credits	: **2 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **-**
Continuous Internal Evaluation	: **60 Marks**	SEE	: **40 Marks**
Programmes: **DIPLOMA IN MECHANICAL ENGINEERING**			

Pre-requisites:

Students should have knowledge on manufacturing in process-1

Course Objectives:

1. To enable the students understand the basic concepts of multipoint cutting tool.
2. To teach students how to drill in metal sheet.
3. To teach students how to use milloing machine.
4. To help students perform some simple exercises on lathe such as turning, thread cutting, drilling, boring etc.

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Course Content:

Topic and Contents
1.To study about the multi point cutting tool know how to grind them 2. To perform a drilling hole in a metal sheet/work piece according to the given dimension. 3. To perform an operation on the shaper machine and convert the cylindrical job into a rectangular block. 4. To perform square threading in a lathe machine. 5. To perform any one welding operation in welding shop. 6. To Prepare a hexagonal/octagonal nut using indexing head on milling m/c and to cut bsw/metrics internal threads on lathe (to meet with job). 7. To study the process of powder metallurgy. 8. To study the capstan lathe, tool holder and its attachments. 9. To callibrate pneumatic comparator and measure taper of a given work piece. 10. To perform step turning, knurling and chamfering on lathe machine as per drawing.

Reference:

Course outcomes:

On successful completion of the course, the student will be able to:

1. Acquire knowledge about green sand molding process, gates and risers.
2. Acquaint with basic welding processes and cutting parameters of turning processes, thread cutting etc.
3. Make decisions on various cutting parameters for different materials in lathe operations.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S		M				S			M		
2		S		S	S			S	S		S	
3	S	S			M	M						M

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

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The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Course Title: CAD LAB	Course Code : DME373

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Semester	: **V**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: 0**:0:2**	Credits	: **2 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **-**
Continuous Internal Evaluation	: **60 Marks**	SEE	: **40 Marks**
Programmes: **DIPLOMA IN MECHANICAL ENGINEERING**			

Pre-requisites:

Students should have knowledge on engineering drawing.

Course Objectives:

1. To introduce students to the basics and standards of engineering drawing related to machines and components.
2. To teach students technical skills regarding assembly, production and part drawings.
3. To familiarize students with various limits, fits and tolerances.
4. To help students gain knowledge about standard CAD packages on modeling and drafting.

Course Content:

Topic and Contents
1) Introduction & different features of the CAD Software 2)Setting up a drawing environment by setting drawing limits, drawing units, naming and drawing, naming layers, setting line types for different layers using various types of lines in engineering drawings. 3) Layout drawing of a building using different layer and line colors indicating all details. Name the details using text commands, make a title block. 4)Make an isometric dimensioned drawing of connecting rod using isometric grid 5) Draw quarter sectional isometric view of cotter joint. 6) Draw different types of nuts and bolts with internal and external threading using ACME and square threading standards. 7) Draw 3-D models by extruding simple 2-D objects. 8) Draw a spiral by simply extruding the circle. 9)To draw orthographic projection drawing(top, front, side) of boiler safety valve giving the name of various components of

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valve.

NOTE- ABOVE PRACTICALS SHOULD PERFORM BY USING CREO/SOLIDWORKS SOFTWARE

Reference:

Course outcomes:

On successful completion of the course, the student will be able to:

1. Acquire the knowledge of various standards and specifications about standard machine components.
2. Make drawings of assemblies with the help of part drawings given.
3. Ability to select, configure and synthesize mechanical components into assemblies.
4. Apply the knowledge of fits and tolerances for various applications.
5. Able to model components of their choice using CAD software.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S											
2		S	M	S	M	M		S		S		S
3				S		M	M		M		M	
4	M		S		S					S		S
5	S	S					S					

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	

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		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Course Title: HEAT AND MASS TRANSFER LAB		Course Code	: **DME377**
Semester	: **V**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: 0**:0:2**	Credits	: **2 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **-**
Continuous Internal Evaluation	: **60 Marks**	SEE	: **40 Marks**
Programmes: **DIPLOMA IN MECHANICAL ENGINEERING**			

Pre-requisites:

Students should have the knowledge on theory of heat and mass transfer i.e conduction, convection and radiation.

Course Objectives:

1. To enable the students to do experimentation on heat transfer equipment and improve practical knowledge of the systems.

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2. To develop trouble shooting abilities of students for practical heat transfer systems.
3. To teach students how to measure heat transfer through various systems.

Course Content:

Topic and Contents
1. To find emissivity of a grey body relative to a given block body. 2. Perform parallel and counter flow heat exchanger. 3. To find out the Stefan Boltzmann constant. 4. To perform experiment on pin fin test rig in forced convection by neglecting radiation losses & to calculate. Convective heat transfer coefficient. (Experimentally & empirical correlation), Efficiency, Effectiveness, Comparison of experimental & theoretical temperature profile. 5. Repeat the same exercise by considering radiation losses 6. To find convectively heat transfer coefficient of a given cylinder in vertical position by neglecting radiation losses by assuring, constant surface temperature, constant heat flux & compare with experimental heat transfer coefficient by neglecting radiation losses & by considering radiation losses. 7.Perform the experiment No.5 by using cylinder in horizontal position 8. To study about the window type air conditioner. 9. Pin fin in natural and forced vibration apparatus. 10. To study the difference between conduction, convection and radiation.

Reference:

Course outcomes:

On successful completion of the course, the student will be able to:

1. An ability to demonstrate the fundamental principles of heat transfer in practice.
2. Design and test practical heat transfer systems like heat exchangers, condensers, evaporators etc.
3. Develop empirical correlations for predicting heat and mass transfer rates for a given system.
4. Troubleshoot existing engineering heat transfer systems and develop alternatives and more energy efficient systems.

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Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S											
2			M		S	S		S		S		M
3		M		S					M		S	
4		S					M					S

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl.	Educational Component	Weightage

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No.		(%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Course Title: DYNAMICS OF MACHINE LAB		Course Code	: DME375
Semester	: **V**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: 0**:0:2**	Credits	: **2 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **-**
Continuous Internal Evaluation	: **60 Marks**	SEE	: **40 Marks**
Programmes: **DIPLOMA IN MECHANICAL ENGINEERING**			

Pre-requisites:

Students should have knowledge on the theory of machine.

Course Objectives:

1. To understand the concepts of inversions and synthesis of mechanisms
2. To understand fundamentals of machine vibrations
3. To understand gyroscopic effect of two wheelers, four wheelers, and aircrafts.
4. To understand speed control of machines using governors

Course Content:

Topic and Contents
1. To study inversion of four bar chain 2. Coupling Rod 3. Beam Engine 4. Steering Mechanism (a) Study of quick return mechanism.(Crank and Slotted lever mech.) (b) To draw velocity and acceleration diagram for Crank and slotted lever mechanism. 5. Study of inversion of Double slider chain Oldhan Coupling Scotch Yoke Elliptical Trammel 6. To plot displacement v/s θ curve for various cams.

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7. Study of various cam- follower arrangements.
8. To determine co-efficient of friction.
9. Study of various types of dynamometers, Brakes and Clutches.
10. To determine moment of inertia of the given object using of Trifler suspension.
11. To Verify the relation T=I.W.Wp. for gyroscope.

Reference:

Course outcomes:

On successful completion of the course, the student will be able to:

1. Synthesis simple mechanisms
2. Draw cam profiles
3. Measure Gyroscopic torque
4. Understand free, forced damped vibrations
5. Measure Radius of Gyrations of compound pendulum, plate

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S										S
2			S	M			S			M		S
3	S				M	M		S	M			
4		S	M					S		M	S	
5				S							S	

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	

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		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Course Title: **INDUSTRIAL MANAGEMENT**		Course Code	: **DHS302**
Semester	: **V**	Core / Elective	: **Elective**
Teaching Scheme in Hrs (L:T:P)	: **3:0:0**	Credits	: **3 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: **Diploma in Electrical Engineering**			

Pre-requisites:

Knowledge of Industries and their working.

Course Objectives:

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17. To achieve the target and goals in an organisation it is essential to co-ordinate the entire system. For this purpose a diploma holder should have the knowledge of principles of industrial management, auditing and environmental aspects.
18. Apply the Purpose of organization and administration.
19. Analyse the Inters relation between skills and levels of management.
20. Evaluate the Scientific management.
21. Analyse the Study of different forms of layout.
22. Create the basic concept of conflict management.

Course Content:

Topic and Contents	Hours	Marks
UNIT-1: INTRODUCTION TO INDUSTRIAL MANAGEMENT	06	12
• Brief history of industries in India, Brief definition of management, organization and administration. • Characteristics of management, Principle of management, Function of management like, planning, organization, direction, co-ordination etc.		
UNITS-2: MANAGEMENT	08	12
• Level of management, skills of management, inters relation between skills and levels of management. • Scientific management, Introduction to Schools of Management thoughts		
UNITS-3: INTRODUCTION TO ORGANIZATION	08	12
Study of basic type of organization for ex. Line and staff organization, project organization, metrics organization, Informal organization.		
UNIT-4: INTRODUCTION TO INDUSTRIAL PSYCHOLOGY	06	12
• Motivation theory and study of Maxlow, Need, Hierarchy Theory, Planned Location, Planned Layout. • Study of different forms of layout like line layout, process layout, product layout, combinational layout, sixth position layout etc.		
UNIT 5: INTRODUCTION TO MATERIAL MANAGEMENT	08	12
Objective of planned layout, introduction to material management, scope of material management, study of		

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inventory control method, introduction to different types of inventory control techniques, introduction to work study, motion study etc, introduction to conflict management.		
TOTAL	**36**	**60**

Reference:

1. Khanna O.P.: Industrial Engineering.
2. T.R. Banga: Industrial Engineering & Management.
3. Mahajan: Industrial & Process Management.

Course outcomes:

On successful completion of the course, the student will be able to:

13. Enable students for Essential Imperatives and Steps in Industrial & Process Management.
14. Find the solution of problem dependent on planning & organization.
15. Determine the Need of Schools of Management thoughts.
16. Solve the problems related to Hierarchy Theory & Planned Location.
17. Enable students to use application of material management and scope of material management.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S				S							S
2	S						S			M		
3	S			S								
4		S										
5	S			M					S			

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	40

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3	Analysis and Evaluation	25

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course
	End of Course survey			End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Course Title: HEAT & MASS TRANSFER LAB		Course Code	: DME377
Semester	: **VI**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: 0**:0:2**	Credits	: **2 Credits**

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Type of course	: **Lecture + Assignments**	Total Contact Hours	: **20**
Continuous Internal Evaluation	: **60 Marks**	SEE	: **40 Marks**
Programmes: **DIPLOMA IN MECHANICAL ENGINEERING**			

Pre-requisites:

Students should have the knowledge on theory of heat and mass transfer i.e conduction, convection and radiation.

Course Objectives:

1. To enable the students to do experimentation on heat transfer equipment and improve practical knowledge of the systems.
2. To develop trouble shooting abilities of students for practical heat transfer systems.
3. To teach students how to measure heat transfer through various systems.

Course Content:

Topic and Contents
1. To find emissivity of a grey body relative to a given block body.
2. Perform parallel and counter flow heat exchanger.
3. To find out the Stefan Boltzmen constant.
4. To perform experiment on pin fin test rig in forced convection by neglecting radiation losses & to calculate. Convective heat transfer coefficient. (Experimentally & empirical correlation), Efficiency, Effectiveness, Comparison of experimental & theoretical temperature profile.
5. Repeat the same exercise by considering radiation losses
6. To find convectively heat transfer coefficient of a given cylinder in vertical position by neglecting radiation losses by assuring, constant surface temperature, constant heat flux & compare with experimental heat transfer coefficient by neglecting radiation losses & by considering radiation losses.
7.Perform the experiment No.5 by using cylinder in horizontal position
8. To study about the window type air conditioner.
9. Pin fin in natural and forced vibration apparatus.
10. To study the difference between conduction, convection and

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radiation.

Reference:

Course outcomes:

On successful completion of the course, the student will be able to:

1. An ability to demonstrate the fundamental principles of heat transfer in practice.
2. Design and test practical heat transfer systems like heat exchangers, condensers, evaporators etc.
3. Develop empirical correlations for predicting heat and mass transfer rates for a given system.
4. Troubleshoot existing engineering heat transfer systems and develop alternatives and more energy efficient systems.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S										
2				S		S		S		M		
3	M		M	S	M			S			S	
4						M	M		M			S

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		

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	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Course Title: **REFRIGERATION AND AIR CONDITIONING**		Course Code	: DME332
Semester	: **VI**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: 4**:0:0**	Credits	: **3 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: **DIPLOMA IN MECHANICAL ENGINEERING**			

Pre-requisites:

Basic Thermodynamics- Laws of thermodynamics, Ideal gas processes, Thermodynamic cycles, Properties of pure substance, Mollier Charts, Fluid properties, Fluid dynamics, Modes of heat transfer, Governing Equations in Heat Transfer, Extended Surfaces, Condensation and Boiling, Heat

Course Objectives:

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With the advancement of science and technology, the use of refrigeration, air Conditioning and production of low temperature is getting momentum and has become of paramount importance. The course in “Refrigeration and Air Conditioning" is introduced as an elective subject with the objective to provide enough training to mechanical engineering technicians, so that when they go in field, they can take up the task related to refrigeration and air conditioning without much difficulty.

Course Content:

Topic and Contents	Hours	Marks
UNIT-1:	6	20
Introduction to Refrigeration- History of refrigeration, meaning and need of refrigeration, difference between refrigeration and Cryogenics, production of refrigeration by various methods. Refrigeration systems and their classification on the basis of use, size and application.		
UNIT-2:	8	20
Thermodynamics of Refrigeration: Revision of I and II law of thermodynamics, comparison between heat engine, heat pump and refrigerator using heat reservoir, heat source, sinks & work. Unit of refrigeration, refrigeration effect, work input, co-efficient of performance. P-V, T-S and schematic diagrams. Calculation of refrigeration effect, work C.O.P and Heat rejection. Vapour compression refrigeration cycle its schematic diagram and representation on P-V,T-S diagram. Wet, dry and superheated vapour compression. Use of tables and charts of common refrigeration for calculating work input, refrigeration effect and C.O.P. Effect of sub-cooling and superheating on vapour compression system.		
UNITS-3:	6	20

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Vapour Absorption Refrigeration System: Comparison between vapour compression and vapour absorption system, the theoretical and practical vapour absorption system, Lithium bromide- water absorption system. Three fluid systems. (Electrolux systems) **Properties of Commonly Used Refrigerants:** Definition, primary and secondary refrigerants, designation of refrigerant, examples of each type. Desirable properties of good refrigerant Azeotropic mixtures.		
UNIT-4:	8	20
Psychometry: psychometric - definition, terminology, psychometric charts and tables, using psychometric charts for solving simple problems.		
UNIT 5:	8	20
Introduction to Air Conditioning: Meaning of air conditioning, application of Air conditioning in theatres, community halls, industry, restaurants, hospitals and windows air conditioner. **Air Conditioning Systems:** Central and unit air conditioning, residential and commercial air conditioning system. Types of fans and ducts - air distribution systems. Thermal insulator, methods and insulation cladding.		
TOTAL	**36**	**100**

Reference:

1. Refrigeration and Air Conditioning by C.P. Arora (Tata Mc Graw Hill)
2. Ashrae Guide and Data Book by Ashrae (Ashrae)
3. Andels Refrigeration and Air Conditioning Guide. by E.P. Anderson (Tarapowala)
4. Practical Refrigeration
5. Refrigeration and Air Conditioning by A.S. Sarao & P.C. Gaabi (Satya Prakashan)
6. Modern Refrigeration Practice by G.P. King (McGraw Hill)

Course outcomes:

On successful completion of the course, the student will be able to:

1. Illustrate the fundamental principles and applications of refrigeration and air conditioning system.

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2. Obtain cooling capacity and coefficient of performance by conducting test on vapor compression refrigeration systems
3. Present the properties, applications and environmental issues of different refrigerants
4. Calculate cooling load for air conditioning systems used for various applications
5. Operate and analyze the refrigeration and air conditioning systems.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S				S						M	
2	S		M		M			S	M			S
3		S		S			M			S		
4	S	S										
5	S	S										

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course

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	End of Course survey		End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Course Title: REFRIGERATION AND AIR CONDITIONING LAB		Course Code	: DME372
Semester	: **VI**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: 0**:0:2**	Credits	: **2 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **-**
Continuous Internal Evaluation	: **60 Marks**	SEE	: **40 Marks**
Programmes: **DIPLOMA IN MECHANICAL ENGINEERING**			

Pre-requisites:

Students should have knowledge on the thermal engineering , evaporators, compressors and basics of heat engine and refrigeration.

Course Objectives:

1. To enable the students to understand the principles of refrigeration and air conditioning
2. To teach the students how to calculate the cooling load for different applications of Refrigeration and Air-conditioning
3. To expose the students to cyclic controls and system balancing
4. To teach students the principles of psychometry
5. To develop the knowledge of students in selecting the right equipment for a particular application of Refrigeration and Air-conditioning

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Course Content:

Topic and Contents
1.Study of a vapor absorption refrigeration system. (Electrolux refrigerator).
2.To determine the C.O.P. of vapor compression cycle.
3.To determine actual and theoretical C.O.P. of heat pump setup.
4.To study various refrigeration accessories.
5.Three Ton air-conditioner performance test.
6. Energy analysis of parallel and counter flow heat exchanger.
7. Study about the refrigerating compressor.
8. Study of lithium bromide refrigeration system.
9. Study of steam jet refrigeration system.
10. Study of vortex tube refrigeration system.

Reference:

Course outcomes:

On successful completion of the course, the student will be able to:

1. Determine C.O.P of refrigeration and heat pump
2. Know about the various refrigeration accessories.
3. Know about compressor and different refrigeration system
4. Know about the testing of three ton air conditioner performance.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1		S										
2	M	S		S		M	S			S		M
3			M		M				M			
4	S						S				S	

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What	To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes

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DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Course Title: COMPUTER AIDED MANUFACTURING LAB		Course Code	: DME374
Semester	: **VI**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: 0**:0:2**	Credits	: **2 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **-**
Continuous Internal Evaluation	: **60 Marks**	SEE	: **40 Marks**
Programmes: **DIPLOMA IN MECHANICAL ENGINEERING**			

Pre-requisites:

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Students should have the knowledge on the basics of engineering drawing. And machine tool.

Course Objectives:

1. To understand the basics of CAD/CAM.
2. To gain exposure over the concepts of computer graphics.
3. To learn about the geometric issues concerned to the manufacturing and its related areas.
4. To understand the latest advances in the manufacturing perspectives.

Course Content:

Topic and Contents
1. To study about the C.N.C Machine and compare it with manual machine. 2. To study about G code and M code. 3. To prepare part programming for plain turning and taper turning operation. 4. To prepare part programming for turning operation in absolute mode. 5. To prepare part program for threading operation. 6. To prepare part program for slot milling operation. 7. To prepare part program for drilling operation. 8. To prepare part program for multiple drilling operation in Z-axis. 9. To prepare part program for multiple drilling in X-axis. 10. To prepare part program for multiple drilling in X and Z axis using drilling cycle. **NOTE- ABOVE PRACTICALS SHOULD PERFORM BY USING UNIGRAPHICS SOFTWARE**

Reference:

Course outcomes:

On successful completion of the course, the student will be able to:

1. Understand the importance of CAD/CAM principles in the Product development.
2. Develop programs related to manufacturing using codes.
3. Analyze the importance of networking in manufacturing environment.

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Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1		S			M			S			S	
2	S		M	S	M		M		M	S		
3	S	S										S

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl.	Educational Component	Weightage

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No.		(%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Course Title: **MECHATRONICS**		Course Code	: DME334
Semester	: **VI**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: 4**:0:0**	Credits	: **4 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: **DIPLOMA IN MECHANICAL ENGINEERING**			

Pre-requisites:

1. Understanding of differential equations
2. Basic knowledge of computers and programming
3. Basic knowledge of the design process
4. Basic machine shop skills

Course Objectives:

1. Understanding of PLC's and their programming
2. Understanding the use of stepper and servo motors and linear actuators
3. Understanding the use and manipulation of digital filters

Course Content:

Topic and Contents	Hours	Marks
UNIT-1:	6	20

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Introduction about Mechatronics, scope of Mechatronics, application, process control automation and N/c Machines.		
UNITS-2:	6	20
Sensors and Transducers - Introduction, classification, specification, characteristics of transducers, type of transducers displacement, strain, vibration pressure, flow, temperature, force & torque, tactile.		
UNITS-3:	8	20
Hydraulic Pneumatic & Electrical actuators - Pumps & Compressors, control valves & accessories, actuators, fluid power symbols, fluid power systems, switching devices, solenoids, motors.		
UNIT-4:	8	20
Data Acquisition and Control System - Introduction, Quantitizing theory, Analog to Digital Conversion, Digital to Analog (D/A) conversation, transfer function, transient response & frequency response & frequency response, stability criteria.		
UNIT 5:	8	20
Design of Mechatronic systems - Introduction, Automatic front and book and cutting in steel rolling mill, lift control system, CNC lathe, temperature control of a heat treatment furnace, EOT crane control panel, Grey grain separators, electrode arm control in electric arc furnace.		
TOTAL	**36**	**100**

Reference:

1. Mechatronics Engineering, Tomkinson, D. and Horne, J., McGraw Hill, 1996
2. Mechatronics, Bolton, W., Longman, 1995
3. Mechatronics, HMT Hand Book, 1998

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4. Understanding Electro-Mechanical Engineering, Kamm, L.J., IEEE Press, New York, 2000
5. Nitaigour Premchand Mahalik, Mechatronics, Tata McGraw-Hill
6. J.P. Holman, Mechanical Measurements, McGraw-Hill
7. T.K.Kundra, P.N.Rao and N.K.Tewari, Numerical Control and Computer Aided Manufacturing, Tata McGraw-Hill

Course outcomes:

On successful completion of the course, the student will be able to:

1. Program software packages involving data acquisition
2. Complete tasks involving collection, conditioning and storage of data in a real-time environment and apply appropriate control outputs to modify system behavior
3. Implement programmable logic controllers for timing mechanical devices
4. Integrate frequency response information in the development of control algorithms
5. Design digital filters by manipulating their filter coefficients

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S		S			S						
2		S		S	S			S		S	M	S
3			M			S			M			
4	M	S		M	M		M			S		S
5	S											

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSESSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8

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		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course
	End of Course survey			End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Course Title: **RELIABILITY AND MAINTENANCE**		Course Code	: DME336
Semester	: **IV**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: 4**:0:0**	Credits	: **3 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: **DIPLOMA IN MECHANICAL ENGINEERING**			

Pre-requisites:

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Students should have knowledge on different machine and heir parts where they have to do maintenance and what should they do in maintenance

Course Objectives:

1) To develop your ability in formulating suitable maintenance strategies to achieve reliable a manufacturing system.
2) To empower you with the skills to manage a manufacturing system to achieve continuous system availability for production.
3) To equip you with essential system diagnosis techniques so that you can identify and take appropriate actions on error symptoms and causes of failures.

Course Content:

Topic and Contents	Hours	Marks
UNIT-1:	8	20
Introduction: Maintenance Objectives and Functions; Maintenance Organization and Administration of Maintenance Systems. Need of planned maintenance. Maintenance policies; Breakdown, time based maintenance: Block replacement, age replacement and periodic replacement policy. Corrective and preventive maintenance. Maintenance planning, Scheduled maintenance. Cost of maintenance versus Cost of equipment and production delays. Inspection: Inspection intervals, Inspection reports, card history system.		
UNITS-2:	6	20
Predictive maintenance. Equipment wears records, standards. Equipment used in predictive maintenance. Computerized maintenance, Total Productive Maintenance. Methods of condition monitoring, Non-destructive testing, Liquid Penetrate, Magnetic particles, Ultrasonic testing, and Vibration analysis. Oil analysis, Radiographic testing.		
UNITS-3:	6	20

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Reliability: Definition, failure data analysis, Mean failure rate, mean time to failure (MTTF), mean time between failures (MTBF) , hazard rate, Bathtub curve. Use of Weibull probability chart foe assessing characteristics life, guarantee period etc.		
UNIT-4:	8	20
System reliability: Series, parallel and mixed configuration; Simple problems. Reliability improvement: Techniques, use of Pareto analysis-Design for reliability, redundancy unit and stand by redundancy, Optimization of reliability.		
UNIT 5:	8	20
Spare Parts Management: Spare parts, features and categorization of spares, cost considerations, Techniques of cost reduction; Selective controls used in spare parts control; ABC analysis, FSN, XYZ, VED and other approaches. Inventory control of spares.		
TOTAL	**36**	**100**

Reference:

1. Reliability of Machines by D.Reshetov, A.Ivanov, V.Fadeev
2. Engineering Diagnostics by I.A.Birger
3. Production Technology by R.K.Jain
4. Production and operation management by Adam and Evert, Tata McGraw Hill.

Course outcomes:

On successful completion of the course, the student will be able to:

1.Understand the relationship of key concepts in reliability engineering and application to maintenance strategies in a manufacturing environment;

2.Establish maintenance strategies according to system characteristics and design transition programs to implement these strategies;

3.Manage the manufacturing organization with highest possible

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1		M				S			M			

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2			M	S	M	S	M			S	S	
3	S	S						S				S

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course
	End of Course survey			End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35

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2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Course Title: Mechanical estimating costing & Material Handling		Course Code	: DME342
Semester	: **VI**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: 4**:0:0**	Credits	: **3 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: **DIPLOMA IN MECHANICAL ENGINEERING**			

Pre-requisites:

Student should know about production planning and industrial organization and management.

Course Objectives:

The main objectives of this course is to enables the students to be trained with the planning/production and plant layouts, studying about strategies of material handling and equipments and selection of site location. It also aims to explore the layout planning by computer application following different algorithms.

Course Content:

Topic and Contents	Hours	Marks
UNIT-1:	8	20
Plant Location: The ideal location. Proximity to market. Proximity to raw materials, Transportation costs. The labour supply. Electric power. Water and land costs. Local Taxes. Security from attack. Specialised communities, Climate, Urban, Suburban, and small town locations, Plant location trends, Best location for small		

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plants. Incentive offered by State Government for dispersal of industries. Planned Industrial centres Government industrial estate - public sector plants and their location, growing competition for industry among states to locate in their midst. Moving to a new location.		
UNITS-2:	6	20
Plant layout: introduction to plant design, types of manufacturing processes. Plant location, influence of location on layout, Industrial Buildings. Influences of Building on Layout, Classical types of layout product layout and Process layout and practical layouts.		
UNITS-3:	08	20
Planning the Layout: Various operational Research techniques for balancing of assembly lines, Fabrication line balancing. Safety Engineering; Safety in Machine shop, forging shop, carpentry shop, welding shop and foundry shop. Safety in critical storage area. Storing explosive materials, gases and inflammable liquids.		
UNIT-4:	8	20
MATERIAL HANDLING: Types of materials handled in an engineering plant, basic principles of material handling. Engineering and economic factors. Classifications of material handling equipment's according to operating principle, construction and nature of service. Gravity equipment's - Chutes, belt and rolling conveyers. Gravity roller spirit's Fixed systems of power driven conveyers, Belt, chain slot, apron, wire aush, Pellet, roller flight, cross bar and chain trolley type of conveyers, Arm, vertical Belt and suspended tray type of elevators, reciprocation elevators industrial elevators, screw conveyers, ribbon conveyers, bucket elevators, etc.		
UNIT 5:	6	20
Cranes; jib electric overhead travelling (E.O.T.), cantilever cranes. Track systems; Overhead track of on rail system. Industrial railways, locomotive cranes. Portable conveyers; Hand trucks, Fork lift trucks.		

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Container system of transport; Co-ordination of handling with production; continuous and intermittent type. Application of time and motion study. Organisational and selection of material handling system. Operation, maintenance, and safety precaution Selection of plant layout from material handling		
TOTAL	**36**	**100**

Reference:

1. Practical Plant Layout, Muther, McGraw Hill
2. Plant Layout & Design, Immer, McGraw Hill
3. Material Handling, Immer, McGraw Hill
4. Facilities Planning, Tomphins James A & White John Wiley & Sons.
5. Facility Layout & Location, Francis R.C. & White J.A.Prentice Hall.

Course outcomes:

On successful completion of the course, the student will be able to:

1) Selecting appropriate location for establishing industrial plants.
2) Developing new algorithms for planning layouts for typical application in the industries.
3) Suggesting appropriate material handling strategies in the industries.
4) Optimize the existing layout/material handling system.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	**Programme Outcomes**											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S								S			
2				S		S	M					S
3	S	S	M		M			S	M	M		S
4			M	S		S		S			M	

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	**What**	**To whom**	**When/where (Frequency in the course)**	**Max Marks**	**Evidence collected**	**Contributing to course outcomes**

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DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course
	End of Course survey			End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

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SURESH GYAN VIHAR UNIVERSITY

GYAN VIHAR SCHOOL OF ENGINEERING AND TECHNOLOGY

SYLLABUS FOR DEPARTMENT OF DIPLOMA IN CIVIL ENGINEERING

EDITION-2021-22

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GYAN VIHAR SCHOOL OF ENGINEERING AND TECHNOLOGY

DIPLOMA IN CIVIL ENGINEERING (3 Year Course)

PROGRAMME OUTCOMES OF DIPLOMA IN CIVIL ENGINEERING

1. An ability to apply knowledge of mathematics, science, and engineering.
2. An ability to design and conduct experiments, as well as to analyze and interpret data.
3. An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
4. An ability to function on multidisciplinary teams.
5. An ability to identify, formulate, and solve engineering problems.
6. An understanding of professional and ethical responsibility.
7. An ability to communicate effectively.
8. The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.
9. A recognition of the need for, and an ability to engage in life-long learning.
10. A knowledge of contemporary issues.
11. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.
12. An understanding of critical issues for professional practice such as the procurement of work and the interaction with contractors during the construction phase of a project.

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Course Code	Course Name	Credits	Contact Hrs/Wk.			Exam Hrs.	Weight age (in %)	
			L	T/S	P		CE	ESE
DCE231	Building Materials and construction	3	3	0	0	3	40	60
DCE232	Concrete technology	3	3	0	0	3	40	60
DCE233	Surveying -I	3	3	0	0	3	40	60
DCE234	Hydraulic And Hydraulic Machines	3	3	0	0	3	40	60
DCE236	Surveying-II	3	3	0	0	3	40	60
DCE 238	Environmental engineering	3	3	0	0	3	40	60
DCE272	Hydraulic and Hydraulic Machines Lab.	2	0	0	3	3	60	40
DCE273	Materials testing Lab	2	0	0	3	3	60	40
DCE274	Surveying lab-II	2	0	0	3	3	60	40
DCE275	Building drawing Lab-I.	2	0	0	3	3	60	40
DCE276	Building drawing lab & CAD Lab	2	0	0	3	3	60	40
DCE277	Surveying lab-I	2	0	0	3	3	60	40
DCE278	Environmental engineering lab	2	0	0	3	3	60	40
DCE 279	Building Construction lab	2	0	0	3	3	60	40
DCE280	CAD Lab	2	0	0	3	3	60	40
DCE282	Concrete technology lab	2	0	0	3	3	60	40
DCE331	Transportation engineering	3	3	0	0	3	40	60
DCE332	Design of Reinforced cement concrete	3	3	0	0	3	40	60
DCE333	Theory of structure	3	3	0	0	3	40	60
DCE334	Irrigation engineering.	3	3	0	0	3	40	60

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DCE335	Construction management	3	3	0	0	3	40	60
DCE336	Quantity survey and valuation	3	3	0	0	3	40	60
DCE 338	Design of steel structure	3	0	0	0	3	40	60
DCE371	Transportation engineering lab	1	0	0	2	3	60	40
DCE372	Civil engineering estimating and costing lab	1	0	0	2	3	60	40
DCE373	Structural lab	1	0	0	2	3	60	40
DCE374	Soil mechanics Lab	1	0	0	2	3	60	40
DCE375	Surveying lab-III and camp	1	0	0	2	3	60	40
DCE376	R.C.C. LAB	2	3	0	0	3	40	60
DCE377	Applied mechanics lab	2	0	0	3	3	60	40
DCE379	Construction technology lab	2	0	0	3	3	60	40
DCS221	Office automation tools LAB -I	1	0	0	2	3	60	40
DHS231	Basic Economics & Social Science	3	3	0	0	3	40	60
DHS232	Entrepreneurship	2	2	0	0	3	40	60
DHS302	Industrial management	2	0	0	0	3	40	60
DEP301	Industry summer internship project	3	0	0	3		100	
DEP302	Industry Association project	6						
DME231	Strength of material	3	3	0	0	3	40	60
DME271	Strength of material Lab	2	0	0	3	2	60	40
EM102	Employability Skills-II	1	0	2	0	2	60	40
EM201	Employability Skills-III	1	0	2	0	2	60	40
EM202	Employability Skills IV	1	0	0	0	2	60	40
MA231	Advance Mathematics	3	3	0	0	3	40	60
PC201	Proficiency in Co-Curricular Activity	2	0	0	0	0	100	
PC202	Proficiency in Co-Curricular Activity	1	0	0	0	0	100	
PC301	Proficiency in Co-Curricular Activity	1	0	0	0	0	100	
PC331	Proficiency in Co-Curricular Activity	2	0	0	0	0	100	

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Course Code	Course Name	Credits	Contact Hrs/Wk.			Exam Hrs.	Weight age (in%)	
			L	T/S	P		CE	ESE
	University Core							
MA231	Advance Mathematics	3	3	1	0	3	40	60
PC201	Proficiency in Co-Curricular Activity	2	0	0	0	0	100	
EM102	Employability Skills-II	1	0	2	0	2	60	40
	Program Core							
DME231	Strength of material	3	3	1	0	3	40	60
DCE231	Building Materials and construction	3	3	1	0	3	40	60
DCE233	Surveying -I	3	3	1	0	3	40	60
DME271	Strength of material Lab	2	0	0	3	2	60	40
DCE273	Materials testing Lab	2	0	0	3	2	60	40
DCE275	Building drawing Lab-I	2	0	0	3	2	60	40

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DCE277	Surveying lab-I	2	0	0	3	2	60	40
	University Elective							
	Consumer affairs	2	0	0	3	3	60	40
DHS231	Basic Economics & Social Science	3	3	0	0	3	40	60
	Program Elective							
DCE279	Building construction lab	2	0	0	3	3	60	40
DCS221	Office automation tools LAB –I	1	0	0	2	2	60	40

Year: II **Edition-2018** **Semester: IV**

Year: III **Edition-2018** **Semester: V**

Course Code	Course Name	Credits	Contact Hrs/Wk.			Exam Hrs.	Weight age (in%)	
			L	T/S	P		CE	ESE
	University Core							
PC202	Proficiency in Co-Curricular Activity	1	0	0	0	0	100	
EM201	Employability Skills-III	1	0	2	0	2	60	40
	Program Core							
DCE232	Concrete technology	3	3	0	0	3	40	60
DCE234	Hydraulic And Hydraulic Machines	3	3	0	0	3	40	60
DCE236	Surveying-II	3	3	0	0	3	40	60
DCE 238	Environmental engineering	3	3	0	0	3	40	60
DCE272	Hydraulic and Hydraulic Machines Lab.	2	0	0	3	3	60	40
DCE274	Surveying lab-II	2	0	0	3	3	60	40
DCE276	Building drawing lab-II & CAD Lab	2	0	0	3	3	60	40
DCE278	Environmental engineering lab	2	0	0	3	3	60	40
	University Elective							
	Swatch bharat	2	0	0	3	3	60	40
DHS232	Entrepreneurship	2	2	0	0	3	40	60
	Program Elective							
DCE 280	CAD lab	2	0	0	3	3	60	40
DCE 282	Concrete technology lab	2	0	0	3	3	60	40

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Course Code	Course Name	Credits	Contact Hrs/Wk.			Exam Hrs.	Weight age (in %)	
			L	T/S	P		CE	ESE
	University Core							
PC301	Proficiency in Co-Curricular Activity	1	0	0	0	0	100	
EM202	Employability Skills IV	1	0	0	0	2	60	40
DEP301	Industry summer internship project	3	0	0	3		100	
ES101/102	Environmental studies	2	0	0	3	3	60	40
	Program Core							
DCE331	Transportation engineering	3	3	0	0	3	40	60
DCE333	Theory of structure	3	3	0	0	3	40	60
DCE335	Construction management	3	3	0	0	3	40	60
DCE371	Transportation engineering lab	2	0	0	2	3	60	40
DCE373	Structural lab	2	0	0	2	3	60	40
DCE375	Surveying lab-IIIand camp	2	0	0	2	3	60	40
	University Elective							
DHS302	Industrial management	3	0	0	3	3	40	60
	Program Elective							
DCE377	Applied mechanics lab	2	0	0	3	3	60	40
DCE379	Construction technology lab	2	0	0	3	3	60	40

Course Code	Course Name	Credits	Contact Hrs/Wk.			Exam Hrs.	Weight age (in%)	
			L	T/S	P		CE	ESE
	University Core							
PC331	Proficiency in Co-Curricular Activity	2	0	0	0	0	100	
DEP302	Industry Association project	6						
	Program Core							
DCE332	Design of Reinforced cement concrete	3	3	0	0	3	40	60
DCE372	Civil engineering estimating and costing lab	2	0	0	3	3	60	40
DCE374	Soil mechanics Lab	2	0	0	3	3	60	40
DCE376	R.C.C. LAB	2	0	0	3	3	60	40
	University Elective							
DEE377	MAT Lab	2	0	0	3	3	60	40
	Disaster management	2	0	0	3	3	60	40
	Program Elective							
DCE334	Irrigation engineering.	3	3	0	0	3	40	60
DCE336	Quantity survey and valuation	3	0	0	0	3	40	60
DCE 338	Design of steel structure	3	0	0	0	3	40	60

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					Weight age (in%)

Year: III **Edition-2018** **Semester: VI**

Course Title:**BUILDING MATERIAL AND CONSTRUCTION**		Course Code	: **DCE231**
Semester	: **III**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **3:0:0**	Credits	: **3 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: **DIPLOMA IN CIVIL ENGINEERING**			

Pre-requisites:

1. Student should be able to read the building plans.
2. Student should be able to think over the construction problems and their remedies.
3. Student should know the basic properties of material being used in the construction of the building.

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Course Objectives:

1. Identify various components of buildings and their functions.
2. Mark layout of building on ground.
3. Know the procedure for execution of various constructions activities.
4. Check line, level and plumb of various construction activities.
5. Prepare checklist of operations for supervision of various construction activities.
6. Identify & suggest rectification the various defects in civil engineering works.

Course Content:

Topic and Contents	Hours	Marks
UNIT-1: BUILDING COMPONENTS AND MATERIALS	08	20
1.1BUILDING COMPONENTS AND TYPES OF STRUCTURE BUILDING COMPONENTS & THEIR FUNCTION. SUBSTRUCTURE–FOUNDATION, PLINTH. SUPERSTRUCTURE–WALLS, SILL, LINTEL, DOORS & WINDOWS, FLOOR, ROOF, PARAPET, BEAMS, COLUMNS. TYPES OF STRUCTURES -LOAD BEARING STRUCTURES, FRAMED STRUCTURES, COMPOSITE STRUCTURES. **1.2MASONRY MATERIALS** A) BUILDING STONES- CLASSIFICATION OF ROCKS, REQUIREMENT OF GOOD BUILDING STONE, DRESSING OF STONES, QUARRYING OF STONES ,ARTIFICIAL OR CAST STONES B) BRICKS– CONVENTIONAL BRICKS , STANDARD BRICKS COMPOSITION OF CLAY BRICK, STRENGTH OF BRICKS, PROPORTIONS OF BURNT CLAY BRICKS , TESTING OF BRICKS , SPECIAL BRICKS ,HOLLOW BLOCKS , FLY ASH BRICKS. C) MORTARS – CLASSIFICATIONS, LIME MORTAR, CEMENT MORTAR, SPECIAL MORTARS. FUNCTIONS OF MORTAR, PROPORTIONS, PROPERTIES OF MORTAR AND TESTS FOR MORTAR. **1.3TIMBER BASED MATERIAL** USE OF TIMBER, CHARACTERISTICS OF GOOD TIMBER, DEFECTS IN TIMBER,		

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PLYWOOD, PARTICLE BOARD ,VENEER, SUN MICA , FORE MICA, NUWOOD, ARTIFICIAL TIMBER, RUBBER WOOD. **1.4MISCELLANEOUS MATERIALS** GLASS, PLASTIC, FIBERS, ALUMINUM, STEEL , GALVANIZED IRON, ASPHALT BITUMEN ETC .MICRO SILICA, PVC, CPVC, PPF. WATERPROOFING AND TERMITE PROOFING MATERIALS, ADMIXTURES IN CONCRETE, BONDING AGENTS, EPOXY RESINS, POLISHING MATERIALS ETC		
UNITS-2: CONSTRUCTION OF SUBSTRUCTURE	06	20
2.1JOB LAYOUT SITE CLEARANCE, PREPARING JOB LAYOUT, LAYOUT FOR LOAD BEARING STRUCTURE AND FRAMED STRUCTURE BY CENTER LINE AND FACE LINE METHOD, PRECAUTIONS WHILE MARKING LAYOUT ON GROUND . 06 12 **2.2EARTHWORK** EXCAVATION FOR FOUNDATION, TIMBERING AND STRUTTING EARTHWORK FOR EMBANKMENT MATERIAL FOR PLINTH FILLING. TOOLS AND PLANTS USED FOR EXCAVATION AND EARTHWORK. **2.3FOUNDATION** TYPES OF FOUNDATION – OPEN FOUNDATIONS, SHALLOW FOUNDATION, STEPPED FOUNDATION, ISOLATED AND COMBINED COLUMN FOOTING, RAFT FOUNDATION, DEEP FOUNDATION AND PILE FOUNDATION. PUMPING METHOD OF DEWATERING, COFFERDAMS. BEARING CAPACITY OF FOUNDATION SOIL, UNDER REAMED PILE FOUNDATION.		
UNITS-3: CONSTRUCTION OF SUBSTRUCTURE	08	20

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3.1STONE MASONRY TERMS USED IN STONE MASONRY – FACING, BACKING, HEARTING, THROUGH STONE, CORNER STONE. UNCOURSED RUBBLE MASONRY, COURSED RUBBLE MASONRY, POINT TO BE OBSERVED IN CONSTRUCTION OF STONE MASONRY, MORTARS FOR STONE MASONRY, TOOLS AND PLANTS USED FOR STONE MASONRY, COL-GROUT MASONRY. 20 24 3.2**BRICK MASONRY** COMMON TERMS USED IN BRICK MASONRY, REQUIREMENTS OF GOOD BRICKWORK, BONDS IN BRICK MASONRY, ENGLISH, FLEMISH, STRETCHER AND HEADER BONDS ONLY. BRICK LAYING ,LINE LEVEL AND PLUMB OF BRICKWORK, STRIKING AND RAKING OF JOINTS, LEAD AND LIFT, PRECAUTIONS IN BRICK MASONRY, TOOLS AND PLANTS USED IN BRICK MASONRY . COMPARISON BETWEEN BRICK AND STONE MASONRY. HOLLOW CONCRETE BLOCK MASONRY, COMPOSITE MASONRY, CAVITY WALL- PURPOSE AND CONSTRUCTION. 3.3 **DOORS AND WINDOWS** DOORS -COMPONENTS AND CONSTRUCTION OF PANELLED DOORS, BATTENED DOORS, FLUSH DOORS, COLLAPSIBLE DOORS, ROLLING SHUTTERS, REVOLVING DOORS, And GLAZED DOORS. SIZES OF DOOR. 3.4 **STAIRS:** TERMSUSED,CLASSIFICATION OFSTAIRS, STAIRSOF DIFFERENT MATERIALS, SPECIFICATIONSANDSUITABILITY		
UNIT-4: BUILDING FINISHES	08	20

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4.1 **FLOORS AND ROOF**S FLOOR FINISHES- SHAHABAD , KOTA, MARBLE, GRANITE ,KADAPPA, CERAMIC TILES ,VITRIFIED , MOSAIC TILES ,CHEQUERRED TILES, GLAZED TILES ,PAVEMENT BLOCKS , CONCRETE FLOORS, TREMIX FLOOR, SKIRTING AND DADO. PROCESS OF LAYING- PROCESS OF LAYING AND CONSTRUCTION, FINISHING AND POLISHING OF FLOORS. ROOFING MATERIALS – AC SHEETS ,G.I. SHEETS, PLASTIC SHEETS, FIBRE SHEETS, MANGALORE TILES ETC. STEEL TRUSSES. R.C.C. SLAB 16 24 4.2 **WALL FINISHES** PLASTERING – NECESSITY OF PLASTERING, SINGLE COAT PLASTER DOUBLE COAT PLASTER , NEERU FINISHING AND POP, SPECIAL PLASTERS STUCCO PLASTER , PLASTER BOARD AND WALL CLADDINGS. PRECAUTION TO BE TAKEN WHILE PLASTERING. DEFECTS IN PLASTER. POINTING – NECESSITY AND PROCEDURE OF POINTING. PAINTING – NECESSITY, SURFACE PREPARATION, METHOD OF APPLICATION, SELECTING SUITABLE PAINTING MATERIAL, WHITE WASH AND COLOUR WASH.		
UNIT 5: BUILDING MAINTENANCE	06	20
5.1 **CRACKS** CAUSES AND TYPES OF CRACKS, IDENTIFICATION AND REPAIR OF CRACKS. GUNITING AND GROUTING, USE OF EPOXY AND CRACK FILLS. 5.2 **SETTLEMENT** SETTLEMENT --CAUSES AND REMEDIAL MEASURES PLINTH PROTECTION – NECESSITY AND MATERIALS USED. 5.3 **DEMOLITION** NECESSITY, METHOD OF DEMOLITION-HAND DEMOLITION, MACHINE DEMOLITION, CONTROLLED BLASTING DEMOLITION, PRECAUTIONS DURING DEMOLITION. 5.4 **REBARING TECHNIQUES** NECESSITY AND EQUIPMENT FOR REBARING TECHNIQUES		
TOTAL	**36**	**100**

Reference:

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TextBooks:

1.BuildingConstructionbySushilKumarStandard Publication,Edition19th 1997

1. BuildingConstructionbyB.C.PunmiaLaxmiPublication,Edition10th2009

Reference Books:

1.BuildingConstructionbyS.C.Rangawala, CharotarPublication, Edition25th 2007

2. BuildingConstructionbyS.P. AroraandBindraDhanpatRaiPublication Edition4th1988

3.CivilEngineeringMaterialsbyTechnicalTeachersTraining Institute, ChandigarhTataMcGraw-Hill PublishingCompanyLtd.NewDelhiEdition1st1992

Course outcomes:

On successful completion of the course, the student will be able to:

1- Brief knowledge about materials used in construction,
2- About different types of materials used in building,
3- Different types of door and windows.
4- About different types of method for masonry.

Mapping Course Outcomes with Program Outcomes:

Course Outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S		M			S			S		
2	S	M				S			S			S
3	S	S			S			M			S	
4	M	S		S								

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

S.No.	Educational Component	Weight age (%)
1	Remembering and Understanding	45

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2	Applying the knowledge acquired from the course	30
3	Analysis and Evaluation	25

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course
	End of Course survey			End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

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Course Title:**CONCRETE TECHNOLOGY**		Course Code	: **DCE232**
Semester	: **IV**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **3:0:0**	Credits	: **3 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: **DIPLOMA IN CIVIL ENGINEERING**			

Pre-requisites:

Student should take survey of different types of materials used in building construction.

Course Objectives:

1. Supervise various concreting operations.
2. Carry out field and laboratory tests on concrete in plastic and hardened stage.
3. Describe different types of concrete.
4. Infer the test results as per relevant I.S. provisions.

Course Content:

Topic and Contents	Hours	Marks
UNIT-1: INTRODUCTION	06	20

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Definition of Concrete, Advantages of concrete, Cement, composition of cement, types of cement, tests on cement, setting time, fineness, strength of cement. **WATER** • Indian Standards for quality of water for use in cement concrete. • Effect of impurities in water on concrete		
UNITS-2: AGGREGASTES	08	20
Aggregates ,classification, strength of aggregate ,bulking of sand, sieve analysis, Quarry selection ,Water Quality Requirements as per IS .S456-2000, Workability: Factors affecting Workability, Measurement of workability, slump test, compacting factor, Recommended slumpsforplacementsinvariousconditionsasperIS.456-2000.BleedingofConcrete,WaterCementratio,Shrinkage,Creep, Durability of Concrete		
UNITS-3: CONCRETE OPERATIONAND TRANSPORTION	08	20
• Batching Volume batching ,Weight batching • Mixing Hand mixing , Machine mixing • Transporting of concrete Mortar pan ,Wheel barrow ,Bucket and rope way Truck mixer and dumpers ,Belt conveyors ,Chute Skip and hoist, Pumps and pipeline • Placing concrete • Compaction of concrete Hand compaction , Compaction by vibrators • Curing of concrete Water curing ,Membrane curing, Steam curing		
UNIT-4:	08	20

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Special types of concrete: Ready mix concrete, precast concrete, vacuum concrete, lightweight concrete, high performance concrete. Admixtures as per IS 456-2000: Chemical Admixtures such as Plasticizers, Retarders, Accelerators, Water Reducing admixtures.		
UNIT 5:	06	20
Mixing and Compaction of concrete: Hand Mixing and Machine Mixing, Hand Compaction and Machine Compaction. Curing of Concrete: Objectives and methods of Curing; Duration of curing and removal of formwork. Defects in Concrete: Identification and methods ofrepairs.		
TOTAL	**36**	**100**

Reference:

Text Books

Properties of Concrete by A.M. Neville Publisher John Wiley &Sons 4th edition 1996

Reference Books

1. Cement Concrete Mix Design Principles and practice by M. Y. Sabnis,GMS Publications edition2005
2. Concrete Technology by M.S.Shetty, S.ChandPublication edition200

Course outcomes:

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On successful completion of the course, the student will be able to:

1. Determine the properties of concrete ingredients i.e. cement. sand. coarse aggregate by conducting different tests.
2. Use different types of cement as per their properties for different fields applications.
3. Design economic mix proportion for different exposure conditions and intended purposes.
4. Use different types of admixtures to improve the properties of concrete for different field applications.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S		M			S			S		
2	S	M				S			S			S
3	S	S			S			M			S	
4	M	S		S								

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

S.No.	Educational Component	Weight age (%)
1	Remembering and Understanding	45
2	Applying the knowledge acquired from the course	30
3	Analysis and Evaluation	25

Course Assessment and Evaluation:

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The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course
	End of Course survey			End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

Course Title:**CONSUMER AFFAIRS**		Course Code	:
Semester	: **III**	Core / Elective	: **Elective**
Teaching Scheme in Hrs (L:T:P)	: **3:0:0**	Credits	: **2 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **24**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: **DIPLOMA IN CIVIL ENGINEERING**			

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Duration:3hrs. *MaxMarks:100* *Total Lectures:24*

Objective: This paper seeks to familiarize the students with their rights and responsibilities as a consumer, the social framework of consumer rights and legal framework of protecting consumer rights. It also provides an understanding of the procedure of redress of consumer complaints, and the role of different agencies in establishing product and service standards. The student should be able to comprehend the business firms' interface with consumers and the consumer related regulatory and businessenvironment.

Unit 1:ConceptualFramework *5 Lectures*

Consumer and Markets: Concept of Consumer, Nature of markets: Liberalization and Globalization of markets with special reference to Indian Consumer Markets, E-Commerce with reference to Indian Market, Concept of Price in Retail and Wholesale, Maximum Retail Price (MRP), Fair Price, GST, labeling and packaging along with relevant laws, Legal Metrology.

Experiencing and Voicing Dissatisfaction: Consumer buying process, Consumer Satisfaction/dissatisfaction-Grievances-complaint, Consumer Complaining Behaviour: Alternatives available to Dissatisfied Consumers; Complaint Handling Process: ISO 10000 suite

Unit 2: The Consumer Protection LawinIndia **5Lectures**

Objectives and Basic Concepts: Consumer rights and UN Guidelines on consumer protection, Consumer goods, defect in goods, spurious goods and services, service, deficiency in service, unfair trade practice, restrictive tradepractice.

Organizational set-up under the Consumer Protection Act: Advisory Bodies: Consumer Protection Councils at the Central, State and District Levels; Adjudicatory Bodies: District Forums, State Commissions, National Commission: Their Composition, Powers, and Jurisdiction (Pecuniary and Territorial), Role of Supreme Court under the CPA with important caselaw.

Unit 3: Grievance Redressal Mechanism under the Indian Consumer Protection Law **5 Lectures**

Who can file a complaint? Grounds of filing a complaint; Limitation period; Procedure for filing and hearing of a complaint; Disposal of cases, Relief/Remedy available; Temporary Injunction, Enforcement of order, Appeal, frivolous and vexatious complaints; Offences and penalties.

Leading Cases decided under Consumer Protection law by Supreme Court/National Commission: Medical Negligence; Banking; Insurance; Housing & Real Estate; Electricity and Telecom Services; Education; Defective Products; Unfair Trade Practices.

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Unit 4: Role of Industry Regulators inConsumerProtection *5lectures*

i. Banking: RBI and BankingOmbudsman
ii. Insurance: IRDA and InsuranceOmbudsman
iii. Telecommunication:TRAI
iv. Food Products:FSSAI
v. Electricity Supply: Electricity RegulatoryCommission
vi. Real Estate RegulatoryAuthority

Unit 5: Contemporary Issues inConsumerAffairs *4Lectures*

Consumer Movement in India: Evolution of Consumer Movement in India, Formation of consumer organizations and their role in consumer protection, Misleading Advertisements and sustainable consumption, National Consumer Helpline, Comparative Product testing, Sustainable consumption and energy ratings.

Quality and Standardization: Voluntary and Mandatory standards; Role of BIS, Indian Standards Mark (ISI), Ag-mark, Hallmarking, Licensing and Surveillance; Role of International Standards: ISO an Overview

Suggested Readings:

1. Khanna, Sri Ram, Savita Hanspal, Sheetal Kapoor, and H.K. Awasthi. (2007) *Consumer Affairs,* Universities Press.

2. Choudhary, Ram Naresh Prasad (2005). *Consumer Protection Law Provisions and Procedure,* Deep and Deep Publications Pvt Ltd.

3. G. Ganesan and M. Sumathy. (2012). *Globalisation and Consumerism: Issues and Challenges*, Regal Publications

4. Suresh Misra and Sapna Chadah (2012). Consumer Protection in India: Issues and Concerns, IIPA, New Delhi

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5. Rajyalaxmi Rao (2012), *Consumer is King,* Universal Law Publishing Company

6. Girimaji, Pushpa (2002). *Consumer Right for Everyone* Penguin Books.

7. E-books :- www.consumereducation.in

8. Empowering Consumers e-book,

9. ebook, www.consumeraffairs.nic.in

10. *The Consumer Protection Act, 1986 and its later versions.* www.bis.org

Articles

1. Misra Suresh, (Aug 2017) "Is the Indian Consumer Protected? One India One People.

2. Raman Mittal, Sonkar Sumit and Parineet Kaur (2016) Regulating Unfair Trade Practices: An Analysis of the Past and Present Indian Legislative Models, Journal of Consumer Policy.

3. Chakravarthy, S. (2014). MRTP Act metamorphoses into Competition Act. CUTS Institute for Regulation and Competition position paper. Available online at www.cuts-international.org/doc01.doc.

4. Kapoor Sheetal (2013) "Banking and the Consumer" Akademos (ISSN 2231-0584)

5. Bhatt K. N., Misra Suresh and Chadah Sapna (2010). Consumer, Consumerism and Consumer Protection, Abhijeet Publications.

6. Kapoor Sheetal (2010) "Advertising-An Essential Part of Consumer's Life-Its Legal and Ethical Aspects", Consumer Protection and Trade Practices Journal, October 2010.

7. Verma, D.P.S. (2002). Regulating Misleading Advertisements, Legal Provisions and Institutional Framework. Vikalpa. Vol. 26. No. 2. pp. 51-57.

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Course Title:**SURVEYING-I**		Course Code	: **DCE233**
Semester	: **III**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **3:0:0**	Credits	: **3 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: **DIPLOMA IN CIVIL ENGINEERING**			

Pre-requisites:

1. Student should have skill in reading, drawing and sketching.
2. Students should know the basic principles, requirements and purpose of surveying.

Course Objectives:

1. Use survey instruments like the theodolite and plane table.
2. Record the data in field book and plot the collected data.
3. Find out horizontal and vertical distances with a tachometer.
4. Set out simple curve using Theodolite.
5. Apply principles of surveying and levelling for Civil Engineering works.

Course Content:

Topic and Contents	Hours	Marks
UNIT-1: TYPES OF SURVEY	6	20
Definition, objects of surveying, principle of surveying. Uses of survey, classification of surveying. Primary – plain , geodetic, Secondary – Based on instruments, method, object, nature of field.		
UNITS-2: CHAIN & CROSS STAFF SURVEY	08	20
2.1 Principle of chain survey .study and use of instruments for linear measurement – chain, tape, ranging rod , arrows , pegs , cross staff, optical square, line ranger- **2.2** Ranging – Direct and Indirect Ranging Chaining – plain & sloping grounds Chain Triangulation – Survey Station and their Selections,	02	

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Survey lines, check lines, tie lines, base line. Taking offsets. Short and long offset degree of offset. Obstacles in chaining. **2.3**chain & cross staff survey for finding area of a field (numerical problems) Errors in chain surveying & applying corrections for chain & tape. Conventional signs related to survey.	03 03	
UNITS-3: COMPASS SURVEY	08	20
3.1 Principle of compass survey.ng Bearing of lines – meridian – true, magnetic, and arbitrary. Bearing – for bearing , back bearing, whole bearing, quadrantal bearing system and reduced bearing , conversion of bearings, **3.2** Prismatic compass- component, construction and uses. **3.3** Local attraction , causes, precaution to be taken to avoid and correction of bearings affected due to local attraction, calculation of included angles, **3.4** Traversing- open traverse, closed traverse, check on open and closed traverse. Graphical adjustment for closing error. **3.5** Numerical problems on calculation of bearings, angles and local attraction.	03 03 02	
UNIT-4: LEVELLING	08	20
4.1 Definitions – Level surface, Level line, Horizontal line, Vertical line, Datum surface, Reduced level , bench mark and its types. . 4.2 Dumpy level –components, construction, line of sight, line of collimation, bubble tube axis, levelling staff – telescopic and folding type .foresight, back sight, intermediate sight, change point, height of collimation . Fundamental axes and their relationship 4.3 Recording in level book. Temporary adjustments of dumpy level. 4.4 method of reduction of levels – height of instrument method and rise and fall method. Arithmetical checks, numerical problems, computation of missing readings. 4.5 classifications of levelling - simple, differential, profile, cross sectional, fly and check levelling. 4.6 study and use of tilting level & auto level. 4.7 sources and errors in levelling, precautions and difficulties faced in levelling.	02 03 03	
UNIT 5: PLANE TABLE SURVEYING	06	20
Plane Table Surveying : 5.1 Description And Uses Of Plane Table And Accessories, Advantages Of Plane Table Surveying,	02	

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5.2 Temporary Adjustment Of Plane Table Surveying- Centering, Levelling And Orientation Of Plane Table. 5.3 Methods Of Palne Tabling- Radiation, Intersections, Traversing, Resection, Two Point Problems And Three Point Problem 5.4 Errors In Plane Tabling.	04	
TOTAL	**36**	**100**

Reference:

1. Surveying-I B. C. Punmia
2. Surveying G. C. Singh
3. Surveying- IS.B. Kanetkar
4. Surveying K. R. Arora

Course outcomes:

On successful completion of the course, the student will be able to:

1. Brief knowledge about surveying
2. About different types of instruments used in surveying
3. Use of chain, tape, compass, cross staff, theodolite,
4. About different types of method by using compass, thedolite, plane table etc.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	**Programme Outcomes**											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S		M			S			S		
2	S	M				S			S			S
3	S	S			S			M			S	
4	M	S		S								

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

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S.No.	Educational Component	Weight age (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course
	End of Course survey			End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

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CIE – Continuous Internal Evaluation **ESE** –End Semester Examinatio

Course Title:**Hydraulic And Hydraulic Machine**		Course Code	: **DCE234**
Semester	: **IV**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **3:0:0**	Credits	: **3 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: **DIPLOMA IN CIVIL ENGINEERING**			

Pre-requisites:

1. Student should know the basic properties of fluid.

Course Objectives:

1. Evaluate the Physical properties of fluid.
2. Determine Difference in behaviour of fluid with respect to solids.
3. Enumerate Concept of pressure head and its unit.
4. Concept of flow.
5. Flow Of Liquid Through Pipes and Hydraulics machine

Course Content:

Topic and Contents	Hours	Marks
UNIT-1: Properties of fluids	06	20
1.1 Definition of fluid, Difference in behaviour of fluid with respect to solids. Introduction to fluid mechanics and hydraulics, Branches of hydraulics- Hydrostatics and hydrodynamics, Importance of Hydraulics with respect to Irrigation and Environmental engineering. 1.2 Physical properties of fluid Mass density, Weight density, Specific		

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volume, Specific gravity, Surface tension and capillarity, Compressibility, Viscosity, Newton's law of viscosity – Dynamic and kinematics viscosity. Ideal and Real liquids.		
UNITS-2: HYDROSTATIC PRESSURE	08	20
2.1 Free liquid surface, Definition of pressure and its SI unit Hydrostatic pressure at point, Pascal's law Variation of pressure in horizontal and vertical direction in static liquid Pressure diagram. 2.2 Total hydrostatic pressure and center of pressure, Determination of total pressure &center of pressure on vertical & inclined faces of dams, sluice gates, sides and bottom of water tanks, Determination of total hydrostatics pressure &center of pressure on sides and bottom of tank containing two liquids. Determination of net hydrostatic pressure andcenter of pressure on vertical surface in contact with liquid on either side. Numerical Problems.		
UNITS-3: Measurement Of Liquid Pressure In Pipes	08	20
Concept of pressure head and its unit, Conversion of pressure head of one liquid in to other devices for pressure measurements in pipes – Piezometer, U-tube manometer, Bourdon's pressure gauge. Principle of working and limitations. Measurement of pressure difference using differential manometer – U-tube differential manometer and inverted U-tube differential manometer. Numerical Problems.		
UNIT-4: Fundamentals Of Fluid Flow	06	20
4.1 Concept of flow, Gravity flow and pressure flow. Types of flow – steady and Unsteady, uniform and non-uniform , Laminar and turbulent. Various combinations of flow with practical examples, Reynolds number and its application, Stream line and equipotential line. Flow net and its uses 4.2 Discharge and its units Continuity equation for fluid flow. Datum head, pressure head, velocity head and total head, Bernoulli's theorem, Loss of head and modified Bernoulli's theorem, Impulse momentum theorem Numerical Problems.		
UNIT 5: Flow Of Liquid Through Pipes and Hydraulics machine	08	20
5.1 Loss of head due to friction, Darcy-Weisbach Equation Friction factor, relative roughness. Moody's diagram and its use. Common range of friction factor for different types of pipe material. 5.2 Minor loss of head in pipe flow- loss of head due to sudden Contraction, sudden expansion, gradual contraction & expansion, at entrance and exit of pipe in various pipe fittings. Pipes in series and parallel Equivalent pipe – Dupuit's equation 5.3 Hydraulic gradient line and Energy gradient line, Siphon pipe. Water hammer in pipes – cause effects and remedial measures Use of Nomograms for design of water distribution system. Numerical. 5.4 Pumps - Definition and types.		

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Suction head, delivery head, static head and manometric head. Centrifugal pump - component parts and their functions, principle of working, priming. Reciprocating pump - component parts and working. Submersible pump and Jet pump. Selection and choice of pump. Computation of power required for pumps. Turbines - Definition and types.		
TOTAL	**36**	**100**

Reference:

1. Fluid Mechanics-F. M. White, McGraw-Hill
2. Fluid Mechanics and Hydraulic Machines-R. K. Bansal
3. Fluid Mechanics and Hydraulic Machines-Modi &Sethi.

Course outcomes:

On successful completion of the course, the student will be able to:

1. Compute the total hydro static pressure &center of pressure.
2. Describe the principle of pressure measuring devices.
3. Identify the concept of fluid flow.
4. Compute the loss of water flowing through pipes.
5. Design most economical channel section
6. Describe working of the velocity measuring devices.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S		M			S			S		
2	S	M				S			S			S
3	S	S			S			M			S	
4	M	S		S								

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

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Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

S.No.	Educational Component	Weight age (%)
1	Remembering and Understanding	45
2	Applying the knowledge acquired from the course	30
3	Analysis and Evaluation	25

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
REC T ASSE SSM	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course

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	End of Course survey		End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Course Title:**SURVEYING-II**		Course Code	: **DCE236**
Semester	: **IV**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **3:0:0**	Credits	: **3 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: **DIPLOMA IN CIVIL ENGINEERING**			

Pre-requisites:

1. Student should have skill in readin, drawing and sketching.
2. Students should know the basic principles, requirements and purpose of surveying.

Course Objectives:

1. Analyse the Components of Transit Theodolite and Their functions.
2. Enumerate Traverse Computation.
3. Analyse the Principle of E.D.M

Course Content:

Topic and Contents	Hours	Marks

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UNIT-1: Theodolite Survey	08	20
1.1 Components of Transit Theodolite and Their functions. Technical terms used. Temporary adjustments of Transit Theodolite. Swinging the telescope, Transiting, Changing the face. 1.2 Measurement of Horizontal angle, method of Repetition, errors eliminated by method of repetition. 1.3 Measurement of Deflection angle. 1.4 Measurement of Vertical angle. 1.5 Measurement of magnetic bearing of a line by Theodolite. 1.6 Prolonging a Straight line. 1.7 Sources of errors in Theodolite Surveying. 1.8 Permanent adjustment of transit Theodolite (only relationship of different axes of Theodolite.). 1.9 Traversing with Theodolite – Method of included angles, locating details, checks in closed traverse, Calculation of bearings from angles. 1.10 Traverse Computation - Latitude, Departure Consecutive Co-ordinates error of Closure, Distribution of a angular error, balancing the traverse by Bowditch rule and Transit Rule, Gale's traverse table .simple problems on above topic.		
UNITS-2: Tachometric Survey	06	20
2.1 Principle of Tachometry. 2.2 Essential requirements of Tacheorneter. 2.3 Use of Theodolite as a Tacheometer with staff held in vertical and fixed hair method (No derivation). 2.4 Determination of tachometric constants, simple numerical problems on above topics.		
UNITS-3: Curves	06	20
3.1 Types of curves used in road and railway alignments. Notations of simple circular curve. Designation of curve by radius and degree of curves. 3.2 Method of Setting out curve by offset from Long chord method and Rankine's method of deflection angles. Simple Numerical problems on above topics. Transition Curves- Ideal transition curve, Types of transition curve		
UNIT-4: Advanced Survey Equipments	08	20
4.1 Construction and use of one second Micro Optic Theodolite, Electronic Digital Theodolite. Features of Electronic Theodolite 4.2 Principle of E.D.M, Components of E.D.M and their functions, use of E.D.M. 4.3 Total station 4.4 Electronic distance measuring instruments 4.5 Global Positioning system		
UNIT 5: Aerial Survey and Remote sensing	08	20
5.1 Aerial Survey Introductions, definition, Aerial photograph. 5.2 Remote Sensing – Introduction, Electro-Magnetic Energy , Remote sensing system- Passive system , Active system. Applications – mineral, land use / Land cover, Natural Hazards and Environmental engineering system.		
TOTAL	**36**	**100**

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Reference:

1. Surveying and Levelling Vol. II
   Dr. B. C. PunmiyaLaxmi Publication

2. Surveying and
   Levelling **N NBasak Tata Mc Graw-Hill**

3. Surveying and Levelling Part I and II
   T .P. Kanetkar& S. V,
   Kulkarni PUNE VIDHYARTHI GRIHA
   Prakashan

4. Surveying and Levelling Vol. I and II
   S. K. Duggal TATA MC GRAW-HILL

Course outcomes:

On successful completion of the course, the student will be able to:

5- Use survey instruments like the theodolite and plane table.
6- Record the data in field book and plot the collected data.
7- Find out horizontal and vertical distances with a tachometer
8- Set out simple curve using Theodolite.
9- Use of Modern Survey equipments - Micro Optic Theodolite and EDM.
10- Apply principles of surveying and levelling for Civil Engineering works.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S		M			S			S		
2	S	M				S			S			S
3	S	S			S			M			S	
4	M	S		S								

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

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Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

S.No.	Educational Component	Weight age (%)
1	Remembering and Understanding	45
2	Applying the knowledge acquired from the course	30
3	Analysis and Evaluation	25

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSESSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8

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		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course
	End of Course survey			End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Course Title:SWATCH BHARAT		Course Code	:
Semester	: **IV**	Core / Elective	: **Elective**
Teaching Scheme in Hrs (L:T:P)	: **3:0:0**	Credits	: **2 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **24**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: **DIPLOMA IN CIVIL ENGINEERING**			

UNIT-1 Introduction to Health, Hygiene, and Sanitation ; The Need for Health, Hygiene, and Sanitation Education ; Related International projects on Health and Hygiene; Overview of the Swachh Bharat ; Qualities of Healthy Living.

UNIT-2 Hygiene - Understanding of Hygiene; Desired Definition of Hygiene; The Hygiene Practices of the different categories of family in India; Role of Family, Institutions and Corporations and government in Developing Hygiene consciousness.

UNIT -3 Sanitation ; Understanding the importance of sanitation; The facilities developed for sanitation; Means adopted to promote the use of Sanitation Facilities; Sanitation Facilities provided by government under Swachh Bharat Abhiyaan.

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UNIT -4 Water Storage Methods; Water Contamination ; Prevention of Water Contamination ; The Health Risks, especially due to Water Borne Diseases; Water Purification ; Importance of Safe water use; Government's role and actions taken for awareness generation for consumption of pure water and preventing contamination of Water.

UNIT -5 Waste Management – Introduction, importance and need; Action Plans for Healthy Living introduced under Swachh Bharat Abhiyaan; Means adopted for Waste Management under Swachh Bharat Abhiyaan.

Course Title:**ENVIEROMENTAL ENGINEERING**		Course Code	: **DCE238**
Semester	: **IV**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **3:0:0**	Credits	: **3 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: **DIPLOMA IN CIVIL ENGINEERING**			

Pre-requisites:

Knowledge of Basic of environment science and chemistry at Sec. and Sr. Sec. Level.

Course Objectives:

1. Identify various components of water supply engineering.
2. Enumerate Treatment process of waste water.
3. Brief knowledge of Collection systems of waste water.
4. Define Supply of water as per demand.

Course Content:

Topic and Contents	Hours	Marks
UNIT-1: Estimate of Supply:	08	20

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Demand for various purposes, factors affecting demand, variation in rate of demand, Basic concepts of environmental Chemistry. Quality of water: Drinking water standards, characterization of water, physical, chemical and bacteriological. Numericals on *p*H, alkalinity, acidity, hardness, solids. Sample collection method. Forecasting of population by various methods. Source of Water Supply: Surface and Sub-sources. Intake works.		
UNITS-2: GLOBAL ENVIRONMENTAL ISSUSE	08	20
Deforestation, Land sliding, Recharging and drying of water resources, Green house effects ,Ozone depletion , Acid rain ,Global warming **Environment Laws :** Water Pollution Prevention and Control Act , Air Pollution Prevention and Control Act		
UNITS-3: WASTE WATER ENGINEERING	06	20
Classification of wastewater, Waste-water Characteristics (Physical, Chemical) Microbiology of sewage, BOD Kinetics, BOD determination in laboratory, wastewater effluent standards. **Waste Water Treatment** Primary Treatment: Screening, Grit removal, Grease trap, sedimentation. Secondary Treatment: Activated sludge process, trickling filter, stabilization pond. Anaerobic wastewater treatment. Septic tank-working principal design. Method of sewage disposal. Sludge sources-digestion and disposal.		
UNIT-4: Collection Systems:	06	20
Separate, partially separate and combined. Types of sewers and drains. Sewer appurtenances Manholes, street inlets, catch basins, sand, grease and oil traps. Maintenance of sewers, problems, in Sewer Maintenances, Sewer Clearing Equipment and Devices.		
UNIT 5: POLLUTION	08	20
Water Pollution: **Fresh water** Causes of water pollution in surface and ground water, Water quality standards, Remedial measures to control fresh water pollution **Waste water** Adverse effects of domestic and industrial effluents, Standards for industrial effluents, Remedial measures to control industrial pollution **Air Pollution** : Definition, Sources, Harmful effects on living and non-living beings , Permissible limits as per Indian standard, Remedial measures **Noise Pollution:** Introduction, Sources of noise, Decibel scale, Adverse		

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effect on human beings and environment. Control measures **Land Pollution:**Introduction, Sources of land pollution, Effects of land pollution, Control measures, Soil conservation		
TOTAL	**36**	**100**

Reference:

1. Peavy, H.S., 1985, Environmental Engineering, mcgraw-Hill Book Company.
2. K.N.Duggal, 2012, Elements of Environmental Engineering, S. Chand, New Delhi.
3. D. Srinivasan, 2009, Environmental Engineering, PHI, New Delhi.
4. Wark& Warner, Air Pollution- origin and control, Harper and Collins.
5. Tchobanoglous, G., H. Theisen and S. Vigil, 1993, Integrated Solid Waste Management, mcgraw-Hill Inc. Singapore.

Course outcomes:

On successful completion of the course, the student will be able to:

11- Brief knowledge about waste water.
12- About different types of supply of water.
13- Different types of collection of waste water.
14- About different types of treatment process for waste water.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S		M			S			S		
2	S	M				S			S			S

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3	S	S			S			M			S	
4	M	S		S								

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

S.No.	Educational Component	Weight age (%)
1	Remembering and Understanding	50
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	25

Course Assessment and Evaluation:

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The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course
	End of Course survey			End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

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Course Title: **HYDRAULICS AND HYDRAULICS MACHINE LAB**		Course Code	: **DCE272**
Semester	: **IV**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **0:0:3**	Credits	: **2Credits**
Type of course	: **Practical**	Total Contact Hours	: **30**
Continuous Internal Evaluation	: **60Marks**	SEE	: **40Marks**
Programmes: **Diploma in Civil Engineering**			

Pre-requisites:

Knowledge of Basic Of hydraulics and hydraulic machine and their properties.

Course Objectives:

1. This course supposed to give the knowledge of flow of fluid.
2. Analyzing different experiments for hydraulics.
3. Enumerate rate of discharge of venturimeter.
4. Analyzing the model of centrifugal pump,

Course Content:

LIST OF EXPERIMENTS	
S. NO.	**NAME OF EXPERIMENT**
01.	Measurements of pressure and pressure head by Piezometer, U-tube manometer
02.	Verification of Bernoulli's theorem
03.	Reynolds experiment to study types of flow.
04.	Determination of Darcy's friction factor for a given pipe
05.	Determination of Minor losses in pipes
06.	Demonstration of Hydraulic jump
07.	Determination of coefficient of discharge for a given Venturimeter.
08.	Demonstration and use of Pitot tube and current meter
09.	Study & use of water meter.
10.	Study of a model of centrifugal and reciprocating pump.

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Course outcomes:

On successful completion of the course, the student will be able to:

1. The student will be able to measure pressure and pressure head from different monometers.
2. The student will be able to verify Bernoulli's equation with experiments.
3. The student will be able to determine minor and major looses from pipes.
4. The student will be able to know different hydraulic machine with their working process.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S			S			S		S		
2	S	M				S			S			M
3	S	S		S			S			M		
4	S	S				S					S	

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	30
3	Analysis and Evaluation	40

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Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

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Course Title:**MATERIAL TESTING LAB**		Course Code	:**DCE273**
Semester	: **III**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **0:0:3**	Credits	: **2Credits**
Type of course	: **Practical**	Total Contact Hours	: **30**
Continuous Internal Evaluation	: **60Marks**	SEE	: **40Marks**
Programmes: **Diploma in Civil Engineering**			

Pre-requisites:

Knowledge of Basics of different building materials and their properties,

Course Objectives:

1. Basic knowledge of various types of building materials.
2. Analyze different tests on bricks.
3. Analyze different test over cement as a fine aggregate.
4. Properties of sand.

Course Content:

LIST OF EXPERIMENTS	
S. NO.	**NAME OF EXPERIMENT**
01.	Identification of various types of stones and their applications
02.	Identification of various types of bricks and clay products
03.	Field tests on bricks
04.	Water absorption test on bricks
05.	Field tests of cement
06.	Fineness of cement
07.	Initial and final setting times of cement
08.	Bulking of Sand
09.	Fineness Modulus of coarse aggregate by sieve analysis
10.	Fineness Modulus of fine aggregate by sieve analysis

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Course outcomes:

On successful completion of the course, the student will be able to:

1. Know about different building materials.
2. Prepare different test on bricks.
3. Able to check consistency of cement.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S			S			S		S		
2	S	M				S			S			M
3	S	S		S			S			M		
4	S	S				S					S	

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	30
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	45

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Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

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Course Title:**SURVEY LAB – II**		Course Code	:**DCE274**
Semester	: **IV**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **0:0:3**	Credits	: **2Credits**
Type of course	: **Practical**	Total Contact Hours	: **30**
Continuous Internal Evaluation	: **60Marks**	SEE	: **40Marks**
Programmes: **Diploma in Civil Engineering**			

Pre-requisites:

Knowledge of Basic Of civil engineering surveying and different equipments.

Course Objectives:

1. This course supposed to give the knowledge of total station..
2. Study of E.D.M. for knowing its components.
3. Analyse the Concept of theodolite.
4. Evaluate the Basic concept of plane tablening.

Course Content:

LIST OF EXPERIMENTS	
S. NO.	**NAME OF EXPERIMENT**
01.	Using accessories carry out temporary adjustments of plane table. Locating details by method of radiation
02.	Locating details with plane table by method of intersection.
03.	Understanding the components of Theodolite and their functions, reading the vernier and temporary adjustments of theodolite.
04.	Measurement of Horizontal angle by transit theodolite
05.	To find Reduced levels and horizontal distances using theodolite as a Tacheomete
06.	Measurement of deflection angle by taking open traverse of 4 –5 sides

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07.	To find Reduced levels and horizontal distances using theodolite as a Tacheometer
08.	Study of E.D.M. for knowing its components.
09.	Use of EDM for finding horizontal and vertical distances and reduced levels.
10.	Determine the geographical parameters by total station.

Course outcomes:

On successful completion of the course, the student will be able to:

5. The course content gives full knowledge to learn how to used equipments of surveying.
6. Find the area of any field or building by using theodolite.
7. To find elevation from different points using thedolite.
8. How to used total station.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	**Programme Outcomes**											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S			S			S		S		
2	S	M				S			S			M
3	S	S		S			S			M		
4	S	S				S					S	

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

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Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	30
3	Analysis and Evaluation	40

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

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CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Course Title:**BUILDING DRAWING LAB –I**		Course Code	:**DCE275**
Semester	: **III**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **0:0:3**	Credits	: **2Credits**
Type of course	: **Practical**	Total Contact Hours	: **30**
Continuous Internal Evaluation	: **60Marks**	SEE	: **40Marks**
Programmes: **Diploma in Civil Engineering**			

Pre-requisites:

Knowledge of Basic Drawing at Sec. and Sr. Sec. Level

Course Objectives:

1. Basic knowledge of civil engineering drawing,
2. About different type of plan of any building.
3. Know how to draw a plan for different portion of the building.

Course Content:

LIST OF EXPERIMENTS	
S. NO.	**NAME OF EXPERIMENT**
01.	Conventional sign and symbols used in civil engineering drawing
02.	Introduction of building plan
03.	Drawing of walls ,brick and Stone masonry, partition wall, cavity wall and cross

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	section of external wall
04.	Pointing, Arches, Lintels and Floors
05.	Doors and Windows
06.	Stairs, cross section of Dog legged stairs
07.	Roofs: Flat and Inclined (Steel)
08.	Foundations for Masonry Structures and Framed Structures, Provision of Damp ProofCourse
09.	Development of Front Elevation and Sectional Elevation from a given plan
10.	Development of Plan, Front Elevation and Sectional Elevation from line diagram

Course outcomes:

On successful completion of the course, the student will be able to:

1. Student will be able to draw plan for any type of building
2. Student will be able to draw plan of different building components.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S			S			S		S		
2	S	M				S			S			M
3	S	S		S			S			M		
4	S	S				S					S	

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

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Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	45
2	Applying the knowledge acquired from the course	30
3	Analysis and Evaluation	25

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		

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	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Course Title:**BUILDING DRAWING –II & CAD LAB**		Course Code	:**DCE276**
Semester	: **IV**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **0:0:3**	Credits	: **2Credits**
Type of course	: **Practical**	Total Contact Hours	: **30**
Continuous Internal Evaluation	: **60Marks**	SEE	: **40Marks**
Programmes: **Diploma in Civil Engineering**			

Pre-requisites:

Knowledge of Basic Drawing at Sec. and Sr. Sec. Level

Course Objectives:

1. Basic knowledge of civil engineering drawing,
2. About different type of plan of any building.
3. Know how to draw a plan for different portion of the building.

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Course Content:

LIST OF EXPERIMENTS	
S. NO.	**NAME OF EXPERIMENT**
01.	Working Drawing of residential/ Public building according to local building bye laws (at least Two storied)
02.	Working Drawing of residential/ Public building according to local building bye laws (at least three storied)
03.	Structural drawing & detailing of the columns
04.	Structural drawing & detailing of the columns footings,
05.	Structural drawing & detailing of the stair cases a complete set of segmental drawing for a residential building.
06.	Detail drawing of RCC deck Types Bridge.
07.	Introduction to CAD
08.	Introduction to command of CAD

Course outcomes:

On successful completion of the course, the student will be able to:

1. Student will be able to draw plan for any type of building
2. Student will be able to draw plan of different building components.
3. Student will be able to draw plan using CAD.
4. Student will able to draw plan of component of structures.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S			S			S		S		
2	S	M				S			S			M
3	S	S		S			S			M		

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4	S	S				S					S	

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	30
2	Applying the knowledge acquired from the course	35
3	Analysis and Evaluation	35

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSESS	CIE	Attendance	Student	Every lab	10	Attendance Register	

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		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Course Title:**SURVEY LAB – I**		Course Code	:**DCE277**
Semester	: **III**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **0:0:3**	Credits	: **2Credits**
Type of course	: **Practical**	Total Contact Hours	: **30**
Continuous Internal Evaluation	: **60Marks**	SEE	: **40Marks**
Programmes: **Diploma in Civil Engineering**			

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Pre-requisites:

Knowledge of Basic Of civil engineering surveying and different equipments.

Course Objectives:

1. This course supposed to give the knowledge of basic civil engineering equipments.
2. Analyse the Applications surveying equipments.
3. Analyse the Concept of chain, tape, and plumb bob.
4. Evaluate the Basic concept of plane tablening.

Course Content:

LIST OF EXPERIMENTS	
S. NO.	**NAME OF EXPERIMENT**
01.	To study various survey equipments.
02.	To study various minor instruments.
03.	Ranging and fixing the survey system.
04.	Plotting of land survey - chain and cross staff surveying calculation of areas.
05.	Plotting building block by the use of cross staff.
06.	Plotting of perpendicular and oblique offsets
07.	Study of prismatic compass and to determine fore and back bearing of survey line.
08.	To determine the elevation of given points with reference to the bench mark.
09.	To find the difference in elevation between two points
10.	To study planimeter and to fix constant of the palnimeter.

Course outcomes:

On successful completion of the course, the student will be able to:

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1. The course content gives full knowledge to learn how to used equipments of surveying.
2. Find the area of any field or building by using chain and cross staff.
3. To find elevation from different points
4. To find vertical and horizontal distance using chain , tape etc.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S			S			S		S		
2	S	M				S			S			M
3	S	S		S			S			M		
4	S	S				S					S	

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	30
3	Analysis and Evaluation	40

Course Assessment and Evaluation:

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The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

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Course Title:**ENVIRONMENTAL ENGINEERING LAB**		Course Code	:**DCE278**
Semester	: **IV**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **0:0:3**	Credits	: **2Credits**
Type of course	: **Practical**	Total Contact Hours	: **30**
Continuous Internal Evaluation	: **60Marks**	SEE	: **40Marks**
Programmes: **Diploma in Civil Engineering**			

Pre-requisites:

Knowledge of Basic of environment science at Sec. and Sr. Sec. Level and chemical reaction.

Course Objectives:

1. Basic knowledge of c.
2. About different type of plan of any building.
3. Know how to draw a plan for different portion of the building.

Course Content:

LIST OF EXPERIMENTS	
S. NO.	**NAME OF EXPERIMENT**
01.	Determination of pH using a digital pH Meter.
02.	To determine total acidity in water and wastewater samples.
03.	To determine total phenolphthalein and methyl orange alkalinity in water and waste water samples.
04.	To determine total and calcium hardness in water samples.
05.	To determine chloride content in water and waste water samples.
06.	To evaluate percentage available chlorine in bleaching powder.
07.	To determine dissolved oxygen in water and wastewater samples.
08.	To determine Biochemical oxygen demand (BOD) of wastewater samples.
09.	To determine Chemical oxygen demand (COD) of wastewater samples.
10.	To determine total solids, total dissolved solids (TDS), total suspended solids (TSS) and total volatile solids in water and wastewater samples.

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Course outcomes:

On successful completion of the course, the student will be able to:

1. Student will be able to evaluate percentage available chlorine in bleaching powder.
2. Student will be able to evaluate total and calcium hardness in water samples.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S			S			S		S		
2	S	M				S			S			M
3	S	S		S			S			M		
4	S	S				S					S	

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	40
2	Applying the knowledge acquired from the course	30
3	Analysis and Evaluation	30

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Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

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Course Title:**BUILDING CONSTRUCTION LAB**		Course Code	:**DCE279**
Semester	: **III**	Core / Elective	: **Elective**
Teaching Scheme in Hrs (L:T:P)	: **0:0:3**	Credits	: **2Credits**
Type of course	: **Practical**	Total Contact Hours	: **30**
Continuous Internal Evaluation	: **60Marks**	SEE	: **40Marks**
Programmes: **Diploma in Civil Engineering**			

Pre-requisites:

1. Student should be able to read the building plans.
2. Student should be able to think over the construction problems and their remedies.
3. Student should know the basic properties of material being used in the construction of the building.

Course Objectives:

1. Identify various components of buildings and their functions.
2. Check line, level and plumb of various construction activities.
3. Prepare checklist of operations for supervision of various construction activities.

Course Content:

LIST OF EXPERIMENTS	
S. NO.	**NAME OF EXPERIMENT**
01.	Preparing foundation plan and marking on ground layout of load bearing structure by face line method from the given plan of the building.
02.	Preparing foundations plan and marking on ground layout of framed structure by face line method from the given plan of the building.
03.	Checking and transferring line and level of plinth, sill, lintel, flooring, slab level of a building and writing report of the process.
04.	Checking verticality (plumb line) of formwork for column, beam and wall at construction site and writing report of the process.
05.	Laying and constructing the process of construction of brickwork and report writing of the process.
06.	Observing the process of painting in residential / public building and writing a report with

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	reference to process and type of paint selected
07.	Observing and writing report of the process of plastering.
08.	Observing and writing report of the process of pointing.
09	Observing and writing report of the process of water proofing of terrace or basement.
10	Observing the models, specimen of building materials kept in the model room for few building items and writing a report for any five models/materials.

Course outcomes:

On successful completion of the course, the student will be able to:

1. Mark layout of building on ground.
2. Know the procedure for execution of various constructions activities.
3. Identify & suggest rectification the various defects in civil engineering works.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S			S			S		S		
2	S	M				S			S			M
3	S	S		S			S			M		

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	45
2	Applying the knowledge acquired from the course	30
3	Analysis and Evaluation	25

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Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	

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	End of Course survey		End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Course Title:**CAD LAB**		Course Code	:**DCE280**
Semester	: **IV**	Core / Elective	: **Elective**
Teaching Scheme in Hrs (L:T:P)	: **0:0:3**	Credits	: **2Credits**
Type of course	: **Practical**	Total Contact Hours	: **30**
Continuous Internal Evaluation	: **60Marks**	SEE	: **40Marks**
Programmes: **Diploma in Civil Engineering**			

Pre-requisites:

Knowledge of basis knowledge of computer at sec. and sr. sec. level.

Course Objectives:

4. Building plan drawn with the help of computer.
5. Analyze command of CAD.
6. Discussed 3D functions.

Course Content:

LIST OF EXPERIMENTS	
S. NO.	**NAME OF EXPERIMENT**
01.	Starting with ACAD
02.	Layout and sketching
03.	Drawing environment

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04.	Elements of drawing
05.	Draw commands
06.	3D functions
07.	Starting the drawing
08	Drawing sheet layout -1
09	Drawing sheet layout -2
10	Figures using acad

Course outcomes:

On successful completion of the course, the student will be able to:

3. Student will be able draw a plan with the help of CAD.
4. Brief knowledge of CAD commands.
5. Brief knowledge of 3D functions.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S			S			S		S		
2	S	M				S			S			M
3	S	S		S			S			M		

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

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Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	45
2	Applying the knowledge acquired from the course	30
3	Analysis and Evaluation	25

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	

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		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Course Title:**CONCRETE TECHNOLOGY LAB**		Course Code	:**DCE282**
Semester	: **IV**	Core / Elective	: **Elective**
Teaching Scheme in Hrs (L:T:P)	: **0:0:3**	Credits	: **2Credits**
Type of course	: **Practical**	Total Contact Hours	: **30**
Continuous Internal Evaluation	: **60Marks**	SEE	: **40Marks**
Programmes: **Diploma in Civil Engineering**			

Pre-requisites:

Knowledge of cement, aggregates, basic of concrete

Course Objectives:

1. Basic knowledge of civil engineering material.
2. About different type of test on cement.
3. About different test on aggregates.
4. Enumerate concrete mixing.

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Course Content:

LIST OF EXPERIMENTS	
S. NO.	**NAME OF EXPERIMENT**
01.	Determination of specific gravity of cement.
02.	Determination of consistency of cement
03.	Determination of soundness of cement
04.	Determination of specific gravity and water absorption of aggregates
05.	Determination of flakiness index and elongation index of aggregates
06.	Determination of fineness modules and grain size distribution
07.	Test for workability using slump test
08.	Test for workability using compaction factor test
09.	Determination of strength of cement concrete.
10.	Mix Design of M-20 by IS code method (IS10262- 1982)

Course outcomes:

On successful completion of the course, the student will be able to:

1. Student will be able to find different properties of cement by test.
2. Student will be able to know different properties of aggregates by test.
3. How to prepare concrete.
4. What to do for mix design.
5. Find out workability of coarse aggregate and fine aggregate.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	**Programme Outcomes**											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S			S			S		S		
2	S	M				S			S			M

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3	S	S		S			S			M		
4	S	S				S					S	

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	40
2	Applying the knowledge acquired from the course	30
3	Analysis and Evaluation	30

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	

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		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Course Title:**TRANSPORTION ENGINEERING**		Course Code	: **DCE331**
Semester	: **V**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **3:0:0**	Credits	: **3 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: **DIPLOMA IN CIVIL ENGINEERING**			

Pre-requisites:

Knowledge of Basic of different way of transportation and traffic problem at Sec. and Sr. Sec. Level.

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Course Objectives:

1. Identify various components of buildings and their functions.

Course Content:

Topic and Contents	Hours	Marks
UNIT-1: INTRODUCTION	08	20
HISTORY AND GEOMETRIC DESIGN OF HIGHWAYS: A brief historical review of how highway construction methodology evolved. Highway development in India, Road Development Plans, IRC classification of urban and rural roads, Expressways, Cross section elements: Right of way, Carriage way, Camber, Kerbs, Shoulders and Footpaths, Highway cross-sections **HIGHWAY GEOMETRIC DESIGN:** Sight distance, Superelevation, Horizontal alignment design, Types of horizontal curves, Vertical Alignment Design, Types of vertical curves.		
UNITS-2: TRAFFIC ENGINEERING	08	20
Traffic characteristics, Traffic studies, Traffic volume studies, Speed studies, Origin and destination study, Traffic flow characteristics, Traffic capacity, Traffic Density, Space and time Headways, Accident studies, Planning and design of intersections, Traffic control devices.Scope of traffic engineering, Causes and precaution of road accidents		
UNITS-3: HIGHWAY MATERIALS AND CONSTRUCTION	06	20
Desirable Properties of subgrade soil, Stone aggregates and Bituminous Materials, Tests on stone aggregates (Crushing, Abrasion and Impact Test for aggregates), Tests on bituminous materials (Penetration, Ductility, Viscosity, Binder content and Softening point Tests), **HIGHWAY CONSTRUCTION:** Water bound Macadam, Bituminous and Concrete roads Construction of Joints. Types of project financing agreements (BOT and BLT Methods) **Highway Maintenance :** Common types of road failures, Routine maintenance		
UNIT-4: RAILWAY ENGINEERING:	06	20
Types of railways (Monorail, hanging rail, etc.), Rail gauges, Creep of rail, Wear of rail, Rail fixtures, Rail fastenings, Railway sleepers, Points and crossings, Laying of rail tracks, Stations and Yards. Function of rails, Requirement of rails, Failures of rails		
UNIT 5: POINT AND CROSSING	08	20
Necessity and details of arrangement, Sketch of a turnout, Functions of different parts and components, Different types of point and crossing Turnout, crossover, scissors, diamond crossingwith slips, double junctions, gathering lines, Turn tables and triangle, Yards		

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TOTAL	**36**	**100**

Reference:

Text Books

1. Khanna, S. K. and Justo, C.E.G. "**Highway Engineering**", Nem Chand and Bros, Roorkee, 8th edition, 2011
2. Khanna, S. K and Arora, M.G & Jain, S. S, "**Airport Planning and Design**", Nem Chand and Bros, Roorkee, 2001

Reference Books

1. Kadiyali, L. R., "**Principles and Practice of Highway Engineering**", Khanna Publishers Ltd. New Delhi, 2000
2. Sehgal, S.B and Bhanot, B. L, "**Highway and Airport Engineering**", S. Chand and Company Ltd. New Delhi,1978
3. VenkatappaRao, G., "**Principles of Transportation and Highway Engineering**", Tata McGraw Hill Publishing Co. Ltd. New Delhi, 2000

Course outcomes:

On successful completion of the course, the student will be able to:

1. Brief knowledge about transportation engineering ,
2. About different types of design used in transportation ,
3. Different types of highway materials and their construction.
4. About different points related to railway engineering.

Mapping Course Outcomes with Program Outcomes:

Course Outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S		M			S			S		
2	S	M				S			S			S

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3	S	S			S			M			S	
4	M	S		S								

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

S.No.	Educational Component	Weight age (%)
1	Remembering and Understanding	45
2	Applying the knowledge acquired from the course	30
3	Analysis and Evaluation	25

Course Assessment and Evaluation:

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The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course
	End of Course survey			End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

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Course Title:**ENVIRONMENTAL STUDIES**		Course Code	: **ES101/102**
Semester	: **V**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **3:0:0**	Credits	: **2 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: **DIPLOMA IN CIVIL ENGINEERING**			

1**Man & Environment**:

Definition of environment & its various components, Ecosystem concepts. Dependence of Man on nature,human population growth & its impacts on environment, Environment & human health. Environmental concerns including climate change, Global warming, Acid Rain, Ozone layer Depletion Ozone depleting substances, environmental ethics, traditional ways of utilizing various components of environment.

2Natural Resources:

Forest resources, Dams & their effects on forests & tribal people. Water resources-floods, droughts and conflicts over water resources. Mineral Resources Petroleum, Coal use of various minerals for Human welfare, environmental effects of mining. Food resources,world food problem. Impacts of changing Agriculture practices on Environment. Energy Resources- Forms of Energy Nuclear power, Energy Resources & exploration of alternative energy sources. Land Resources- Desert, land degradation, soil erosion, desertification & soil contamination.

3 **Ecosystems:**

Structure & function, energy flow, food chains, food webs, Ecological pyramids. Basics of forest, grasslands, desert and aquatic ecosystem (Ponds, Streams, Lakes, Rivers, Oceans & Estuaries)Social issues with environment. Values of a tree for a life of 50 Years, Consumption impacts and ecosystem. Urban growth and ecosystem

4 Biodiversity **and Conservations**

Classification, Biological Diversity: Genetic, species & ecosystem diversity, Values of Biodiversity, Global, National & Local Biodiversity. Hot-spots of Biodiversity, threat to biodiversity, endangered & endemic species of India. Conservation of biodiversity:in situ & ex-situ.

5**Environment Pollution and Sustainability**.

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Causes, effects & control of: Air pollution, Water pollution, Soil pollution, Noise Pollution, Thermal pollution & Nuclear Hazards. Concept of pollution Solid wastes Management. Disaster ManagementFlood, Drought, Earthquake, Landslides etc. Development and reorienting Science and Technology.Sustainable developments

Suggested Readings

1. A Text Book of Environmental Studies GR Chatwal Harish Sharma Himalaya Publishing House Mumbai 2005

2. Environmental Modeling Introduction JO Smith Pete Smith Oxford University Press 2009

3. Environmental Biology, KCAgarwal Nidhi Publishers Ltd. Bikaner.2001

4. Textbook of Environmental Studies for Undergraduate Courses 1 Edition Erach Bharucha

5. Environmental Studies Benny Joseph) 2nd Edition, 2008 Publisher: McGraw Hill Education

6. Fundamentals of Environmental Studies B R BamniyaL N Verma and Arvind Verma Yash Publishing Bikaner

7. Fundamnetal of Ecology V Edition Eugene P odum & Gary W Barrett Cenage Learning Singapore

8. The Biodiversity of India, Bharucha Erach, Mapin Publishing Pvt. Ltd, Ahmadabad 2003.

9. Hazardous Waste Incineration, RC, Brunner McGraw Hill Inc 1989,

10. Environmental Encyclopedia, Cunningham WP, Cooper TH, Gorhani E & Hepworth MT, Jaico Publishing House, Mumbai2001.

11. Environmental Chemistry a Global Perspectives Gary W Vanloon Stephen J Duffy 2005 Oxford university Press

12.Environmental Studies from Crisis to Cure R Rajgopalan Oxford University Press, New Delhi 2005.

13. Environmental Education, C M Gupta and Renu Sharma, Aastha Prakashan Jaipur 2007.

14. Understanding Environment Kiran B Chhokar, Mamta Pandey and Meena Raghunathan Sage Publication Inc. California.

15.Environmental Studies, D L ManjunathPublisher: Pearson, 2006.

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16. Environmental Chemistry, Anil K De New Age International Publishers. 2005.

Course Title:**DESIGN OF REINFORCED CEMENT CONCRETE**		Course Code	: **DCE332**
Semester	: **VI**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **3:0:0**	Credits	: **3 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: **DIPLOMA IN CIVIL ENGINEERING**			

Pre-requisites:

Knowledge of Basic of cement, reinforcement and concrete.

Course Objectives:

1. Identify various components of buildings and their functions.
2. Discuss strain- stress curve.
3. Different properties of R.C.C.
4. Design of beams, slabs etc.

Course Content:

Topic and Contents	Hours	Marks
UNIT-1: INTRODUCTION	08	20
Reinforced Cement Concrete- its meaning, constituents, functions and specifications as per I.S.,Working stress method of design,Limit state method of design, Ultimate method of design, Past practice and present practice for the design of structures., Grades of concrete and steel, Stress - strain curve for concrete and steel, Load factors, Steel concrete bond, development length, anchorage value, Effective span, specification of reinforcement as per BIS		
UNITS-2: FLEXURAL MEMBERS	08	20
Limit state of collapse, Limit state of flexure, Neutral axis, moment of resistance, balanced and unbalanced sections, Limit state of shear, nominal shear stress, shear strength of beam. , Design of shear reinforcement, Limit state of serviceability deflection and cracking criteria. , Curtailment of bars		
UNITS-3: ANALYSIS AND DESIGN OF BEAMS	06	20

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Single reinforced beam, Doubly reinforced beam, T-beam, Lintel, Cantilever beam **Slabs :** Design criteria as per BIS Design of one-way slab Design of two-way slab with corners free to lift		
UNIT-4: (AXIALLY LOADED COLUMNS	06	20
Limit state of compression, Load carrying capacity, Design of short column (rectangular, square and circular cross section) . **Design of Footing** : Critical section for shear and bending moment , Design of an isolated footing of uniform depth for a square column ,Layout of reinforcement		
UNIT 5: RETAINING WALL	08	20
Types of retaining walls, Design of cantilever type retaining wall, Reinforcement details **Prestressed Concrete** : Definition, advantages and methods of prestressing ,Losses in prestressing, Stress calculations for point loads and uniformly distributed load for different tendon position		
TOTAL	**36**	**100**

Reference:

1. Design of R.C.C. Structures B.C. Punmia
2. Design of R.C.C. Structures H.J. Shah
3. Design of R.C.C. Structures A.K. Jain
4. Design of R.C.C. Structures N. Krishna Raj
5. Design of R.C.C . Structures V.L. Shah & S.R. Karve

Course outcomes:

On successful completion of the course, the student will be able to:

1. Brief knowledge about R.C.C.
2. About different types of slabs and beams.
3. Different types of retaining wall.
4. Brief knowledge of pre-stressed concrete.

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Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S		M			S			S		
2	S	M				S			S			S
3	S	S			S			M			S	
4	M	S		S								

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

S.No.	Educational Component	Weight age (%)
1	Remembering and Understanding	45
2	Applying the knowledge acquired from the course	30
3	Analysis and Evaluation	25

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Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
DIRECT ASSESSM	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course

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	End of Course survey		End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Course Title:**THEORY OF STRUCTURE**		Course Code	: **DCE333**
Semester	: **V**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **3:0:0**	Credits	: **3 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: **DIPLOMA IN CIVIL ENGINEERING**			

Pre-requisites:

Knowledge of Basic of mechanics and strength of material.

Course Objectives:

1. Enumerate stress and strain.
2. Find the slope deflection.
3. Analyzing share force diagram and bending moment diagram.
4. Discussed on different types of arch.

Course Content:

Topic and Contents	Hours	Marks
UNIT-1: STRESSES AND STRAINS	08	20
Introduction - Principle stresses and strains Graphical methods: Mohr's circle		

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Distribution of shear stress in rectangular, circular, I and T section. **SLOPE AND DEFLECTION:** Computation of slope and deflection for simple cases of cantilever and simply supported beams for concentrated and uniformly distributed load by, 1. Area moment method 2. Double integration method and 3. Macaulay's method		
UNITS-2: BEAM	08	20
PROPPED BEAMS: Prop reactions. Bending moment and shear force diagram for simple loading **FIXED BEAM:** Analysis of fixed beams. SFD and BMD for symmetrical, concentrated and uniformly Distributed load.		
UNITS-3:	06	20
TORSION: Torsion of circular shaft, torsional equation. Horse Power transmitted. **CONTINUOUS BEAM:** Analysis by Three-moment Theorem Method. SFD and BMD for symmetrical concentrated and uniformly distributed loads over full span. **Indeterminate Structures** : Types of indeterminacy, External and internal, Degree of indeterminacy in beams and pin jointed frames		
UNIT-4:	06	20
COMBINED DIRECT AND BENDING STRESS: 1. Stress due to eccentric loads 2. Law of middle third 3. Application of Law of middle third for dams. **PORTAL FRAMES:** BM and SF and thrust for portals with static symmetrical loading.		
UNIT 5:	08	20
THREE-HINGED ARCH: Linear Arch, Eddy's theorem, BM, and Normal Thrust for parabolic, circular arch for Static loading. **INFLUENCE LINES:** Introduction - ILD for BM and SF for beams. Application of influence line diagram for determination of SF and BM due to concentrated and uniformly distributed load.		
TOTAL	**36**	**100**

Reference:

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1. Strength of Material & Theory of Structures. Vol – I & II B.C. Punmia
2. Mechanics of Structure S.B. Junarkar.
3. Strength of Material S. Ramamurtham
4. Strength of Material & Theory of Structures. Vol – I & II R.S. Khurmi

Course outcomes:

On successful completion of the course, the student will be able to:

1. Brief knowledge about structure.
2. About different types of arches.
3. Know how to find BM & SF.
4. Well known how to compute SFD & BMD..

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S		M			S			S		
2	S	M				S			S			S
3	S	S			S			M			S	
4	M	S		S								

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

S.No.	Educational Component	Weight age (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	30
3	Analysis and Evaluation	35

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What	To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes

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DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course
	End of Course survey			End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Course Title:**IRREGATION ENGINEERING**		Course Code	: **DCE334**
Semester	: **VI**	Core / Elective	: **Elective**
Teaching Scheme in Hrs (L:T:P)	: **3:0:0**	Credits	: **3 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: **DIPLOMA IN CIVIL ENGINEERING**			

Pre-requisites:

Knowledge of Basic of environment science and chemistry at Sec. and Sr. Sec. Level.

Course Objectives:

1. Identify various components of buildings and their functions.

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Course Content:

Topic and Contents	Hours	Marks
UNIT-1: INTRODUCTION:	08	20
1**. Introduction:** 1.1 History of irrigation development in India. 1.2 Classification and different methods of irrigation. 2. **Water Requirements of Crops** : 2.1 Classes and availability of soil water 2.2 Depth and frequency of irrigation 2.3 Relationship between duty, delta and base period. 2.4 Gross command area (G.C.A.) culturable commanded area (C.C.A.), culturable cultivated and uncultivated area. Intensity of irrigation 2.5 Factors affecting duty of water, methods of improving duty 2.6 Principal crops of Rajasthan and India. Sowing and harvesting time 2.7 Water requirements and rotation of different crops 2.8 Calculation of water requirement for a given irrigated area.		
UNITS-2: HYDROLOGY:	08	20
Hydrology: 3.1 Hydrologic cycle 3.2 Rainfall its characteristics and methods of measurement. 3.3 Run off, factors affecting run off, determination of average annual run off. 3.4 Importance and different methods of gauging stream flow. Hydrograph, unit hydrograph and flood hydrograph 4. **Dams :** 4.1 Types of Dams 4.2 Selection of site for a dam 4.3 Forces acting on a gravity dam 4.4 Failure of gravity dams		
UNITS-3: CANALS	06	20
8.1 Explanation of terms-canal 8.2 Classification of canals, channel, major distributory, minor distributory, water course, navigation canal, hydro-canal, irrigation canal, perennial canal, inundation canal 8.3 Water shed 8.4 Drainage 8.5 Alignment of irrigation canal 8.6 Explanation of terms-critical velocity, rugosity coefficient, velocity ratio, silt factor 8.7 Regime, regime slope, regime dimensions		

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8.8 Relation between Kennedy's critical velocity ratio and Lacey's silt factor. 8.9 Problems of sediment transport in channels. 8.10 Salient features of Kennedy's and Lacey's silt theories 8.11 Computing the losses in irrigation channels		
UNIT-4: WATER LOGGING	06	20
Water Logging: 9.1 Definition 9.2 Causes, effects and preventive measures 9.3 Types of canal lining brief description and advantages 10. Diversion Head Works : 10.1 Typical layout of head works 10.2 Brief description, sketches and function of component parts of weir or barrage 10.3 Scouring sluices, silt excluder 10.4 Divide-wall 10.5 Fish ladder 10.6 Guide bank 10.7 Marginal bunds 10.8 Head regulator 10.9 Classes of weirs 10.9.1 Rockfill weir 10.9.2 Bligh type weir 10.9.3 Khosla type weir 10.9.4 Pickup weir 10.10 Causes of failure of weirs.		
UNIT 5: CROSS DRAINAGE WORKS :	08	20
Cross Drainage Works : 11.1 Brief description of different methods of disposal of drainage intercepted by canals 11.2 Inlet and outlet 11.3 Aqueduct and syphon aqueduct 11.4 Super passage and syphon 11.5 Level crossing **Well Irrigation** : Explanation of terms - well, open well tube well, shallow and deep well, ground water reservoir, mota layer, depression head, cone of depression, radius of influence critical velocity, Classification of tube well: (1) Slotted wells (2) Strainer wells (3) Cavity wells		
TOTAL	**36**	**100**

Reference:

1. Irrigation & Water Power Engg. Dr. B.C. Punmia
2. Irrigation & Water Power Engg. Dr. P.N. Modi
3. Irrigation & Water Power Engg. S.K. Garg

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4. Elem. Irrigation Engg. (Hindi) Gurcharan Singh
5. Elem. Irrigation Engg. (Hindi) B.L. Gupta
6. Fundamental Principles of Irrigation Engg. V.B. Priyani

Course outcomes:

On successful completion of the course, the student will be able to:

1. Brief knowledge about irrigation engineering,
2. About different properties of hydrology.,
3. Brief knowledge of canal.
4. Brief knowledge cross drainage work..

Mapping Course Outcomes with Program Outcomes:

Course Outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S		M			S			S		
2	S	M				S			S			S
3	S	S			S			M			S	
4	M	S		S								

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

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Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

S.No.	Educational Component	Weight age (%)
1	Remembering and Understanding	45
2	Applying the knowledge acquired from the course	30
3	Analysis and Evaluation	25

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What	To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
T A S	Mid Term	Student	Two tests	20	Midterm	1 to 8

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	CIE	Test				Answer books	
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course
	End of Course survey			End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Course Title:**DISASTER MANAGEMENT**		Course Code	: **DCE334**
Semester	: **VI**	Core / Elective	: **Elective**
Teaching Scheme in Hrs (L:T:P)	: **3:0:0**	Credits	: **2 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: **DIPLOMA IN CIVIL ENGINEERING**			

Unit I. Introduction to Disasters: Concepts and definitions (Disaster, Hazard, Vulnerability, Resilience, Risks)

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Unit II. Disasters: Classification Causes, Impacts (including social, economic, political, environmental, health, psychosocial, etc.), Differential impacts- in terms of caste, class, gender, age, location, disability, Global trends in disasters! Urban disasters, pandemics, complex emergencies, Climate change

Unit III. Approaches to Disaster Risk reduction: Disaster cycle - its analysis, Phases, Culture of safety, prevention, mitigation and preparedness community based DRR, Structural non-structural ensures roles and responsibilities of- community, Panchayati Raj Institutions/Urban Local Bodies (PRIs/ULBs), states, Centre, and other stake-holders.

Unit IV. Inter-relationship between Disasters and Development: Factors affecting Vulnerabilities, differential impacts, impact of Development projects such as dams, embankments, changes in Land-use etc. Climate Change Adaptation.Relevance of indigenousknowledge, appropriate technology and local resources.

Unit V. Disaster Risk Management in India Hazard and Vulnerability profile of India Components of Disaster Relief: Water, Food, Sanitation, Shelter, Health, Waste Management Institutional arrangements (Mitigation, Response and Preparedness, DM Act and Policy, Other related policies, plans, programs and legislation)

Unit VI. Project Work: (Field Work, Case Studies)

The project /fieldwork is meant for students to understand vulnerabilities and to work on reducing disaster risks and to build a culture of safety. Projects must be conceived creatively based on the geographic location and hazard profile of the region where the college is located.

Suggested Reading list

1. Alexander David, Introduction in 'Confronting Catastrophe', Oxford University Press, 2000
2. Andharia J. Vulnerability in Disaster Discourse, JTCDM, Tata Institute of Social Sciences Working Paper no. 8, 2008
3. Blaikie, P, Cannon T, Davis I, Wisner B 1997. At Risk Natural Hazards, Peoples' Vulnerability and Disasters, Routledge.
4. Coppola P Damon, 2007. Introduction to International Disaster Management,

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5. Carter, Nick 1991. Disaster Management: A Disaster Manager's Handbook. Asian Development Bank, Manila Philippines.
6. Cuny, F. 1983. Development and Disasters, Oxford University Press.
7. Govt. of India: Disaster Management Act 2005, Government of India, New Delhi.
8. Government of India, 2009. National Disaster Management Policy,
9. Gupta Anil K, Sreeja S. Nair. 2011 Environmental Knowledge for Disaster Risk Management, NIDM, New Delhi , Indian Journal of Social Work 2002.Special Issue on Psychosocial Aspects of Disasters, Volume 63, Issue 2, April.
10. Kapur, Anu& others, 2005: Disasters in India Studies of grim reality, Rawat Publishers, Jaipur

Course Title:**CONSTRUCTION MANAGEMENT**		Course Code	: **DCE335**
Semester	: **V**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **3:0:0**	Credits	: **3 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: **DIPLOMA IN CIVIL ENGINEERING**			

Pre-requisites:

Knowledge of Basic management and construction work.

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Course Objectives:

1. Identify various works of construction.
2. Discussed about planning and scheduling.
3. Enumerate safety in construction work.
4. Analysis of management in construction work.

Course Content:

Topic and Contents	Hours	Marks
UNIT-1: INTRODUCTION	08	20
INTRODUCTION**:** Signification, main objectives & functions of construction management, Classification & stages in construction. The construction team: Owner, Engineer & Contractor. Recourses for construction: Men, Machine, Materials, Money &Management. CONSTRUCTION PLANNING**:** Objective, principles advantages, analysis, limitation and stages of planning for construction projects. CONSTRUCTION SCHEDULING**:** Preparation of construction schedule for labour, material, machine & finance		
UNITS-2:	08	20
Construction Planning : 2.1 Construction project planning, Stages in planning, Bar charts, Introduction to Network, Planning and scheduling by bar charts, Limitations of bar chart, PERT and CPM, Network construction, Determination of project schedule and critical path of a network for different cases, Resource allocation and cost time balancing **2.2 Construction Contracts :** Introduction, Proposal and agreements, Types of construction contracts,lumpsum contract, rate contract, cost plus contracts, turnkey contracts General conditions of contracts ,Contract labour act.		
UNITS-3:	06	20
PROJECT MANAGEMENT - II**:** Float: Different types of floats calculation of float in a network. CONTROL OF PROCESS**:** Project supervision. Method of recording progress. Analysis of progress. Taking corrective action during control of progress. ENTREPRENEURSHIP**:** Entrepreneur, function & quality of entrepreneur. PURCHASE DEPARTMENT:Objectives, activities, duties & functions of purchase department.		
UNIT-4:	06	20
TIME COST OPTIMIZATION**:** Direct, indirect, and total project cost. Normal &crash cost & time. Cost – time optimization through CPM techniques for simple jobs.		

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ACCIDENT & SAFETY IN CONSTRUCTION**:** definition of accident terms: Partial & total disablement, Injury frequency rate, injury severity rate. Causes of accidents:remedies to avoid accidents. Accident prevention. Importance of safety. Safety measures for storage & handling of building material, construction elements of a building: excavation, drilling & blasting, hot bituminous work, scaffolding ladders, form work, demolition. CONSTRUCTION LABOUR**:** Important provision of the following (as amended). Trade Union act 1926, labor welfare fund Act 1936, Payment of wages act 1936, minimum wages Act 1948. Workers compensation Act 1923, Contract labor (Regulation & Abolition) Act 1970		
UNIT 5:	08	20
MANAGEMENT OF CONSTRUCTION**:** introduction, factors affecting selection of construction equipment. Planning of infra structure for mechanization. MATERIAL MANAGEMENT:Importance, objectives, functions and uses of materials management. CONSTRUCTION DISPUTES & THEIR SETTLEMENT**:** Introduction, categories of disputes, modes of settlement of disputes		
TOTAL	**36**	**100**

Reference:

Text Books:-

1. Sadimala C.M., *Materials and Financial Management*, New Age International Publishers, Delhi.

Reference Books:-

1. Gahlot P.S., *Construction Planning and Management*, International Publishers, Delhi
2. Project planning and construction management , s.s.shiphani

Course outcomes:

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On successful completion of the course, the student will be able to:

1. Brief knowledge about project planning.
2. Able to know how to schedule any projects.
3. Able to material management on construction sight.
4. About tender, contract, and disputes.

Mapping Course Outcomes with Program Outcomes:

Course Outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S		M			S			S		
2	S	M				S			S			S
3	S	S			S			M			S	
4	M	S		S								

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

S.No.	Educational Component	Weight age (%)
1	Remembering and Understanding	45
2	Applying the knowledge acquired from the course	30
3	Analysis and Evaluation	25

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Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course
	End of Course survey			End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

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Course Title:**QUANTITY SURVEY AND VALUATION**		Course Code	: **DCE336**
Semester	: **V**	Core / Elective	: **Elective**
Teaching Scheme in Hrs (L:T:P)	: **3:0:0**	Credits	: **3 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: **DIPLOMA IN CIVIL ENGINEERING**			

Pre-requisites:

Knowledge of Basic knoweladge of contract, estimation and tender.

Course Objectives:

1. Discussed different methods of estimating.
2. Discussed about tender, contract etc.
3. Analyze rate analysis of estimating data or materials.

Course Content:

Topic and Contents	Hours	Marks
UNIT-1: INTRODUCTION	08	20
Definition, Importance. Duties of quantity surveyor. Types of estimates: Preliminary estimates, Plinth area estimate, Cubic rate estimate, Estimate per unit base. Detailed estimates: Definition, Stages of preparation. Measurement: Units of measurement for various items of work as per BIS: 1200, Rules For measurements		
UNITS-2: METHODS OF ESTIMATING:	08	20
(i) Long wall and short wall method. (ii) Centre Line method. Calculation of the quantities of the following items of work: (i) Earthwork in excavation in foundation. (ii) Earthwork in filling in foundation and plinth. Sand filling in plinth. (iii) Concreting in foundations, floors, roofs etc. (iv) I-class B/w in foundation, plinth and super-structure. (v) R.B. and RCC works. (vi) Wood work and steel work in doors and windows. (vii) Surface finishing i.e. plastering, pointing, white washing, color washing, distempering and painting. (viii) RCC/Brickwork in arches. (ix) Mosaic/stone/Tile flooring.		
UNITS-3: DETAILED ESTIMATES	06	20

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Preparation of detailed estimates (i.e. abstract/bill of quantities of items of work and abstract of cost) for the following work: (i) Buildings with continuous wall footings. (ii) R.C.C. framed buildings/structures. (iii) Septic tank and soak pit. (iv) Steel roof truss. (v) Slab culvert (vi) Bituminous and C.C. roads.		
UNIT-4: ANALYSIS OF RATES	06	20
Definition, market survey, analysis of rates for various items of work involved in the Above solved problems. Schedule of rates, DSR and CPWD schedule of rates. Abstract of cost. Material statements for various items of works (as mentioned in UNIT-II & III).		
UNIT 5:	08	20
Muster Role: Maintenance of muster role, daily labour report. Preparation of pay bill. Measurements of work for payment of contractors and supplier. Maintenance of Measurements Book. Different types of payments. First and final running advance and final payments. **Valuation**: Purpose of valuation. Principles of valuations.Definition of terms such as depreciations, sinking fund, salvage and scrap value. Valuation of building property by replacement cost method and rental return Method of calculation of standard rent, concept of capitalized value and years purchase. **Tender:** Tender form, tender documents, tender notice, time limit for tender notice, necessary to include in the tender notice, global tender, sale of tender paper, submission of tender, and deposit of earnest money, opening of tenders, comparative statement of tenders, informal tender, unbalanced tender, example on unbalanced tender. Acceptance of tender, specimen form of letter accepting the tender. Work order contract documents. **Contract**: Types of contracts.		
TOTAL	**36**	**100**

Reference:

1. Pasrija, H. D., Arora, C. L. and S. Inderjit Singh, “Estimating, Costing and Valuation (Civil)”.New Asian Publishers, Delhi.
2. Rangwala, B. S.; “Estimating and Costing”. Anand, Charotar Book Stall.
3. Kohli, D; and Kohli, R. C.; “A Text Book on Estimating and Costing (Civil) with Drawings”. Ramesh Publications, Ambala.

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4. Chakraborti, M; “Estimating, Costing and Specification in Civil Engineering”.Calcutta.
5. Dutta, B. N.; “Estimating and Costing”.
6. Amarjit Agarwal & A. K. Upadhyaya;“Civil Engg Estimating Costing & Valuation”.
7. Birdie, G. S., “Text Book on Estimating and Costing”.Dhanpat Rai & Sons, New Delhi.
8. BIS: 1200
9. Jagjit Singh, “Estimating & Costing in Civil Engineering”

Course outcomes:

On successful completion of the course, the student will be able to:

1. Brief knowledge about tendering.
2. Make and check any contract.
3. Complete valuation of any section from respective methods.
4. Make a estimate for any construction work.

Mapping Course Outcomes with Program Outcomes:

Course Outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S		M			S			S		
2	S	M				S			S			S
3	S	S			S			M			S	
4	M	S		S								

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom’s taxonomy) such as:

S.No.	Educational Component	Weight age (%)
1	Remembering and Understanding	45
2	Applying the knowledge acquired from the course	30

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3	Analysis and Evaluation	25

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course

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	End of Course survey		End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Course Title: **DESIGN OF STEEL STRUCTURE**		Course Code	: **DCE338**
Semester	: **VI**	Core / Elective	: **Elective**
Teaching Scheme in Hrs (L:T:P)	: **3:0:0**	Credits	: **3 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: **DIPLOMA IN CIVIL ENGINEERING**			

Pre-requisites:

Knowledge of Basic of properties of steel and steel structure.

Course Objectives:

1. Discussed properties of steel used in structure.
2. Discussed about joints in construction.
3. Properties of steel tension and compression are discussed.

Course Content:

Topic and Contents	Hours	Marks
UNIT-1: INTRODUCTION	08	20
Structural Steel 1.2 Structural Steel Sections 1.3 Steel as a structural material 1.3.1 Advantages		

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1.3.2 Disadvantages 1.4 Limit State Method 1.4.1 Introduction 1.4.2 Limit state design 1.4.3 Limit state of strength 1.4.4 Limit state of serviceability 1.5 Partial safety factor for material strength 1.6 Partial safety factor for loads		
UNITS-2: Bolted Connections	08	20
2.1 Types of Bolts 2.2 Definition and detailing of Bolts 2.3 Types of bolted joints 2.4 Failure of bolted joints in 2.5 Design strength of bolt 2.5.1 Bolts in shear 2.5.2 Bolts in Tension 2.5.3 Bolts in Bearing 2.5.4 Tension capacity of plate 2.5.5 Combined shear and tension 2.6 Efficiency of Bolted Joint Civil Engineering		
UNITS-3: Welded Connections	06	20
3.1 Advantages and Disadvantage of welded joint 3.2 Permissible stresses in welds 3.3 Types of welded connections 3.4 Design of butt and fillet welded connections subjected to axial loads		
UNIT-4: Design of Tension Members & Compression Members	06	20
4.1 Net sectional area 4.2 Design strength due to yielding of gross section 4.3 Design strength due to rupture at net section 4.4 Design strength due to block shear 4.5 Design of tension members (flats, angles and tee sections only.) 5. Compression Members: 5.1 End conditions: Effective length, slenderness ratio, radius of gyration 5.2 Permissible stresses in compression as per IS : 800-2007 5.3 Strength of columns-single and built up sections. 5.4 Design of angle struts. 5.5 Design of axially loaded 5.5.1 Single rolled steel section 5.5.2 Built up section 5.6 Design of lacing 5.7 Design of battens		
UNIT 5: Design of Beams:	08	20
Column Bases:		

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6.1 Design of slab base 6.2 Design of gusseted base 7. Design of Beams: 7.1 Plastic methods of design 7.1.1 Plastic section modulus 7.1.2 Shape factor 7.1.3 Plastic hinge 7.2 Methods of Plastic Analysis 7.3 Plastic analysis of structures 7.4 Shear behaviour of steel beam 7.5 Factors affecting plastic moment capacity. 7.6 Design of laterally restrained beams 7.7 Web buckling and crippling		
TOTAL	**36**	**100**

Reference:

1. Limit state Design of Steel Structure Dr.V.L. Shah & Prof. Veena Gore
2. Limit state Design of Steel Structure Subramanian
3. IS 800-2007
4 Steel Table

Course outcomes:

On successful completion of the course, the student will be able to:

1. Brief knowledge about properties of steel.
2. Reaction of steel in civil structure..

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S		M			S			S		
2	S	M				S			S			S

S: Strong relationship M: Moderate relationship

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Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

S.No.	Educational Component	Weight age (%)
1	Remembering and Understanding	30
2	Applying the knowledge acquired from the course	35
3	Analysis and Evaluation	25

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9

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		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course
	End of Course survey			End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Course Title: **TRANSPORTION ENGINEERING LAB**		Course Code	:**DCE371**
Semester	: **V**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **0:0:3**	Credits	: **2Credits**
Type of course	: **Practical**	Total Contact Hours	: **30**
Continuous Internal Evaluation	: **60Marks**	SEE	: **40Marks**
Programmes: **Diploma in Civil Engineering**			

Pre-requisites:

Knowledge of different highway materials and construction.

Course Objectives:

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1. Basic knowledge of highway materials
2. About different type of test on aggregates.
3. Perform test for material by different methods.

Course Content:

LIST OF EXPERIMENTS	
S. NO.	**NAME OF EXPERIMENT**
01.	To determine the crushing strength of stone aggregates.
02.	To determine the hardness of stone aggregates using Los Angeles abrasion test.
03.	To determine the toughness of stone aggregates using Aggregate Impact Test.
04.	To determine the Specific Gravity and water absorption of stone aggregates.
05.	To determine the stripping value of stone aggregates.
06.	To Determine the Consistency of Bituminous Materials.
07.	To determine the ductility of Bitumen Binder.
08.	To determine the softening point of Bitumen using Ring and Ball Test.
09.	Benkelman Beam Test
10.	California Bearing Ratio Test

Course outcomes:

On successful completion of the course, the student will be able to:

1. Student will be able to find the toughness of aggregates.
2. Student will be able to determine specific gravity & water absorption of aggregates.
3. Able to know different properties of material & perform also in lab.

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Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S			S			S		S		
2	S	M				S			S			M
3	S	S		S			S			M		
4	S	S				S					S	

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	30
2	Applying the knowledge acquired from the course	35
3	Analysis and Evaluation	35

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What	To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes

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DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Course Title:**CIVIL ENGINEERING ESTIMATING AND COSTING LAB**		Course Code	:**DCE372**
Semester	: **VI**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **0:0:3**	Credits	: **2Credits**
Type of course	: **Practical**	Total Contact Hours	: **30**
Continuous Internal Evaluation	: **60Marks**	SEE	: **40Marks**

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Programmes: **Diploma in Civil Engineering**

Pre-requisites:

Knowledge of Basic estimation & management.

Course Objectives:

1. Basic knowledge about estimation.
2. About different type of estimation and valuation.
3. Know how to estimated cost of any projects.

Course Content:

LIST OF EXPERIMENTS	
S. NO.	**NAME OF EXPERIMENT**
01.	Writing units for various items of work involved in construction
02.	Finding out the quantities of work for a residential building.
03.	Preparation of detailed estimate for a residential building. Single storey
04.	Preparation of detailed estimate for a residential building. Double storey
05.	Writing detailed specifications and rate analysis schedules for Earth work in excavation
06.	Writing detailed specifications and rate analysis schedules for Plastering
07.	Writing detailed specifications and rate analysis schedules for White washing, colour washing and distempering
08.	Writing detailed specifications and rate analysis schedules for Concrete in foundation.
09.	Valuation by different methods
10.	Typical valuation reports

Course outcomes:

On successful completion of the course, the student will be able to:

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1. Student will be able to analyse rate of any activity.
2. Student will be able to prepare estimate data for multi-storied residential building.
3. Valuation process for any civil engineering work.
4. To know name of work which are used in construction.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S			S			S		S		
2	S	M				S			S			M
3	S	S		S			S			M		
4	S	S				S					S	

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	40
2	Applying the knowledge acquired from the course	30
3	Analysis and Evaluation	30

Course Assessment and Evaluation:

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The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

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Course Title:**STRUCTURAL LAB**		Course Code	:**DCE373**
Semester	: **V**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **0:0:3**	Credits	: **2Credits**
Type of course	: **Practical**	Total Contact Hours	: **30**
Continuous Internal Evaluation	: **60Marks**	SEE	: **40Marks**
Programmes: **Diploma in Civil Engineering**			

Pre-requisites:

Knowledge of Basic of structural analysis , applied mechanics & physics.

Course Objectives:

1. Discussed different test on different parts of structure.
2. Enumerate deflection over application of structure .

Course Content:

LIST OF EXPERIMENTS	
S. NO.	**NAME OF EXPERIMENT**
01.	Tensile Test
02.	Compression Test
03.	Hardness Test
04.	Impact Value Test
05.	Bending Moment
06.	Deflection of Beam of Simply Supported Beam
07.	Deflection of Beam of fixed Beam
08.	Three Hinge Arches
09.	Portal Frame
10.	Influence Line Diagrams

Course outcomes:

On successful completion of the course, the student will be able to:

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1. Student will be able know different properties of structure after test results.
2. Learn different test over structure. And their application over different T & C.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S			S			S		S		
2	S	M				S			S			M

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	30
2	Applying the knowledge acquired from the course	35
3	Analysis and Evaluation	35

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Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

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Course Title:**SOIL MACHANICS LAB**		Course Code	:**DCE374**
Semester	: **VI**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **0:0:3**	Credits	: **2Credits**
Type of course	: **Practical**	Total Contact Hours	: **30**
Continuous Internal Evaluation	: **60Marks**	SEE	: **40Marks**
Programmes: **Diploma in Civil Engineering**			

Pre-requisites:

Knowledge of Basic properties of soil Sec. and Sr. Sec. Level

Course Objectives:

1. Basic knowledge of soil mechanics.
2. About different test for soil.
3. Know how to find specific gravity of the soil particle.

Course Content:

LIST OF EXPERIMENTS	
S. NO.	**NAME OF EXPERIMENT**
01.	To classify the given sample of course grained soil
02.	To determine the in-situ density of soil by core cutter method.
03.	To determine the specific gravity of the given soil particles, using pycnometer /Density bottle.
04.	To determine the optimum Moisture content (OMC)and maximum dry density of a given soil sample.
05.	To determine the liquid limit of a given soil by Casagrande's liquid limit apparatus.
06.	To determine the plastic limit of a given soil sample.
07.	To determine the shrinkage limit of a given soil sample.

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08.	Coefficient of Permeability using Constant head Permeability Test
09.	Coefficient of Permeability using Falling head permeability Test
10.	Coefficient of Permeability using Standard Penetration Test (STP)

Course outcomes:

On successful completion of the course, the student will be able to:

1. Student will be able to find soil properties from test results.
2. Student will be able to find out different properties of soil by using different method.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S			S			S		S		
2	S	M				S			S			M

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	30
2	Applying the knowledge acquired from the course	35
3	Analysis and Evaluation	35

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Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

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Course Title:**SURVEYING LAB –III & CAMP**		Course Code	:**DCE375**
Semester	: **V**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **0:0:3**	Credits	: **2Credits**
Type of course	: **Practical**	Total Contact Hours	: **30**
Continuous Internal Evaluation	: **60Marks**	SEE	: **40Marks**
Programmes: **Diploma in Civil Engineering**			

Pre-requisites:

Knowledge of surveying I & II.

Course Objectives:

1. Analysis of curve by different methods.
2. Uses of closed traverse.
3. Applications of Rankin's method.

Course Content:

LIST OF EXPERIMENTS	
S. NO.	**NAME OF EXPERIMENT**
01.	To determine the length and bearing of one side in a closed traverse.
02.	To determine the length of one side and bearing of another adjacent side in a closed traverse
03.	To set out the Simple circular curve by the method of offset from the chords Produced.

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04.	To set out the Simple Circular Curve by Rankin's method of tangential angles.
05.	To set out Simple circular Curve by Rankin's Two theodolite method
06.	To set out a compound Curve by Rankin's method.
07.	Survey Camp Work.

Course outcomes:

On successful completion of the course, the student will be able to:

1. Student will be able to measurement of curves from different methods.
2. Student will be able to used closed traverse.
3. Due to survey camp , students able to measure all the horizontal distance, vertical distance and angles on different position, place and environment.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S			S			S		S		
2	S	M				S			S			M
3	S	S		S			S			M		

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

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Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	45
2	Applying the knowledge acquired from the course	30
3	Analysis and Evaluation	25

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	

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INDIRECT ASSESSMENT	Student feedback	Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey		End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Course Title:**REINFORCED CEMENT CONCRETE LAB**		Course Code	:**DCE376**
Semester	: **VI**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **0:0:3**	Credits	: **2Credits**
Type of course	: **Practical**	Total Contact Hours	: **30**
Continuous Internal Evaluation	: **60Marks**	SEE	: **40Marks**
Programmes: **Diploma in Civil Engineering**			

Pre-requisites:

Knowledge Of Reinforced cement concrete in brifly.

Course Objectives:

1. Preparation of R.C.C. slab
2. Preparation of R.C.C. structure.

Course Content:

LIST OF EXPERIMENTS	
S. NO.	**NAME OF EXPERIMENT**
01.	Types of bar used in R.C.C.
02.	Preparation of bar bending schedule and to bend the bars accordingly for Singly

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	reinforced concrete beam – part I
03.	Preparation of bar bending schedule and to bend the bars accordingly for Singly reinforced concrete beam- Part II
04.	Preparation of bar bending schedule and to bend the bars accordingly for Doubly reinforced concrete beam– part I
05.	Preparation of bar bending schedule and to bend the bars accordingly for Doubly reinforced concrete beam- Part II
06.	Preparation of bar bending schedule and to bend the bars accordingly for Reinforced concrete column– part I
07.	Preparation of bar bending schedule and to bend the bars accordingly for Reinforced concrete column- Part II
08.	Preparation of bar bending schedule and to bend the bars accordingly for Reinforced concrete slab– part I
09.	Preparation of bar bending schedule and to bend the bars accordingly for Reinforced concrete slab- Part II
10.	Prepare a model R.C.C. beam.

Course outcomes:

On successful completion of the course, the student will be able to:

1. Know prepare R.C.C slab
2. Know prepare R.C.C beam
3. Know prepare R.C.C. column
4. Know prepare R.C.C singly beam.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S			S			S		S		
2	S	M				S			S			M
3	S	S		S			S			M		
4	S	S				S					S	

S: Strong relationship M: Moderate relationship

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Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	30
2	Applying the knowledge acquired from the course	35
3	Analysis and Evaluation	35

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	

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				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Course Title:**APPLIED MECHANICS LAB**		Course Code	:**DCE377**
Semester	: **V**	Core / Elective	: **Elective**
Teaching Scheme in Hrs (L:T:P)	: **0:0:3**	Credits	: **2Credits**
Type of course	: **Practical**	Total Contact Hours	: **30**
Continuous Internal Evaluation	: **60Marks**	SEE	: **40Marks**
Programmes: **Diploma in Civil Engineering**			

Pre-requisites:

Knowledge of Basic applied mechanics Sec. Level, Sr. Sec. Level, and

Course Objectives:

1. Basic knowledge of applied mechanics application.
2. About different type of mechanical properties
3. Law of forces applied in mechanics

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Course Content:

LIST OF EXPERIMENTS	
S. NO.	**NAME OF EXPERIMENT**
01.	Verification of the laws of parallelogram of forces.
02.	Verification of the laws of polygon of forces.
03.	To verify the reaction in the supports of a simple supported beam.
04.	To find the mechanical advantage, velocity ratio and efficiency in the case of inclined Planes.
05.	To find the mechanical advantage, velocity ratio and efficiency in the case of Screw Jack.
06.	To find the mechanical advantage, velocity ratio and efficiency in the case of Worm and Worm Wheel.
07.	To find the mechanical advantage, velocity ratio and efficiency in the case of Winch Crab Single Graphical Representation.
08.	To verify low of moment using Bell crank lever.
09.	To find the efficiency of differential wheel and axle.
10.	To Determine the coefficient of static friction.

Course outcomes:

On successful completion of the course, the student will be able to:

1. Student will be able to find efficiency of screw jack.
2. Student will be able to determine M.A. & V.R. of different equipments.
3. Know reaction of static friction on inclined plane.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	**Programme Outcomes**											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S			S			S		S		

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2	S	M				S			S			M
3	S	S		S			S			M		

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	30
2	Applying the knowledge acquired from the course	35
3	Analysis and Evaluation	35

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	

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		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Course Title:**CONSTRUCTION TECHNOLOGY LAB**		Course Code	:**DCE379**
Semester	: **V**	Core / Elective	: **Elective**
Teaching Scheme in Hrs (L:T:P)	: **0:0:3**	Credits	: **2Credits**
Type of course	: **Practical**	Total Contact Hours	: **30**
Continuous Internal Evaluation	: **60Marks**	SEE	: **40Marks**
Programmes: **Diploma in Civil Engineering**			

Pre-requisites:

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Knowledge of Basic of construction technology.

Course Objectives:

1. Analyze different types of joints.
2. Enumerate different factors affected in construction.

Course Content:

LIST OF EXPERIMENTS	
S. NO.	**NAME OF EXPERIMENT**
01.	Identification & Demonstration of building materials and tools used in the construction work.
02.	Construction of L-Junction with stretcher and header bonds.
03.	Construction of L-Junction with one brick thick wall in English and Flemish bonds.
04.	Construction of L-Junction with ½ brick thick wall in English and Flemish bonds.
05.	Construction of L-Junction with 2 bricks thick wall in English and Flemish bonds.
06.	Idea of earth quake resistant load bearing bricks masonry construction and R.C.C structures
07.	Demonstration of various mortars and cement concrete mixes, mixing, transportation, placement, compaction and curing and their methods.
08.	Form work, centring& shuttering and their removal.
09.	Demonstration of water supply fixtures and sanitary fittings.
10.	Site Visits

Course outcomes:

On successful completion of the course, the student will be able to:

1. Student will be able to mix concrete.
2. Able to construct masonry by different types.

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3. Able to construct different section of masonry.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S			S			S		S		
2	S	M				S			S			M
3	S	S		S			S			M		

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	30
2	Applying the knowledge acquired from the course	35
3	Analysis and Evaluation	35

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What	To	When/where	Max	Evidence	Contributing

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			whom	(Frequency in the course)	Marks	collected	to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

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Course Title: **OFFICE AUTOMATION LAB**		Course Code	: **DCS221**
Semester	: **III**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **0:0:3**	Credits	: **2 Credits**
Type of course	: **Practical**	Total Contact Hours	: **30**
Continuous Internal Evaluation	: **60 Marks**	SEE	: **40 Marks**
Programmes: **Diploma in Computer Science**			

Pre-requisites:

Basic computer Knowledge

Course Objectives:

1. Learn operating system Installation
2. Can Install Hard disk, RAM, CD, ROM, CPU and other computer components.
3. Can work with MS-word, and use MS word features
4. Learn MS word Mail options.
5. Can work with MS-Excel, and use MS Excel features.

Course Content:

Installation of Operating Systems.
Introduction to control panel, Add remove hardware and software,
Installation of Hard disk, RAM,CD, ROM,CPU, Mother Board, Keyboard, Mouse,
Ms-Word Basics: Working with MS Word; Menus Commands; Toolbars & Buttons; Shortcut Menus, Wizards & Templates; Creating a New Document
Ms-Word Lab 2:Spell Check, Thesaurus, Find & Replace; Headers & Footers; inserting-Page Number, Pictures, File, Auto texts, Symbols etc.
Ms-Word lab 3 Working with Columns, Tabs & Indent; Creation & Working with Tables including conversion to and from text; Margins & Space management in Document; adding References and Graphics.
Ms-Word lab 4: Mail Merge, Envelops& Mailing Labels. Importing and exporting to and from

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various formats.
MS Excel Lab 1: Working with Ms Excel; concepts of Workbook & Worksheets; using Wizards; Various Data Types; Using Different features with Data, Cell and Texts; Inserting
Removing & Resizing of Columns & Rows; Working with Data & Ranges; different Views of Worksheets; Column Freezing, Labels, Hiding, Splitting etc.
Ms Power Point: Working with MS Power Point; Creating a New Presentation; Working with Presentation & Presentation of Slide Show, Printing Presentation.

Reference:

Lab manual

Course outcomes:

On successful completion of the course, the student will be able to:

1. Install operating system.
2. Install Hard disk, RAM, CD, ROM, CPU and other computer components.
3. Work with MS-word, and use MS word features
4. Use MS word Mail options.
5. Work with MS-Excel, and use MS Excel features.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S	S	S		M						S
2	S		S	S	M		M	M				M
3	S	S	S	S								S
4	S	S	S		M							M
5	S	S		S		M	M	M			M	

S: Strong relationship M: Moderate relationship

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Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	20
3	Analysis and Evaluation	45

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	

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INDIRECT ASSESSMENT	Student feedback	Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey		End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Course Title:**BASIC ECONOMICS AND SOCIAL SCIENCES**		Course Code	:**DPHS203**
Semester	: **III**	Core / Elective	: **Elective**
Teaching Scheme in Hrs (L:T:P)	: **2:0:0**	Credits	: **3Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **25**
Continuous Internal Evaluation	: **40Marks**	SEE	: **60Marks**
Programmes: **Diploma in Electrical Engineering**			

Pre-requisites:

Knowledge of Basic Physics at Sec. and Sr. Sec. Level.

Course Objectives:

1. This course supposed to give the knowledge of basic concept of economics.
2. Analyse the Applications and scope of Micro Economics.
3. Analyse the Concept of Demand and supply.
4. Evaluate the Basic concept of economics in social reforms in India.
5. Analyse the problems faced by Political Economy.

Course Content:

Topic and Contents	Hours	Marks
UNIT-1:Introduction	05	20
Definition meaning, nature and scope of economics.		
UNITS-2: Micro Economics	05	20
Definition, meaning and scope of Micro Economics. Importance and limitations.		
UNITS-3: Concept of Demand and supply	05	20

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Utility Analysis, Law of Demand, Law of Supply		
UNIT-4:Introduction to social Sciences	05	20
Social Change: Causes and impacts, reforms in India.		
UNIT 5: Political Economy	05	20
New Economic reform, Entrepreneurship and Small scale business management.		
TOTAL	**25**	**100**

Reference:

1. Micro Economics by M. L. Sethi
2. Micro Economics by T.R Jain

Course outcomes:

On successful completion of the course, the student will be able to:

1. The course content gives full knowledge to learn nature and scope of economics.
2. Find the solution of problem dependent on Micro Economics.
3. Solve the problems related to Law of Demand, Law of Supply.
4. Enable students to solve difficulties face in social reforms and political economics.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S				S			M			
2	M	S		S				S			S	
3	S	M			S				M			
4	S	S		S			S					S

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

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Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	30
2	Applying the knowledge acquired from the course	40
3	Analysis and Evaluation	30

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course

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	End of Course survey		End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Course Title:**ENTREPRENEURSHIP**		Course Code	:**DHS232**
Semester	: **IV**	Core / Elective	: **Elective**
Teaching Scheme in Hrs (L:T:P)	: **2:0:0**	Credits	: **2Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **35**
Continuous Internal Evaluation	: **40Marks**	SEE	: **60Marks**
Programmes: **Diploma in Electrical Engineering**			

Pre-requisites:

Knowledge of Basic Business Market and Industry.

Course Objectives:

1. This course supposed to give the knowledge of how an entrepreneur can make his business successful.
2. Analyse the Location of Industrial Units.
3. Analyse how the size and pricing of a firm can affect the business.
4. Evaluate the Financing of Small Industries.
5. Analyse the problems faced by small enterprises.
6. Create the basic concept of Entrepreneurship.

Course Content:

Topic and Contents	Hours	Marks

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UNIT-1:PROMOTION OF ENTREPRENEURSHIP	08	20
Meaning, definition and functions of an entrepreneur, qualities of a good entrepreneur; Role of Entrepreneur in economic development. Government measures for the promotion of small scale industries with special reference to Haryana. Cultural factors in developing entrepreneurship.		
UNITS-2: OWNERSHIP AND LOCATION OF INDUSTRIAL UNITS	06	20
Different forms of Industrial Organization. Theories of Industrial location. Process of preparing project reports.		
UNITS-3: SIZE OF FIRM AND PRICING	07	20
Concept of optimum firm, factors determining optimum size, Technical, Managerial, Marketing Uncertainties and risk. Pricing Methods, Policies and procedures.		
UNIT-4:FINANCING OF SMALL INDUSTRIES	08	20
Importance and need: Commercial Banks and term lending in India; Banks and under-writing of capital issues; Brief description about the role of other financial agencies as: • Industrial Finance Corporation of India • State Financial Corporation • Industrial Development Bank of India • Unit Trust of India.		
UNIT 5: PROBLEMS FACED BY SMALL ENTERPRISES	06	20
Problems connected with Marketing: • Management of New Products • Power, Finance, Raw Material • Under-utilization of capacity Causes of under utilization; Rehabilitation of Sick Mills.		
TOTAL	**35**	**100**

Reference:

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1. Entrepreneurship of Small Industries- Deshpande Manohar D. (Asian Publisher, New Delhi)
2. Environment& Entrepreneur- Tandon B.C. (Asian Publishers, New delhi)
3. The Industrial Economy of India- Kuchhal S.C. (Chaitanya, Allahabad)
4. Emerging Trends in Entrepreneurship Development Theories & Practices- Singh P. Narendra (International Founder, New Delhi)

Course outcomes:

On successful completion of the course, the student will be able to:

6. The course content gives full knowledge to learn hoe an entrepreneur can succeed.
7. Find the solution of problem dependent on industrial units.
8. Solve the problems related to Location and pricing of industrial units.
9. Enable students to solve difficulties face by small units.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S			S	S			M			
2	S	M				S				S		
3		M		S	S			S				S
4	S	M					S				S	

S: Strong relationship M: Moderate relationship

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Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	30
2	Applying the knowledge acquired from the course	40
3	Analysis and Evaluation	30

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		

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	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course
	End of Course survey			End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Course Title: **INDUSTRIAL MANAGEMENT**		Course Code	:**DHS302**
Semester	: **V**	Core / Elective	: **Elective**
Teaching Scheme in Hrs (L:T:P)	: **3:0:0**	Credits	: **3Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40Marks**	SEE	: **60Marks**
Programmes: **Diploma in Electrical Engineering**			

Pre-requisites:

Knowledge of Industries and their working.

Course Objectives:

1. To achieve the target and goals in an organisation it is essential to co-ordinate the entire system. For this purpose a diploma holder should have the knowledge of principles of industrial management, auditing and environmental aspects.
2. Apply the Purpose of organization and administration.

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3. Analyse the Inters relation between skills and levels of management.
4. Evaluate the Scientific management.
5. Analyse the Study of different forms of layout.
6. Create the basic concept of conflict management.

Course Content:

Topic and Contents	Hours	Marks
UNIT-1:INTRODUCTION TO INDUSTRIAL MANAGEMENT	06	12
• Brief history of industries in India, Brief definition of management, organization and administration. • Characteristics of management, Principle of management, Function of management like, planning, organization, direction, co-ordination etc.		
UNITS-2: MANAGEMENT	08	12
• Level of management, skills of management, inters relation between skills and levels of management. • Scientific management, Introduction to Schools of Management thoughts		
UNITS-3:INTRODUCTION TO ORGANIZATION	08	12
Study of basic type of organization for ex. Line and staff organization, project organization, metrics organization, Informal organization.		
UNIT-4:INTRODUCTION TO INDUSTRIAL PSYCHOLOGY	06	12
• Motivation theory and study of Maxlow, Need, Hierarchy Theory, Planned Location, Planned Layout. • Study of different forms oflayout like line layout, process layout, product layout, combinational layout, sixth position layout etc.		
UNIT 5:INTRODUCTION TO MATERIAL MANAGEMENT	08	12
Objective of planned layout, introduction to material management, scope of material management, study of inventory control method, introduction to different types of inventory control techniques, introduction to work study, motion study etc, introduction to conflict management.		

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TOTAL	**36**	**60**

Reference:

1. Khanna O.P.: Industrial Engineering.
2. T.R. Banga: Industrial Engineering & Management.
3. Mahajan: Industrial & Process Management.

Course outcomes:

On successful completion of the course, the student will be able to:

1. Enable students for Essential Imperatives and Steps in Industrial & Process Management.
2. Find the solution of problem dependent on planning &organization.
3. Determine the Need of Schools of Management thoughts.
4. Solve the problems related to Hierarchy Theory &Planned Location.
5. Enable students to use application of material management and scope of material management.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	**Programme Outcomes**											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S				S							S
2	S						S			M		
3	S			S								
4		S										
5	S			M					S			

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	**Educational Component**	**Weightage (%)**

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1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	40
3	Analysis and Evaluation	25

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9

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		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course
	End of Course survey			End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Course Title: STRENGTH OF MATERIAL		Course Code	: DME231
Semester	: **III**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: 4**:0:0**	Credits	: **3 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: **DIPLOMA IN CIVIL ENGINEERING**			

Pre-requisites:

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Students should have knowledge on basic material properties based on senior secondary school syllabus

Course Objectives:

The subjects are kept in diploma course so that the students of mechanical engineering discipline should know the proper use of material for common engineering problems.

Course Content:

Topic and Contents	Hours	Marks
UNIT-1: SIMPLE STRESS AND STRAINS	6	20
Simple Stress and Strains : Introduction types of loads and deformation, types of stresses and strain. Hooke's law, stress strain diagram for ferrous and non ferrous materials modulus of elasticity. rigidity and bulk modules of materials Stress in bars of varying cross sections, composite sections and compound sections Thermal stresses and strains, thermal stresses in composite sections. Poisson's ratio, volumetric strain, relation between different modulus, strain energy.		
UNITS-2: S.F. AND B.M. DIAGRAMS	8	20
S.F. and B.M. Diagrams : Definition, types of loading types of beams, shear force and bending moment sign conventions S.F. and B.M. diagrams for cantilever simply supported and overhanging beams with point or concentrated loads uniformly distributed loads and combination of point and U.D.L. Point of contra flexure, numerical problems.		
UNITS-3: Spring	8	20
Spring: Definition types and use of springs, leaf spring, helical and spiral springs, Stiffness of a spring and maximum shear stress, defection of spring . Spring Classification based on size shape and load.		
UNIT-4: PRINCIPLE STRESSES AND STRAIN	8	20

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Principle stresses and strain:- Transformation of plane stresses, Principle stresses, Maximum shear stresses, Mohr's circle for plane stresses, Plain strain and its Mohr's circle representation, Principle strains, Maximum shear strain. Combined Loading: Components subjected to bending, torsion & axial loads.		
UNIT 5: DEFLECTION OF BEAM	6	20
Deflection of beam:- Relation between slope deflection and radius of curvature, solution of beam deflection, problem by Macaulay's method, Direct integration method, Method of super position, Moment Area Method.		
TOTAL	**36**	**100**

Reference:

- S. C. Crandall, N. C. Dahl, and T. J. Lardner, An Introduction to the Mechanics of Solids, 2nd Ed, McGraw Hill, 1978.
- E. P. Popov, Engineering Mechanics of Solids, Prentice Hall, 1990.
- I. H. Shames, Introduction to Solid Mechanics, 2nd Ed, Prentice Hall, 1989.
- S. P. Timoshenko, Strength of Materials, Vols. 1 & 2, CBS publ., 1986.

Course outcomes:

On successful completion of the course, the student will be able to:

1. Apply concepts of strength of materials to obtain solutions to real time Engineering problems.

2. Able to analyze the different types of loading and the consequent deflection.

3.Able to analyze different types of stress and strain in the beam or load applied.

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4. Interpret hardness curve measured after heat treatment.

5. Find correlation between material structure and its creep.

Mapping Course Outcomes with Program outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S										
2	S	S										
3	S	S										
4	S	S										
5	S	S										

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What	To whom	When/where (Frequency in	Max Marks	Evidence collected	Contributing to course outcomes

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				the course)			
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course
	End of Course survey			End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl.	Educational Component	Weightage

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No.		(%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Course Title:STRENGTH OF MATERIAL LAB	Course Code : DME271

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Semester	: **III**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: 0**:0:2**	Credits	: **2 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **-**
Continuous Internal Evaluation	: **60 Marks**	SEE	: **40 Marks**
Programmes: **DIPLOMA IN MECHANICAL ENGINEERING**			

Pre-requisites:

Students should have knowledge on strength of material subject.

Course Objectives:

1. To help the students gain experience in the determination of creep for various materials and understand how this property varies with time.

2. To provide students an opportunity to learn how to measure hardness of materials and analyze how heat treatment affects hardening.

3. To impart knowledge on phase development of two isomorphous metals.

4. To teach students determine phases present in a material using XRD graph.

Course Content:

Topic and Contents
1) Study of extensometers 2) Study and operation of UTM 3) Tensile test on mild steel specimen and plotting stress strain curve 4) Bending test on timber beams. 5) Compression test on common structural materials viz. timber, cast iron etc. 6) Determination of toughness of cast iron and mild steel specimen by Charpy and Izod test. 7) Hardness test by Brinell and Rockwell test.

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8) Determination of deflection for various types of loading
9) Torsion test on brass and mild steel
10) Determination of stiffness of close coiled spring

Reference:

Course outcomes:

On successful completion of the course, the student will be able to:

1. Interpret hardness curve measured after heat treatment.

2. Find correlation between material structure and its creep.

3. Index XRD plot and determine phases of a material.

4. Perform non destructive failureanalysis.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S										
2	S	S										
3	S	S										
4	S	S										

S: Strong relationship M: Moderate relationship

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Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course

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	End of Course survey		End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

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EMPLOYABILITY SKILLS – II

EM 102 **C (L, T, P) = 1 (1, 0, 0)**

S.NO.	TOPIC	DETAILS	CONTACT HOURS
1	Communication	Role Play, Reading, Formal writing skills Listening, Interaction Process, Interpersonal Relationship	15
2	Attitude& Manners	Motivation, Team Building, Winning Strategy, CAN DO,	5
3	Preparation, presentation	Presentation skills, Preparation Skills,	4
4	Industry	Concept & Importance of SIP, Industrial Mentoring & Networking	1

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EMPLOYABILITY SKILLS – III

EM 201 **C (L, T, P) = 1 (1, 0, 0)**

S.NO.	TOPIC	DETAILS	CONTACT HOURS
1	Communication	Negotiation & Reasoning, Interaction Process, Interpersonal Relationship	5
2	Quantitative	Number System, Ratio & Proportion, Partnership, Percentage, Profit &Loss	5
3	Reasoning,	Analytical Reasoning, Coding & Decoding, Series	5
4	Motivation	Leadership & Styles, Self Esteem, Winning strategies,	5
5	Preparation, presentation	Self Esteem, Preparation of CV, Writing Application, Placement Mantra	5

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EMPLOYABILITY SKILLS – IV

EM 202 **C (L, T, P) = 1 (1, 0, 0)**

S.NO.	TOPIC	DETAILS	CONTACT HOURS
1	Aptitude Test Preparation	Numerical, Reasoning, Logical, Verbal	10
2	Employability Enhancement	Impactful Summer Internships, Statement of Purpose, Application / Cover Letter Writing, Email Application, Online Search & Registration	5
3	Interview Skills	Telephonic Interviews, Video Interviews, Group Discussion Techniques, Mocks – Recording & Playback	6

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4	Miscellaneous	Industry Related Preparation, Company Specific Preparation, Current Affairs, Business News, General Knowledge	5

Course Title:**ADVANCE MATHEMATICS**		Course Code	:**MA231**
Semester	: **III**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **3:0:0**	Credits	: **3Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40Marks**	SEE	: **60Marks**
Programmes: **Diploma in Electrical Engineering**			

Pre-requisites:

Knowledge of Basic Mathematics at Sec. and Sr. Sec. Level.

Course Objectives:

1. This course supposed to give the knowledge of basic concept of Linear Programming.

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2. Analyse the Applications of PERT and CPM Network.
3. Analyse the Concept of Transportation problem.
4. Evaluate the Basic concept of Laplace transform.
5. Analyse the problems faced in Numerical differentiation and Integration.

Course Content:

Topic and Contents	Hours	Marks
UNIT-1:LINEAR PROGRAMMING	08	20
Mathematical Formulation of Linear Programming problem. • Graphical method of solving Linear Programming problem. • Simple method for solving Linear Programming problem. • Duality in Linear Programming problem.		
UNITS-2: PROJECT SCHEDULING	06	20
Project Scheduling by PERT and CPM Network Analysis. Sequencing Theory: • General Sequencing problem • N-jobs through 2 machines & 3 machines • 2-jobs through m machine.		
UNITS-3: TRANSPORTATION PROBLEM	08	20
Find the initial solution using: • North West Corner rule, Least Cost Method. Assignment problem: • Solving Assignment problem		
UNIT-4:TRANSFORM CALCULUS	06	20
Laplace transform with its simple properties.		
UNIT 5: NUMERICAL METHODS	08	20
Finite differences and Interpolation, Numerical differentiation and Integration. Numerical solution of ordinary differential equations		
TOTAL	**36**	**100**

Reference:

1. Advanced Mathematics for Engineers by Chandrika Prasad
2. Higher Engineering Mathematics by B.S. Grewal
3. Higher Engineering Mathematics by Y.N. Gaur and C.L. Koul

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4. Higher Engineering Mathematics by K.C. Jain and M.L. Rawat

Course outcomes:

On successful completion of the course, the student will be able to:

1. The course content gives full knowledge to learn Linear Programming.
2. Find the solution of problem dependent on Project Scheduling.
3. Solve the problems related to Transportation.
4. Enable students to solve difficulties face in Numerical method and transform Calculus.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S			M			S	M				
2	S		S			M				S		
3		M			S				M			
4	S	S					M					

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	30
2	Applying the knowledge acquired from the course	35
3	Analysis and Evaluation	35

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What	To whom	When/where (Frequency	Max Marks	Evidence collected	Contributing to course

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				in the course)			outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course
	End of Course survey			End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

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Syllabus

SYLLABUS

Edition-2021-22

DEPARTMENT OF
DIPLOMA IN COMPUTER SCIENCE

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LIST OF COURSES OFFERED
Edition-2021-22

DEPARTMENT OF
DIPLOMA IN COMPUTER SCIENCE

Head, Department of Diploma Engg.
Gyan Vihar School of Engg. & Tech.
JAIPUR

GYAN VIHAR SCHOOL OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF DIPLOMA IN CSE
EDITION - 2021-22

Course Code	Course Name	Credits	Contact Hrs/Wk.			Exam Hrs.	Weightage (in%)	
			L	T/S	P		CE	ESE
DCS203	Computer System Programming	3	3	0	0	3	40	60
DCS204	Fundamentals of Data Structure and Algorithm	3	3	1	0	3	40	60
DCS205	Operating System Basics & Pc Packages	3	3	0	0	3	40	60
DCS206	Web Technology	3	3	0	3	3	40	60
DCS207	Fundamentals of Information Technology	3	3	0	0	3	40	60
DCS208	Computer Organization & Architecture	3	3	0	3	3	40	60
DCS209	Open Source Technology	3	3	0	0	3	40	60
DCS210	Data Base Management System	3	3	0	0	3	40	60
DCS212	E- Commerce in Business	3	3	0	0	3	40	60
DCS215	Computer System Programming Lab	2	0	0	3	2	60	40
DCS216	Fundamentals of Data Structure & Algorithm Lab	2	0	0	3	2	60	40
DCS219	Operating System Lab	2	0	0	3	2	60	40
DCS220	LAN and windows 2000 Administration Lab	2	0	0	3	2	60	40
DCS221	Office Automation Lab	2	0	0	3	2	60	40
DCS222	OOPS(C++) Lab	2	0	0	3	2	60	40
DCS223	Open Source Technology Lab	2	0	0	3	2	60	40
DCS224	Web Technology LAB	2	0	0	3	2	60	40
DCS225	PHP Lab	2	0	0	3	2	60	40
DCS228	DBMS Lab	2	0	0	3	2	60	40
DCS302	ASP.NET with C#	3	3	0	0	3	40	60
DCS303	OOPs through Java	3	3	0	0	3	40	60
DCS304	Data Mining & data warehousing	3	3	0	0	3	40	60
DCS305	Desktop Publishing & Multimedia	3	3	0	0	3	40	60
DCS306	Mobile Computing	3	3	0	0	3	40	60
DCS307	Network Security & Management	3	3	0	0	3	40	60
DCS309	System Anaylsis & Designing	3	3	0	0	3	40	60
DCS312	ASP.Net with C# Lab	2	0	0	3	2	60	40
DCS314	Data Mining & data warehousing Lab	2	0	0	3	2	60	40
DCS315	OOPs Lab in Java	2	0	0	3	2	60	40
DCS317	Python Lab	2	0	0	3	2	60	40
DCS319	Network Security Lab	2	0	0	3	2	60	40
DEE377	MAT Lab	2	0	0	3	2	60	40
DEP301	Industry Summer Internship Project	3	0	0	3	2	60	40
DEP302	Industry Association Project	6	0	0	3	2	60	40
DHS231	Basic Economics & Social Science	2	2	0	0	3	40	60
DHS232	Entrepreneurship	2	2	0	0	3	40	60
DHS301	Industrial Management	3	3	0	0	3	40	60
EM102	Employability Skills II	1	0	2	0	2	60	40
EM201	Employability Skills – III	1	0	2	0	2	60	40
EM202	Employability Skills IV	1	2	0	0	2	60	40
MA231	Advance Mathematics	3	3	0	0	3	40	60
PC201	Proficiency in Co-Curricular Activity	2	0	0	0	0	100	
PC202	Proficiency in Co-Curricular Activity	2	0	0	0	0	100	
PC301	Proficiency in Co-Curricular Activity	2	0	0	0	0	100	
PC302	Proficiency in Co-Curricular Activity	2	0	0	0	0	100	
PT 301	Practical Training Seminar	2	0	0	3	2	60	40

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GYAN VIHAR SCHOOL OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF DIPOLMA IN ENGINEERING
DIPLOMA IN COMPUTER- SCIENCE (3 Year Course)

Year: II **Edition-2021-22** **Semester: III**

Course Code	Course Name	Credits	Contact Hrs/Wk.			Exam Hrs.	Weightage (in%)	
			L	T/S	P		CE	ESE
	University Core							
MA231		3	3	0	0	3	40	60
PC201	Proficiency in Co-Curricular Activity	2	0	0	0	0	100	
EM102	Employability Skills II	1	0	2	0	2	60	40
	Program Core							
DCS203	Computer System Programming	3	3	0	0	3	40	60
DCS206	Web Technology	3	3	0	3	3	40	60
DCS224	Web Technology LAB	2	0	0	3	2	60	40
DCS215	Computer System Programming Lab	2	0	0	3	2	60	40
DCS219	Operating System Lab	2	0	0	3	2	60	40
DCS221	Office Automation Lab	2	0	0	3	2	60	40
DCS223	Open Source Technology Lab	2	0	0	3	2	60	40
	University Elective							
DHS231	Basic Economics & Social Science	2	2	0	0	3	40	60
	Program Elective							
DCS209	Open Source Technology	3	3	0	0	3	40	60
DCS207	Fundamentals of Information Technology	3	3	0	0	3	40	60

Course Code	Course Name	Credits	Contact Hrs/Wk.			Exam Hrs.	Weightage (in%)	
			L	T/S	P		CE	ESE
	University Core							
PC202	Proficiency in Co-Curricular Activity	2	0	0	0	0	100	
EM201	Employability Skills – III	1	0	2	0	2	60	40
	Program Core							
DCS204	Fundamentals of Data Structure and Algorithm	3	3	1	0	3	40	60
DCS216	Fundamentals of Data Structure & Algorithm Lab	2	0	0	3	2	60	40
DCS205	Operating System Basics & Pc Packages	3	3	0	0	3	40	60
DCS208	Computer Organization & Architecture	3	3	0	3	3	40	60
DCS220	LAN and windows 2000 Administration LAB	2	0	0	3	2	60	40
DCS222	OOPS(C++) Lab	2	0	0	3	2	60	40
DCS225	PHP Lab	2	0	0	3	2	60	40
DCS228	DBMS Lab	2	0	0	3	2	60	40
	University Elective							
DHS232	Entrepreneurship	2	2	0	0	3	40	60
*	Any course may be opted from other Department							
	Program Elective							
DCS212	E- Commerce in Business	3	3	0	0	3	40	60

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DCS210	Data Base Management System	3	3	0	0	3	40	60

Year: II **Edition-2021-22** **Semester: IV**

Course Code	Course Name	Credits	Contact Hrs/Wk.			Exam Hrs.	Weightage (in%)	
			L	T/S	P		CE	ESE
	University Core							
PC301	Proficiency in Co-Curricular Activity	2	0	0	0	0	100	
EM202	Employability Skills IV	1	2	0	0	2	60	40
DEP301	Industry Summer Internship Project	2	0	0	3	2	60	40
	Program Core							
DCS303	OOPs through Java	3	3	0	0	3	40	60
DCS305	Desktop Publishing & Multimedia	3	3	0	0	3	40	60
DCS315	OOPs Lab in Java	2	0	0	3	2	60	40
DCS319	Network Security Lab	2	0	0	3	2	60	40
DCS307	Network Security & Management	3	3	0	0	3	40	60
	University Elective							
DHS301	Industrial Management	2	2	0	0	3	40	60
	Program Elective							
DCS309	System Anaylsis & Designing	3	3	0	0	3	40	60
PT 301	Practical Training Seminar	2	0	0	3	2	60	40

Year: III **Edition-2021-22** **Semester: V**

Year: III **Edition-2021-22** **Semester: VI**

Course Code	Course Name	Credits	Contact Hrs/Wk.			Exam Hrs.	Weightage (in%)	
			L	T/S	P		CE	ESE
	University Core							
PC302	Proficiency in Co-Curricular Activity	2	0	0	0	0	100	
DEP302	Industry Association Project	4	0	0	3	2	60	40
	Program Core							
DCS302	ASP.NET with C#	3	3	0	0	3	40	60
DCS317	Python Lab	2	0	0	3	2	60	40
DCS314	Data Mining & data warehousing Lab	2	0	0	3	2	60	40
DCS312	ASP.Net with C# Lab	2	0	0	3	2	60	40
	University Elective							
PT 302	Seminar	2	0	0	3	2	60	40
DEE377	MAT Lab	2	0	0	3	2	60	40
	Program Elective							
DCS306	Mobile Computing	3	3	0	0	3	40	60
DCS304	Data Mining & data warehousing	3	3	0	0	3	40	60

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DETAIL OF COURSES

DEPARTMENT OF
DIPLOMA IN COMPUTER SCIENCE

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Course Title: Computer System Programming		Course Code	: DCS203
Semester	: III	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: 3**:0:0**	Credits	: 3 **Credits**
Type of course	: **Lecture**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: Diploma in Computer Science			

Pre-requisites:

Basic Computer Knowledge

Course Objectives:

1. To introduce about computer.
2. learn Computer fundamentals
3. Learn how computer work and about computer languages.
4. To introduce Basic C programming.
5. To introduce structure, pointers.

Course Content:

Topic and Contents	Hours	Marks
UNIT 1 Introduction	06	20
(a) Types of computers and generations Basic, architecture of computers and its building blocks **(b)** Input-Output devices, Memories	03 03	
UNIT 2 Number Systems	07	20
(a) Binary, octal, decimal and hexadecimal representation of numbers Integers and floating point numbers Representation of characters, ASCII and EBCDIC codesBinary Arithmetic: addition, subtraction, complements **(b) Classification of Computer Languages**	04 03	

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Machine, assembly and high level languages Brief idea of operating system, Assembler, compiler and interpreter		
UNIT 3 Programming in 'C'	08	20
(a) Need of programming languages, Defining problems (b) Flowcharts and algorithm development (c) Data types, constants, variables, operators and expressions (d) Input and output statements, Conditional and control statements	02 02 02 02	
UNIT 4 LOOPS	08	20
Loops (While do while for), break, goto, continue, Arrays, 2D array, user defined functions	08	
UNIT 5 Structures and unions	08	20
a. Structures and unions ; Pointers; File handling	08	
TOTAL	**36**	**100**

Reference:

1. Computer Fundamentals by P.K.Sinha, BPB Publications
2. Fundamentals of information Technology and Computer Programming by V.K.Jain
3. Introduction to Computers and Information Systems by Dr. Sushila Madan, Taxmann Publications

Course outcomes:

On successful completion of the course, the student will be able to:

1. Can learn about computer.
2. learn Computer fundamentals
3. know how computer work and about computer languages.
4. Learn Basic C programming and implement C programs.
5. learn about structure, union, pointers and file handling.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S	M	M	M	M			M			M
2	S	M			M	M						

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3	S	S	S	S	M	M			M			M
4	S	S	S	S	M	M			M			M
5	S	S	S	S	M	M			M			M

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	
		Graded Assignments		Two Assignments	10	Log of record	
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	30
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	45

Model Question Paper:

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Guidelines for Question Paper Setting:

The question paper must be prepared based on the blue print without changing the weigh age of model fixed for each unit.

The question paper pattern provided should be adhered to

- The paper should have 10 questions in all, wherein it will have 2 questions from each unit.
- Student shall be asked to attempt in all 5 questions, 1 Question from each unit.
- Student shall be given Internal choice in every Unit.

Questions should not be set from the recapitulation topics.

Course Title: Fundamentals of Data Structure and Algorithm		Course Code	: DCS204
Semester	: IV	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: 3**:0:0**	Credits	: 3 **Credits**
Type of course	: **Lecture**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: Diploma in Computer Science			

Pre-requisites:

Basic Computer and C Language

Course Objectives:

1. To introduce about the data structure and algorithm, linear data structure and non linear data structure
2. To introduce about array representation and application of Stack and Queue and Sparse matrix and practice on them

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3. To introduce the link list architecture of data structure and the application of it and practice on that.
4. To introduce the tree architecture of data structure and the application of it and practice on that
5. To introduce the graph architecture of data structure and the application of it and practice on that

Course Content:

Topic and Contents	Hours	Marks
UNIT 1 Introduction	06	20
a. Data Structure: Definition, Implementation, Operation, Application, Algorithm writing and convention. b. Analysis of algorithm, Complexity Measures and Notations	03 03	
UNIT 2 Arrays	06	20
a. Definition, Implementation, Representation of arrays, single and multidimensional arrays.	06	
UNIT 3 Stacks	08	20
(a) Definition, Implementation, Application (Tower of Hanoi, (b) Function Call and return, Parentheses Matching)	04 04	
UNIT 4 Linked Lists	08	20
a. Implementation, Doubly linked list, Circular linked list. b. Queues : Definition, deque, Implementation, Application	04 04	

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UNIT 5 Sorting	08	20
a. Bubble, Selection, Insertion, Merge, b. Searching: Linear search, Binary Search, Simple String Searching	04 04	
TOTAL	**36**	**100**

Reference:

1. Seymour Lipschutz- "Data structure and algorithm " - TMH Publication
2. A.S. Tanunbaum - "Data structure and algorithm in C" –TMH Publication
3. T.H.Cormen – "Introduction to algorithm "-PHI publication
4. Gupta,Agarwal,Varshney- "Design and analysis of Algorithm –PHI Publication

Course outcomes:

On successful completion of the course, the student will be able to:

1. Get knowledge about the data structure, how to design an algorithm and importance of data structure
2. How we represent an array in memory and all application of array
3. How we implement the link list and its application
4. How we implement the tree data structure and its application
5. How we implement the graph data structure and its application

Mapping Course Outcomes with Program Outcomes:

Course outcomes	**Programme Outcomes**											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S						M				
2	S	S										
3	S	S		S					M	M		
4	S	S		S							M	
5	S	S			S					M		M

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

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The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	
		Graded Assignments		Two Assignments	10	Log of record	
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Model Question Paper:

Guidelines for Question Paper Setting:

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The question paper must be prepared based on the blue print without changing the weigh age of model fixed for each unit.

The question paper pattern provided should be adhered to

- The paper should have 10 questions in all, wherein it will have 2 questions from each unit.
- Student shall be asked to attempt in all 5 questions, 1 Question from each unit.
- Student shall be given Internal choice in every Unit.

Questions should not be set from the recapitulation topics.

Course Title: Operating System Basics & Pc Packages		Course Code	: DCS205
Semester	: IV	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: 3**:0:0**	Credits	: 3 **Credits**
Type of course	: **Lecture**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: Diploma in Computer Science			

Pre-requisites:

Basic Computer

Course Objectives:

1. To introduce about operating system and window XP.
2. To learn about various features of window XP.
3. Learn about installation of various software and know about explorer.
4. To introduce Features, Structure of file system, Linux system architecture.
5. Learn word processor ,types of word processor and its features.

Course Content:

Topic and Contents	Hours	Marks

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UNIT 1 Introduction	07	20
(a) Evolution of an operating system, Define Operating system, objectives and functions of an operating system , the operating system as a resource manager, types of an operation system. (b) Differentiate Dos, windows and linux/Unix. Introduction to Windows-XP **:** Windows XP features, windows Desktop Setting, managing windows explorer.	04 03	
UNIT 2 Windows-XP	07	20
(a) Using Taskbar, Start Menu options, My Computer, Recycle Bin, My Network Place, My Documents. creating user Accounts in win-XP. (b) Windows Accessories**:** - Calculator, Note Pad, Word Pad, Paint, Entertainment, Address Book.	04 03	
UNIT 3 Control Panel	07	20
(a) Installation of Software ,Addition of new hardware, installation of modem, (b) Sound card, Printers and Scanner, Date and time, taskbar and start menu. Windows (c) Explorer**:** Creating a new folders and other explore facilities, changing the look and feel of windows(Desktop, Wallpaper, Screen saver etc.).	02 02 03	
UNIT 4 Linux	07	20
(a) Features, Structure of file system, Linux system architecture(Kernel and Shell). (b) Linux Command: - How to create and manage a text file in linux, cat, pwd, ls, mkdir, cd, , rm, rmdir, cp, who, mv, tty, sty, chmod.	02 02	

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(c) Utilities**:** more, file, cmp, comm., diff, passwd, uname, cal, bc. (d) Filter and Pipe: pr, head, tail, grep, egrep, frep, tr.	02 01	
UNIT 5 MS-WORD	07	20
(a) Define word processor ,types of word processor,creating document in MS word,formatting (b) features of MS-word, word standard toolbar ,text formatting, header and footer, auto text,document (c) security features,table handling features, insertion of files and pictures ,mail merge and macros.	02 02 03	
TOTAL	**36**	**100**

Reference:

1. Microsoft windows XP - PHI
2. operating system – William stallings – pearson education
3. Unix operating System – sumitabha das – Tata McGraw hill
4. Introduction to computers – Norton – McGraw Hill
5. Microsoft office : Ron Mansdield – BPB publication

Course outcomes:

On successful completion of the course, the student will be able to:

1. Know about operating system and window XP.
2. Learn about various features of window XP.
3. Learn about installation of various software and know about explorer.
4. Know about Linux system architecture.
5. Can work with word processor and can use its features.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	**Programme Outcomes**											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S		S									
2	S		S							M		
3	S	S			S							
4	S			S							M	
5	S	S				S						M

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Course Assessment and Evaluation:

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Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	
		Graded Assignments		Two Assignments	10	Log of record	
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	25
2	Applying the knowledge acquired from the course	30
3	Analysis and Evaluation	45

Model Question Paper:

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Guidelines for Question Paper Setting:

The question paper must be prepared based on the blue print without changing the weigh age of model fixed for each unit.

The question paper pattern provided should be adhered to

- The paper should have 10 questions in all, wherein it will have 2 questions from each unit.
- Student shall be asked to attempt in all 5 questions, 1 Question from each unit.
- Student shall be given Internal choice in every Unit.

Questions should not be set from the recapitulation topics.

Course Title: Web Technology		Course Code	: DCS206
Semester	: III	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: 3**:0:0**	Credits	: 3 **Credits**
Type of course	: **Lecture**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: Diploma in Computer Science			

Pre-requisites:

Basic Computer

Course Objectives:

1. Understand the various steps in designing a creative and dynamic website.
2. They will have clear understanding of hierarchy of objects in HTML and XML.
3. Finally they can create good, effective and customized websites.
4. Know regarding internet related technologies. Systematic way of developing a website.
5. They will able to write html, JavaScript, CSS and applet codes.

Course Content:

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Topic and Contents	Hours	Marks
UNIT 1 Internet Connection Concepts	07	20
(c) Server, Client and Parts, DNS, Telephone, Cable and Satellite connections- Dialup, ISDN, ADSL and Leased live based connection, **(d)** Cable and DSS a/c, Web TV and Internet, ISP features. TCP and UDP protocols, URL's, CGI, MIME and introduction to SGML.	04 03	
UNIT 2 HTML	07	20
a. Introduction to HTML, Elements of HTML syntax, Head and Body sections, Building HTML documents, Inserting text, images, hyperlinks, Backgrounds and Color Control, ordered and unordered lists, b. content layout & presentation. Tables: use of table tags,DIV and SPAN and various other HTML tags. forms – frames – table	04 03	
UNIT 3 Introduction of intranet	07	20
(c) Intranet v/s LAN, Components of Internet-Workstations and Client software, Server and Network operating system. (d)Network cards, cabling and hubs, steps for creating an intranet. Maintenance and connecting to internet.	03 04	
UNIT 4 Web technology	07	20
(a) Elements of web – clients and servers languages and protocols, web page and web sites, special kinds of web sites, web resources – search engines, massage boards, clubs, news groups and chat (b) web page creation concepts – planning, navigation, themes and publishing. Analyzing web traffic – log file data, analyzing log file and product for analyzing web traffic.	04 03	
UNIT 5 E-mail technology	07	20
a. features and concepts – message headers, address book, attachment, filtering and forwarding mails. b. Scripting languages HTML –webpage design – java script introduction – control structures – functions – arrays – objects – simple web applications.	04 03	
TOTAL	**36**	**100**

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Reference:

1. Roy and Sinha, Internet Technologies by BPB Publications
2. Mukharjee S., Web Designing and Development by TMH

Course outcomes:

On successful completion of the course, the student will be able to:

1. Understand web basics.
2. understand hierarchy of objects in HTML and XML
3. can create good, effective and customized websites
4. Know regarding internet related technologies
5. Can develop an applet application

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S								M		
2	S	S										
3	S	S		S				M			M	
4	S	S		S					M	M		
5	S	S			S						M	M

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	

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		Graded Assignments		Two Assignments	10	Log of record	
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Model Question Paper:

Guidelines for Question Paper Setting:

The question paper must be prepared based on the blue print without changing the weigh age of model fixed for each unit.

The question paper pattern provided should be adhered to

- The paper should have 10 questions in all, wherein it will have 2 questions from each unit.
- Student shall be asked to attempt in all 5 questions, 1 Question from each unit.
- Student shall be given Internal choice in every Unit.

Questions should not be set from the recapitulation topics.

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Course Title: FUNDAMENTALS OF INFORMATION TECHNOLOGY		Course Code	: DCS207
Semester	: III	Core / Elective	: **Elective**
Teaching Scheme in Hrs (L:T:P)	: 3**:0:0**	Credits	: 3 **Credits**
Type of course	: **Lecture**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: Diploma in Computer Science			

Pre-requisites:

Basic Computer

Course Objectives:

1. Know about information technology and data types.
2. To introduce about e-commerce and its advantage
3. Learn about Transmission media and signals types.
4. Know various function of operating system.
5. To introduce application software and GUI interface.

Course Content:

Topic and Contents	Hours	Marks
UNIT 1 Introduction	06	20
(a) An overview of information technology, difference between data and information, quality, of information, Information system. (b) Important data types: text, image, graphics & animation, audio, video. Data compression and its techniques	03 03	
UNIT 2 Introduction to internet	07	20
(a) www, web browser, search engine, email Introduction to e-commerce and its advantage, security threats to e-commerce, Electronic payment system, (b) E-governance, EDI and its benefits Introduction to cryptography, digital signature and smart card technology	04 03	
UNIT 3 Introduction to LAN, WAN, MAN	07	20

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(a) Transmission media Data transmission type: Introduction to OSI reference model (b) Analog and digital signals, modulation Network topologies, client-server architecture, ISDN	04 03	
UNIT 4 Operating System	07	20
(a) Overview, definition and function of operating system, need of operating system (b) Batch processing, spooling, multi-programming, multi-processing (c) Time sharing, online processing, real time system	03 02 02	
UNIT 5	08	20
(a) Application software and their categories, system software (b) User interface GUI, spread sheet Data base software, its features and benefits	04 04	
TOTAL	**36**	**100**

Reference:

1. Information Technology and the Networked Economy, Second Edition **By** McKeown, Patrick G.
2. Internet & Intranet Engineering, Tata McGraw Hill company.
3. Information Technology by Ajit Poonia.
4. Information Technology by D.P. Sharma

Course outcomes:

On successful completion of the course, the student will be able to:

1. Know about information technology and data types.
2. Learn about e-commerce and its advantage
3. Know Transmission media and signals types.
4. Know various function of operating system.
5. Learn application software and GUI interface.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12

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1	S	S										
2	S	S										
3	S		S									
4	S		S									
5	S		S							M		

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	
		Graded Assignments		Two Assignments	10	Log of record	
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

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Model Question Paper:

Guidelines for Question Paper Setting:

The question paper must be prepared based on the blue print without changing the weigh age of model fixed for each unit.

The question paper pattern provided should be adhered to

- The paper should have 10 questions in all, wherein it will have 2 questions from each unit.
- Student shall be asked to attempt in all 5 questions, 1 Question from each unit.
- Student shall be given Internal choice in every Unit.

Questions should not be set from the recapitulation topics.

Course Title: Computer Organization & Architecture		Course Code	: DCS208
Semester	: IV	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: 3**:0:0**	Credits	: 3 **Credits**
Type of course	: **Lecture**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: Diploma in Computer Science			

Pre-requisites:

Basic Computer Knowledge

Course Objectives:

1 Describe the progression of computer architecture.

2 Understand Instruction execution through instruction cycles. Understand the system interconnection and the different I/O techniques

3 Explain the basic concepts of interrupts and how interrupts are used to implement I/O control and data transfers.

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4 Explain the functioning of the arithmetic and logic unit.

5 Explain the functioning of the control unit and look at the different implementations of the control unit.

Course Content:

Topic and Contents	Hours	Marks
UNIT 1 Computer Evolution	06	20
a. Brief history of Computer, Mechanical and Electromechanical Ancestors, Classification of Computer, Designing for performance b. Structure of a Computer System, Arithmetic Logic Unit, Control Unit, Bus Structure.	03 03	
UNIT 2 Central Processing Unit and Instructions	07	20
a. Instruction Characteristics, CPU with Single BUS, Types of Operands b. Types of Operations, Addressing Modes, Instruction Formats.	04 03	
UNIT 3 ARITHMETIC ALGORITHM	07	20
a. Array multiplier, Hardware Implementation, IEEE Standards. b. Addition subtraction for signed unsigned numbers and 2's complement numbers	04 03	
UNIT 4 I/O Organization	07	20
a. Need of I/O Module, External Devices , Input / Output Module, I/O Module Function, I/O Module Decisions, Input Output Techniques b. Programmed I/O, I/O commands, I/O instructions, Interrupt Driven I/O, Basic concepts of an Interrupt	03 03	
UNIT 5 MEMORY ORGANISATION	08	20
b. Concept of RAM/ROM, basic cell of RAM Associative memory, Cache memory organization, Vertical memory organization c. I/O ORGANISATION: Introduction to Peripherals & their interfacing. Video displays, Printers	04 04	
TOTAL	**36**	**100**

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Reference:

1. J.P.Hayes -'Computer Architecture & organization', Mc-Graw Hill.
2. Heuring-Computer System Design and Architecture, Pearson Education.
3. M.MORRISMANNO-'Computer System Architecture', Prentice Hall of India.
4. Bartee-Computer Architecture, Tata Mc-Graw Hill.
5. Stallings-Computer Organization and Architecture, Pearson Education.

Course outcomes:

On successful completion of the course, the student will be able to:

1 Describe computer architecture and organization, computer arithmetic, and CPU design.

2 Describe I/O system and interconnection structures of computer.

3 Identify high performance architecture design.

4 Use assembly language to program a microprocessor system.

5 Develop independent learning skills and be able to learn more about different computer architectures and hardware.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S										
2	S	S		S								
3	S	S	S					S				
4	S	S		S						M		M
5	S	S		S				M			M	

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSESSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	

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		Weekly Test		Two Weekly Test	10	Weekly Test Copies	
		Graded Assignments		Two Assignments	10	Log of record	
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Model Question Paper:

Guidelines for Question Paper Setting:

The question paper must be prepared based on the blue print without changing the weigh age of model fixed for each unit.

The question paper pattern provided should be adhered to

- The paper should have 10 questions in all, wherein it will have 2 questions from each unit.
- Student shall be asked to attempt in all 5 questions, 1 Question from each unit.

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- Student shall be given Internal choice in every Unit.

Questions should not be set from the recapitulation topics.

Course Title: Open Source Technology		Course Code	: DCS209
Semester	: IV	Core / Elective	: **Elective**
Teaching Scheme in Hrs (L:T:P)	: 3**:0:0**	Credits	: 3 **Credits**
Type of course	: **Lecture**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: Diploma in Computer Science			

Pre-requisites:

BASIC Computer Knowledge.

Course Objectives:

1. Will know UNIX and LINUX concepts
2. Learn about GNU Project and the Free Software Foundation
3. Know how Linux System Administration works.
4. Learn the concept of Memory Management
5. Know Software package Management

Course Content:

Topic and Contents	Hours	Marks
UNIT 1 OST overview	08	20
a. Evolution & development of OST and contemporary technologies, Factors leading to its growth. b. Open Source Initiative (OSI), Free Software Foundation and the GNU Project, principle and methodologies. Contexts of OST (India & international). c. Applications of open source (open source teaching and open source media) Risk Factors. Myths regarding open source.	03 03 02	
UNIT 2 Softwares	07	20

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a. Philosophy of Software Freedom, Free Software, OSS, Closed software, Public Domain Software, Shared software, Shared source. b. Detail of few OSS like Open Audio, Video, 2d & 3d graphics software, system tools, office tools, c. Networking & internet, Security, Educational tools and Games	02 03 02	
UNIT 3 Models	07	20
a. Open Source Development Model, Starting and Maintaining an Open Source Project b. Open Source Hardware, Open Source Design, Ongoing OS Projects (i.e. examples of few good upcoming software projects.) Case Study: - Linux, Wikipedia.	03 04	
UNIT 4 Licenses and Patents	07	20
a. What Is A License, How to create your own Licenses? b. Important FOSS Licenses (Apache,BSD, GPL, LGPL), copyrights and copy lefts, Patents	03 04	
UNIT 5 Economics of FOSS	06	20
a. Social and Financial impacts of open source technology,: Zero Marginal Cost, b. Income generation opportunities Problems with traditional commercial software, Internationalization, c. Open Source as a Business Strategy.	02 02 02	
TOTAL	**36**	**100**

Reference:

1. Vikas thada, Review to OST
2. Balaguruswamy concepts of open source concepts

Course outcomes:

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On successful completion of the course, the student will be able to:

1. Learn UNIX and LINUX concepts
2. Will know about GNU Project and the Free Software Foundation
3. Know Linux System Administration works.
4. Use the concept of Memory Management
5. Know Software package Management

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S										
2	S	S										
3	S	S										
4	S	S										
5	S	S										

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	
		Graded Assignments		Two Assignments	10	Log of record	
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	

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	End of Course survey		End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Model Question Paper:

Guidelines for Question Paper Setting:

The question paper must be prepared based on the blue print without changing the weigh age of model fixed for each unit.

The question paper pattern provided should be adhered to

- The paper should have 10 questions in all, wherein it will have 2 questions from each unit.
- Student shall be asked to attempt in all 5 questions, 1 Question from each unit.
- Student shall be given Internal choice in every Unit.

Questions should not be set from the recapitulation topics.

Course Title: Data Base Management System		Course Code	: DCS210
Semester	: IV	Core / Elective	: **Elective**
Teaching Scheme in Hrs (L:T:P)	: 3**:0:0**	Credits	: 3 **Credits**
Type of course	: **Lecture**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: Diploma in Computer Science			

Pre-requisites:

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Basic Computer Knowledge

Course Objectives:

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1 This course gives an overview of database management systems. It is intended to be an introductory course in databases. No prior knowledge of data models, query languages or application packages is assumed. Familiarity with software such as Oracle and MS Access is a plus, but is not necessary.

2 To learn the theoretical concepts behind how data models evolved,

3 Study the relational data model in detail, and apply this knowledge to create and maintain a simple database system.

4 To learn the principles of logical and physical storage management, query processing and normalization.

5 To learn indexing structures, transaction processing, security issues and concurrency control.

Course Content:

Topic and Contents	Hours	Marks
UNIT 1 Introduction	06	20
(e) Overview of DBMS, Basic DBMS terminology, data base system v/s file system, **(f)** data independence. Architecture of a DBMS	03 03	
UNIT 2 Introduction to data models:	06	20
a. entity relationship model, hierarchical model: from network to hierarchical, relational model, b. comparison of network, hierarchical and relational models	03 03	
UNIT 3 Models	08	20

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(e) Data modeling using the Entity Relationship Model: ER model concepts, notation for ER diagram, (f) mapping constraints, keys, Concepts of Super Key, candidate key, primary key, Generalization, aggregation, reduction of an ER diagrams to tables, (g) extended ER model, relationships of higher degree	02 03 03	
UNIT 4 Relational model	08	20
(c) storage organizations for relations, relational algebra, relational calculus. (d) Normalization: Functional dependencies, normal forms, first, second, third normal forms, BCNF, inclusion dependencies, loss less join decompositions, (e) normalization using FD, MVD, and JDs, alternative approaches to database design	03 03 03	
UNIT 5 Introduction to SQL	08	20
d. Characteristics of SQL, Advantages of SQL, SQL data types and literals, Types of SQL commands, SQL operators and their procedure, e. Tables, views and indexes, Queries and sub queries, Aggregate functions, insert, update and delete operations, Joins, Unions, Intersection, Minus in SQL	04 04	
TOTAL	**36**	**100**

Reference:

1 R. ElMasri, and S. Navathe, 1999 Fundamentals of Database Systems, 3rd Edition Benjamin Cummings.

2 J.D. Ullman 1989 Principles of Data and Knowledge Base Systems, Volume 1, Computer Science Press.

3 H.F. Korth, and A. Silberschatz 1991 Database System Concepts, 2nd Edition, McGraw-Hill.

4 Raghu Ramakrishnan and Johannes Gerhke 1997 Database Management Systems, McGraw-Hill, 1st Edition, 2nd printing.

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5 J. Melton and A. R. Simon 1993 Understanding the New SQL: A Complete Guide, Morgan-Kaufmann.

6 C. J. Date and H. Darwen 1994 A Guide to the SQL Standard (third edition), Addison-Wesley.

Course outcomes:

On successful completion of the course, the student will be able to:

1 Students learn about the concepts of DBMS and proceeds over the file management system and they will also learn to design the database.

2 Students learn, how write database queries to store and retrieve information from database by getting knowledge of relational algebra, relational calculus and SQL.

3 Students come to know about the short comes in designing of relational database and refinement of relations for a good database design.

4 Students learn about the security issues in database in mechanisms or concepts to employ security and transaction management in database.

5 Students learn about indexing and hashing in database.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S										
2	S	S										
3	S	S		S				M				
4	S	S	S						M			
5	S	S		S						M		M

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
TASS	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer	

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						books	
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	
		Graded Assignments		Two Assignments	10	Log of record	
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Model Question Paper:

Guidelines for Question Paper Setting:

The question paper must be prepared based on the blue print without changing the weigh age of model fixed for each unit.

The question paper pattern provided should be adhered to

- The paper should have 10 questions in all, wherein it will have 2 questions from each unit.

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- Student shall be asked to attempt in all 5 questions, 1 Question from each unit.
- Student shall be given Internal choice in every Unit.

Questions should not be set from the recapitulation topics.

Course Title: E- Commerce in Business		Course Code	: DCS212
Semester	: III	Core / Elective	: **Elective**
Teaching Scheme in Hrs (L:T:P)	: 3**:0:0**	Credits	: 3 **Credits**
Type of course	: **Lecture**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: Diploma in Computer Science			

Pre-requisites:

Basic Computer Knowledge

Course Objectives:

1. Learn about E- Commerce.
2. Know what is inter and intra ecommerce
3. Learn Network Infrastructure behind E- Commerce
4. Learn Electronic Payments methods.
5. Know Encryption and Transaction security issues.

Course Content:

Topic and Contents	Hours	Marks
UNIT 1 Introduction:	07	20
(a) Motivation, Forces behind E-Commerce Industry Framework, (b) Brief history of ECommerce, Advantages and Disadvantages of E-Commerce	04 03	
UNIT 2 INTER and INTRA E- Commerce	07	20
a. Inter Organizational E-Commerce	04 03	

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b. Intra Organizational E-Commerce		
UNIT 3 Architectural framework	07	20
a. Network Infrastructure for E-Commerce Network Infrastructure for ECommerce, Market forces behind I Way, b. Component of I way Access Equipment, Global Information Distribution Network, c. Broad band Telecommunication.	03 02 02	
UNIT 4 Electronic Payments	08	20
(f) Overview of Electronics payments, Digital Token based Electronics payment System, Smart Cards, Credit Card I Debit Card based EPS, (g) Emerging financial Instruments, Home Banking, Online Banking	04 03	
UNIT 5 Encryption	08	20
f. World Wide Web & Security, Encryption, Transaction security, Secret Key Encryption, Public Key Encryption, g. Virtual Private Network (VPM), Implementation Management Issues	04 04	
TOTAL	**36**	**100**

Reference:

1. David Whiteley-E-Commerce Strategy, Technology and Applications, Tata McGraw Hill.
2. Mathew Reynolds-Beginning E-commerce with visual Basic ASP, SQL Server 7.0 and MTS

Course outcomes:

On successful completion of the course, the student will be able to:

1. Know E- Commerce.
2. Use inter and intra ecommerce
3. Use concept of Network Infrastructure behind E- Commerce
4. Use Electronic Payments methods.
5. Encryption and Transaction security issues.

Mapping Course Outcomes with Program Outcomes:

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Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S		S								
2	S	S		S								M
3	S	S		S								M
4	S	S			S						M	M
5	S	S								M		M

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	
		Graded Assignments		Two Assignments	10	Log of record	
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	40
2	Applying the knowledge acquired from the course	20

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3	Analysis and Evaluation	40

Model Question Paper:

Guidelines for Question Paper Setting:

1. The question paper must be prepared based on the blue print without changing the weigh age of model fixed for each unit.
2. The question paper pattern provided should be adhered to
   - The paper should have 10 questions in all, wherein it will have 2 questions from each unit.
   - Student shall be asked to attempt in all 5 questions, 1 Question from each unit.
   - Student shall be given Internal choice in every Unit.
3. Questions should not be set from the recapitulation topics.

Course Title: Computer System Programming Lab		Course Code	: DCS215
Semester	: III	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: 0**:0:3**	Credits	: 2 **Credits**
Type of course	: **Practical**	Total Contact Hours	: **30**
Continuous Internal Evaluation	: **60 Marks**	SEE	: **40 Marks**
Programmes: Diploma in Computer Science			

Pre-requisites:

Basic Computer

Course Objectives:

1. Learn Conditional statement
2. Can implement LOOPS.
3. Know about array and its implementation.
4. To introduce functions both recursive and non-recursive.

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5. Learn how to implement pointers and file handling

Course Content:

S.No.	List of Experiments
I	Simple input program integer, real character and string. (Formatted & Unformatted)
II	Conditional statement programs (if, if-else-if, switch-case)
III	Looping Program (for, while, do-white)
IV	Program based on array one dimensions
V	Program based on array two and three dimensions
VI	Program using structure and unions.
VII	Program using Function without recursion
VIII	Program using Function With recursion
IX	Simple programs using pointers
X	File handling

Reference:

Lab manual

Course outcomes:

On successful completion of the course, the student will be able to:

1. Learn Conditional statement
2. How to implement LOOPS.
3. How to implement array both 1D and 2 D.
4. Implement functions both recursive and non-recursive.
5. How to implement pointers and file handling

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Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S					M		M				S
2	S	S	S	M	S	M		M		M		S
3	S	M	S	M	M	M			M	S		M
4	S	M	M	M	M		M	M	S	S	M	M
5	S	S				M				S	M	

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What	To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes

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DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	30
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	45

Course Title: Fundamentals of Data Structure & Algorithm Lab		Course Code	: DCS216
Semester	: IV	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: 0**:0:3**	Credits	: 2 **Credits**
Type of course	: **Practical**	Total Contact Hours	: **30**

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Continuous Internal Evaluation : **60 Marks**	SEE : **40 Marks**
Programmes: Diploma in Computer Science	

Pre-requisites:

Basic computer and C Programming

Course Objectives:

1. Understanding concept of C-language like-looping, array, function ,structure and pointers
2. Implementation of array with Stack, Queue.
3. Know how to implementation of link list, doubly link list and circular link list in C
4. Implementation of various sorting algorithm.
5. Know the concept of two way link list and also Implement two way link list.

Course Content:

1. Program of linear and binary search algorithm
2. Program to insert element at desire position in array.
3. Program to replacing element in array.
4. Program to deletion in array.
5. Implementation of stack and queue using array
6. Implementation of stack and queue using link lists
7. Implementation of circular queue using link lists.
8 Program on Insertion sorting algorithm
9. Program on Selection, Bubble sort algorithm
10. Two-way link lists programs.

Reference:

Lab manual

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Course outcomes:

On successful completion of the course, the student will be able to:

1. Learn the concept of C-language like-looping, array, function ,structure and pointers
2. Implementation of array and linked list with Stack, Queue.
3. Implementation of link list, doubly link list and circular link list in C
4. Implementation of various sorting algorithm.
5. Implement two way link list.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S								M		
2	S		S									
3	S		S					M			M	
4	S		S		S							
5	S	S					M					M

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
REC T ASSE SSM	Student feedback		Students	Middle of the course	-NA-	Feedback forms	

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	End of Course survey		End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Course Title: Operating System Lab		Course Code	: DCS219
Semester	: III	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: 0**:0:3**	Credits	: 2 **Credits**
Type of course	: **Practical**	Total Contact Hours	: **30**
Continuous Internal Evaluation	: **60 Marks**	SEE	: **40 Marks**
Programmes: Diploma in Computer Science			

Pre-requisites:

Basic Computer.

Course Objectives:

1. Illustrate the linux system administration and commands to handle files and directories.
2. Apply the commands for process management.
3. Illustrate the commands for file systems storage and structure.
4. To introduce Shell Scripting
5. Implement Scheduling Algorithm

Course Content:

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1. Introduction to Operating System, virtual machines and file systems
2. Installation of Linux Redhat, Ubuntu
3. Linux Commands – 1
4. Linux Commands – 2
5. Introduction to Android.
6. Introduction of Android Application components.
7. Installation of Android (sdk or adk)
8. Write a simple program “Hello world” in android
9. Create an activity using Android .
10. Write a program using Services in Android

Reference:

Lab manual

Course outcomes:

On successful completion of the course, the student will be able to:

1. Learn about Operating System
2. Implement Linux commands
3. Implement Android.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S				S	S			M			M
2	S	S			S			M	M	M		M
3	S	M	M	M	S			M	M	M		M
4	S		S		S			M	M	M		M
5	S	S							M			M

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What	To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes

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DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	30
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	45

Course Title: LAN and windows 2000 Administration LAB	Course Code : DCS220
Semester : IV	Core / Elective : **Core**
Teaching Scheme in Hrs (L:T:P) : 0**:0:3**	Credits : 2 **Credits**
Type of course : **Practical**	Total Contact Hours : **30**
Continuous Internal Evaluation : **60 Marks**	SEE : **40 Marks**
Programmes: Diploma in Computer Science	

Pre-requisites:

Basic Computer Knowledge, Programming in C

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Course Objectives:

1. Know different types of Network cables
2. Know about different types of network devices
3. Learn the concept of Local Area Network
4. Use basic Commands of Cisco Packet Tracer
5. Learn about network programming

Course Content:

1. Study of different types of Network cables and practically implement the cross-wired cable and straight through cable using clamping tool.
2. Study of network devices in detail.
3. Study of Network IP.
4. Connect the computers in Local Area Network
5. Basic Commands of Cisco Packet Tracer.
6. WAP to connect a dump terminal/PC to the router.
7. WAP to stepping through context-sensitive help to set the time for router.
8. WAP to setting the line console password and enable password.
9. WAP to setting the enable secret password and basic serial connection.
10. WAP to disabling domain-lookup and synchronizing the console line.

Reference:

Lab manual

Course outcomes:

On successful completion of the course, the student will be able to:

1. Learn different types of Network cables
2. Know about different types of network devices
3. Implement of Local Area Network
4. Use basic Commands of Cisco Packet Tracer
5. Know network programming

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12

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1	S	S										
2	S	S				S			M			M
3	S	S		S						M		
4	S	S		S			S			M	M	
5	S	S		S								M

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

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Course Title: Office Automation Lab		Course Code	: DCS221
Semester	: III	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: 0**:0:3**	Credits	: 2 **Credits**
Type of course	: **Practical**	Total Contact Hours	: **30**
Continuous Internal Evaluation	: **60 Marks**	SEE	: **40 Marks**
Programmes: Diploma in Computer Science			

Pre-requisites:

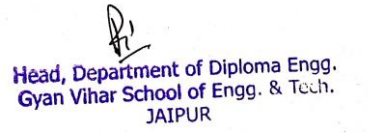
Basic computer Knowledge

Course Objectives:

1. Learn operating system Installation
2. Can Install Hard disk, RAM,CD, ROM,CPU and other computer components.
3. Can work with MS-word, and use MS word features
4. Learn MS word Mail options.
5. Can work with MS-Excel, and use MS Excel features.

Course Content:

Installation of Operating Systems.
Introduction to control panel, Add remove hardware and software,
Installation of Hard disk, RAM,CD, ROM,CPU, Mother Board, Keyboard, Mouse,
Ms-Word Basics: Working with MS Word; Menus Commands; Toolbars & Buttons; Shortcut Menus, Wizards & Templates; Creating a New Document
Ms-Word Lab 2:Spell Check, Thesaurus, Find & Replace; Headers & Footers; inserting-Page Number, Pictures, File, Auto texts, Symbols etc.
Ms-Word lab 3 Working with Columns, Tabs & Indent; Creation & Working with Tables including conversion to and from text; Margins & Space management in Document; adding References and Graphics.
Ms-Word lab 4: Mail Merge, Envelops& Mailing Labels. Importing and exporting to and from various formats.
MS Excel Lab 1: Working with Ms Excel; concepts of Workbook & Worksheets; using Wizards; Various Data Types; Using Different features with Data, Cell and Texts; Inserting



Removing & Resizing of Columns & Rows; Working with Data & Ranges; different Views of Worksheets; Column Freezing,Labels, Hiding, Splitting etc.
Ms Power Point: Working with MS Power Point; Creating a New Presentation; Working with Presentation & Presentation of Slide Show;Printing Presentation.

Reference:

Lab manual

Course outcomes:

On successful completion of the course, the student will be able to:

1. Install operating system.
2. Install Hard disk, RAM,CD, ROM,CPU and other computer components.
3. Work with MS-word, and use MS word features
4. Use MS word Mail options.
5. Work with MS-Excel, and use MS Excel features.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S	S	S		M						S
2	S		S	S	M		M	M				M
3	S	S	S	S								S
4	S	S	S		M							M
5	S	S		S		M	M	M			M	

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	

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		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	20
3	Analysis and Evaluation	45

Course Title: OOPS(C++) Lab	Course Code : DCS222
Semester : IV	Core / Elective : **Core**
Teaching Scheme in Hrs (L:T:P) : 0**:0:3**	Credits : 2 **Credits**
Type of course : **Practical**	Total Contact Hours : **30**
Continuous Internal Evaluation : **60 Marks**	SEE : **40 Marks**
Programmes: Diploma in Computer Science	

Pre-requisites:

Basic Computer Knowledge, C Language

Course Objectives:

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1. Identify classes, objects, members of a class and the relationships among them needed to solve a specific problem.
2. Demonstrate the concept of constructors and destructors.
3. Demonstrate the concept data encapsulation and inheritance
4. Demonstrate the concept of polymorphism.
5. Demonstrate the concept of virtual functions.

Course Content:

1. Program on Basic Data Types, control statements
2. Write a program to perform the rational number arithmetic.
3. Write a program to perform the matrix operations (addition, subtraction).
4. Write a program to perform the matrix operations (Transpose, Multiplication).
5. Program based on class and objects
6. Program on constructor and destructor
7. Program for to implement data encapsulation and inheritance
8. Program for to implement polymorphism
9. Program based on virtual functions.
10. To implement a calculator with its functionality

Reference:

Lab manual

Course outcomes:

On successful completion of the course, the student will be able to:

1. Identify classes, objects, members of a class and the relationships among them needed to solve a specific problem.
2. Use the concept of constructors and destructors.
3. Implement data encapsulation and inheritance
4. Implement polymorphism.

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5. Implement virtual functions

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S	S	S	M	M			M	M		
2	S	S	S	S	M	M			M	M		
3	S	S	S	S	M	M		M	M	M		M
4	S	S	S	S	M	M		M	M	M		M
5	S	S	S	S	M	M		M	M	M		M

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

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Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Course Title: Open Source Technology Lab	Course Code : DCS223
Semester : IV	Core / Elective : **Core**
Teaching Scheme in Hrs (L:T:P) : 0**:0:3**	Credits : 2 **Credits**
Type of course : **Practical**	Total Contact Hours : **30**
Continuous Internal Evaluation : **60 Marks**	SEE : **40 Marks**
Programmes: Diploma in Computer Science	

Pre-requisites:

Basic Computer Knowledge, Basic Programming

Course Objectives:

6. Will know UNIX and LINUX concepts
7. Learn about GNU Project and the Free Software Foundation
8. Know how Linux System Administration works.
9. Learn the concept of Memory Management
10. Know Software package Management

Course Content:

1. Introduction To Linux An Introduction to UNIX, Linux, and GNU What Is UNIX,
2. What Is Linux, The GNU Project and the Free Software Foundation
3. Installation of Linux Basic Installation, network based installation
4. Linux System Administration Process Management with Linux,
5. Memory Management, File System management,
6. User Administration, Linux Startup and Shutdown,
7. Software package Management

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8. Shell Programming Shells, Scripting Rationale Creating a bash Script, bash Startup Files,
9. A Script's Environment, Exporting Variables, Exit Status, Programming the Shell,
10. Software Tools C Language and Linux,
11. MySQL Database, Network Simulator, SciLAB configuration, Multimedia, etc.

Reference:

Lab manual

Course outcomes:

On successful completion of the course, the student will be able to:

6. Learn UNIX and LINUX concepts
7. Will know about GNU Project and the Free Software Foundation
8. Know Linux System Administration works.
9. Use the concept of Memory Management
10. Know Software package Management

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S										
2	S	S										
3	S	S		S								
4	S	S		S	S					M		
5	S	S									M	

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	

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		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Course Title: Web Technology LAB	Course Code : DCS224
Semester : III	Core / Elective : **Core**
Teaching Scheme in Hrs (L:T:P) : 0**:0:3**	Credits : 2 **Credits**
Type of course : **Practical**	Total Contact Hours : **30**
Continuous Internal Evaluation : **60 Marks**	SEE : **40 Marks**
Programmes: Diploma in Computer Science	

Pre-requisites:

Basic Computer Lab, Programming Knowledge

Course Objectives:

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1. Can use HTML basic tags.
2. Learn how to create web page.
3. Learn how to link HTML pages
4. Know the concept of style sheet and implement style sheets.
5. Use Text fields of HTML

Course Content:

1. Introduction HTML , HTML5, CSS, Javascript.
2. Create a biodata of self using HTML with a photograph on the page and containing marks in a table.
3. Develop your web page with 2 Photographs display at the same place flip on mouse over.
4. Link to separate HTML file for academic, sports and other interests.
5. Enhance your web page using style sheets frames and setup a hyper link to your friends page.
6. Create an exam forms using HTML.
7. How to create frame and iframe in HTML.
8. Create a web page using marquee and blink tag with link.
9. Installation of wordpress.
10. Create a website in wordpress.

Reference:

Lab manual

Course outcomes:

On successful completion of the course, the student will be able to:

1. Use HTML basic tags.
2. Learn to create web page.
3. Learn how to link HTML pages
4. Implement style sheets.
5. Use Text fields of HTML

Mapping Course Outcomes with Program Outcomes:

Course	Programme Outcomes

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outcomes	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S									M	
2	S	S								M		M
3	S	S	S		S			M			M	
4	S	S	S			S			M			M
5	S	S	S					S		M		

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

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Course Title: PHP Lab		Course Code	: DCS225
Semester	: III	Core / Elective	: **core**
Teaching Scheme in Hrs (L:T:P)	: 0**:0:3**	Credits	: 2 **Credits**
Type of course	: **Practical**	Total Contact Hours	: **30**
Continuous Internal Evaluation	: **60 Marks**	SEE	: **40 Marks**
Programmes: Diploma in Computer Science			

Pre-requisites:

Basic Computer

Course Objectives:

1. Know Troubleshooting Problems
2. Learn about Motherboard BIOS, BIOS Features
3. Can perform Drive Testing& troubleshooting.
4. Installing Memories
5. Know how Printer Works, Attaching Printer, Installing PrinterDrivers

Course Content:

1. General Troubleshooting Problems
2. Preventive Maintenance
3. Motherboard BIOS, BIOS Features
4. BIOS Troubleshooting, BIOS Upgrades
5. Drive Testing& troubleshooting.
6. Motherboard Components, Expansion Slots
7. Installing Memories, Upgrade Options & Strategies
8. Troubleshooting Memory
9. How Printer Works, Attaching Printer, Installing PrinterDrivers
10. Error Code, Beep Code, Post Code

Reference:

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Course outcomes:

On successful completion of the course, the student will be able to:

1. Can handle Troubleshooting Problems
2. Learn about Motherboard BIOS, BIOS Features
3. Implement Drive Testing& troubleshooting.
4. Installing Memories
5. Attach Printer and Install Printer Drivers

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S				M							
2	S			S	M				M		M	
3	S	S			M					M		M
4	S	S	M		M			M			M	
5	S	S		S			M					

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	

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INDIRECT ASSESSMENT	Student feedback	Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey		End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	30
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	45

Course Title: DBMS Lab		Course Code	: DCS228
Semester	: IV	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: 0**:0:3**	Credits	: 2 **Credits**
Type of course	: **Practical**	Total Contact Hours	: **30**
Continuous Internal Evaluation	: **60 Marks**	SEE	: **40 Marks**
Programmes: Diploma in Computer Science			

Pre-requisites:

Basic Computer Knowledge, Basic Programming knowledge

Course Objectives:

1 To discuss about the database and File system.

2 Different commands used in DDL,

3 Different commands used in DCL, DML etc

4 Use transfer control language commands

5 Learn to implement Nested Queries, Join Queries and Trigger

Course Content:

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1. Create a program of Data Definition Language Commands
2. Create a program of Data Manipulation Language Commands
3. Create a program of Data control language
4. Create a program of transfer control language commands
5. Create a program of In Built Functions
6. Create a program of Nested Queries
7. Create a program of Join Queries
8. Create a program of Control Structure
9. Create a program of Procedure and Function
10. Create a program of Trigger

Reference:

Lab manual

Course outcomes:

On successful completion of the course, the student will be able to:

1 Know about the database and File system.

2 Use different commands used in DDL,

3 Use different commands used in DCL, DML etc

4 Use transfer control language commands

5 Implement Nested Queries, Join Queries and Trigger

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S						M				
2	S	S										
3	S	S	S						M	M		
4	S	S	S								M	
5	S	S			S					M		M

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What	To	When/where	Max	Evidence	Contributing

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			whom	(Frequency in the course)	Marks	collected	to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Course Title: ASP.NET with C#		Course Code	: DCS302
Semester	: IV	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: 3**:0:0**	Credits	: 3 **Credits**
Type of course	: **Lecture**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: Diploma in Computer Science			

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Pre-requisites:

HTML, Programming Knowledge

Course Objectives:

1. Learn the concept of Asp .net.
2. Know Ado.Net Basics and Ado.Net object model
3. To introduce Catching
4. Learn Application state, Session state
5. Know the concept of Web Services and XML

Course Content:

Topic and Contents	Hours	Marks
UNIT 1 Asp .Net Basics	07	20
a. Understanding the .Net framework – principal, feature, design, gole, Benefits of .Net framework, Event Logging, Performance Counter, Tracing, CTS, CLS, CLR, .Net class library, GIT, Type of GIT, b. Assemblies - version, culture,strong name, Type of Assemblies, Metadata, Manifest, MSIL, Managed and Unmanaged code, Memory Management, Garbage Collection, Security, Reflection, c. WPF, WCF, Window Card Space, GAC, CASPOL, REGEN, ILASM, ILDASM. DLL HELL Problem, Page life cycle.	02 03 02	
UNIT 2 Introduction Ado.NET	06	20
a. Ado.Net Basics, Ado.Net object model, Ado.Net class for OLE DB data source, SQL Server, DataSet, Data View, Data Reader, Data Adapter, Data Table, Data Column, Data Row, b. Difference between Ado and Ado.Net, Communication with OLEDB data source using Ado.Net.	03 03	
UNIT 3 Understanding Caching	08	20

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a. Overview, Introduction to Caching, Client dedicated server, Reverse proxy, Absolute expiration and Relative expiration, b. Http Cache Policy, HttpCacheability, Output Cache, HttpCacheVaryByParams, HttpCacheVaryByHeaders, CachingPageOutput c. Data caching, PageFragment Caching, PageOutput caching.	03 03 02	
UNIT 4 State Management	07	20
a. Client state management- View state, Hidden field, Cookies, QueryString, Server state management- Application state, Session state, b. Advantage and Disadvantage of database support.	05 02	
UNIT 5 Web Services and XML	07	20
a. Introduction to xml, Advantage of xml, xml Element, Naming Rules, Attributes, b. Introduction to web service, web service Infrastructure, SOAP, UDDI, WSDL.	04 03	
TOTAL	**36**	**100**

Reference:

1. Beginning ASP.NET 3.5 in C# 2008: From Novice to Professional, Second Edition by Matthew MacDonald
2. ASP .NET Programming with C# & SQL Server (The Web Technologies) by Don Gosselin
3. Developing Web Applications with ASP.NET and C# by Hank Meyne and Scott Davis

Course outcomes:

On successful completion of the course, the student will be able to:

1. Know the concept of Asp .net.
2. Use the basic Ado.Net and Ado.Net object model
3. Know the Catching concept
4. Know and implement Application state, Session state
5. Use the concept of Web Services and XML

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S								M		
2	S	S										

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3	S	S									M	
4	S	S										
5	S	S										M

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	
		Graded Assignments		Two Assignments	10	Log of record	
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Model Question Paper:

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Guidelines for Question Paper Setting:

The question paper must be prepared based on the blue print without changing the weigh age of model fixed for each unit.

The question paper pattern provided should be adhered to

- The paper should have 10 questions in all, wherein it will have 2 questions from each unit.
- Student shall be asked to attempt in all 5 questions, 1 Question from each unit.
- Student shall be given Internal choice in every Unit.

Questions should not be set from the recapitulation topics.

Course Title: OOPs through Java		Course Code	: DCS303
Semester	: V	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: 3**:0:0**	Credits	: 3 **Credits**
Type of course	: **Lecture**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: Diploma in Computer Science			

Pre-requisites:

Basic Computer, OOPs Concepts

Course Objectives:

1 Basic topics considered are programs and program structure.

2 In general, and Java syntax, data types, flow of control, classes, methods, objects, arrays, exception handling, recursion, and graphical user interfaces (GUIs)

3 Understanding how such applets may access enterprise data bases.

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4 Understanding the use of APIs in robust, enterprise three level application developments.

5 Understanding the Java features for secure communications over the internet.

Course Content:

Topic and Contents	Hours	Marks
UNIT 1 Introduction	07	20
a. Overview of Java, Object Oriented Concepts in Java. Abstraction, OOP Principles and Java applications, Java features like security, portability, byte code, b. java virtual machine, object oriented, robust, multithreading, architectural neutral, distributed and dynamic, Data types and Keyword	04 03	
UNIT 2 Operators: and Array	08	20
a. Arithmetic, Bitwise, Relation, increment Decrement, logical, special, Assignment Control Structures, Type Casting , b. Array, Java methods, Classes, Constructor, method overriding, method overloading, abstract class, Inheritance of procedures and Data, c. packages java. lang, java.util and their uses, java.io, basics of networking using Java, Javap, javadoc command And interface, Inner class.	02 03 03	
UNIT 3 String Handling	08	20
a. String handling and various string functions, String Buffer, object class method toString (), hasCode (), equals (), b. Exception handling, multithreaded programming thread priorities, synchronization, messaging, creating and controlling of threads. New(),run(),Wait() ,join() method of thread class, c. Runnable thread and method ,i/o stream, garbage collection, externalization	02 04 02	
UNIT 4 Applet	06	20

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a. Java utilities like Applets, Java applets and their use – Event Handling – AWT and working with Windows – Event Handling – Event Handling Mechanisms, b. Delegation Event Model, Event Class, Event Listener Interfaces, Adapter Classes, Inner Class.	03 03	
UNIT 5 AWT and working with windows AWT	06	20
a. AWT and working with windows AWT, Classes, Window fundamentals, frame windows, frame window in An Applet, b. Working with Graphics, color, fonts and text. , JAR files	05 03	
TOTAL	**36**	**100**

Reference:

1 Herbert Scheldt: JAVA 2 - The Complete Reference, TMH, Delhi

2 Deitel: How to Program JAVA, PHI

3 U.K. Chakraborty and D.G. Dastidar: Software and Systems – An Introduction, Wheeler Publishing, Delhi.

Course outcomes:

On successful completion of the course, the student will be able to:

1 Demonstrate knowledge of Java technology,

2 The Java programming language, and the product life cycle

3 Use various Java programming language constructs to create several Java technology applications

4 Use decision and looping constructs and methods to dictate program flow

5 Implement intermediate Java technology programming and object-oriented (OO) concepts in Java technology programs.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S			S					M		M
2	S	S		S								
3	S	S	S			S			M		M	
4	S	S	S	S				M				
5	S	S							M	M		

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S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	
		Graded Assignments		Two Assignments	10	Log of record	
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Model Question Paper:

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Guidelines for Question Paper Setting:

The question paper must be prepared based on the blue print without changing the weigh age of model fixed for each unit.

The question paper pattern provided should be adhered to

- The paper should have 10 questions in all, wherein it will have 2 questions from each unit.
- Student shall be asked to attempt in all 5 questions, 1 Question from each unit.
- Student shall be given Internal choice in every Unit.

Questions should not be set from the recapitulation topics.

Course Title: Data Mining & data warehousing		Course Code	: DCS304
Semester	: VI	Core / Elective	: **core**
Teaching Scheme in Hrs (L:T:P)	: 3**:0:0**	Credits	: 3 **Credits**
Type of course	: **Lecture**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: Diploma in Computer Science			

Pre-requisites:

Data base management System

Course Objectives:

1 Introduction to Data mining and data warehousing, To introduce how data is preprocessed and noise and clustering is done.

2 Introduction to statistical and transactional data are handled and preprocessed

3 Introduction to data warehousing, data cubes, and star, snowflake techniques to handle multidimensional data's.

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4 What is prediction and classification? Introduction to density based, Grid Based Methods, Model Based Method and 3-tier architecture

5 Introduction to Query Facility, OLAP function and Tools. ROLAP, MOLAP, HOLAP, Security, Backup and Recovery, Tuning Data Warehouse, Testing Data Warehouse.

Course Content:

Topic and Contents	Hours	Marks
UNIT 1 Introduction	07	20
a. Overview, Motivation(for Data Mining),Data Mining- Definition & Functionalities, Data Processing, Form of Data Preprocessing, Data Cleaning: Missing Values, Noisy Data,(Binning, Clustering, Regression, Computer and Human inspection), b. Inconsistent Data, Data Integration and Transformation. Data Reduction:-Data Cube Aggregation, Dimensionality reduction, Data Compression, Numerosity Reduction, Clustering, Discretization and Concept hierarchy generation.	04 03	
UNIT 2 Concept Description	07	20
a. Definition, Data Generalization, Analytical Characterization, Analysis of attribute relevance, Mining Class comparisons, Statistical measures in large Databases. Measuring Central Tendency, Measuring Dispersion of Data, Graph Displays of Basic Statistical class Description, b. Mining Association Rules in Large Databases, Association rule mining, mining Single-Dimensional Boolean Association rules from Transactional Databases– Apriori Algorithm, Mining Multilevel Association rules from Transaction Databases and Mining Multi- Dimensional Association rules from Relational Databases.	04 03	
UNIT 3 Classification and Grid Based Methods	08	20

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a. What is Classification & Prediction, Issues regarding Classification and prediction,Decision tree, Bayesian Classification, Classification by Back propagation, Multilayer feed-forward Neural Network, Back propagation Algorithm, Classification methods K-nearest neighbor classifiers, Genetic Algorithm. b. Grid Based Methods- STING, CLIQUE. Model Based Method –Statistical Approach, Neural Networkapproach, Outlier Analysis	04 04	
UNIT 4 Data Warehousing	07	20
a. Overview, Definition, Delivery Process, Difference between Database System and Data Warehouse, Multi Dimensional Data Model, Data Cubes, b. Stars, Snow Flakes, Fact Constellations, Concept hierarchy, Process Architecture, 3 Tier Architecture, Data Marking	04 03	
UNIT 5 Aggregation	06	20
a. Aggregation, Historical information, Query Facility, OLAP function and Tools. OLAP Servers, ROLAP, MOLAP, HOLAP, b. Data Mining interface, Security, Backup and Recovery, Tuning Data Warehouse, Testing Data Warehouse	03 03	
TOTAL	**36**	**100**

Reference:

1 Kamber “Data Mining and Ware housing”

Course outcomes:

On successful completion of the course, the student will be able to:

1 Get knowledge about data mining and warehousing and how data is preprocessed when amount of data is large

2 They are able to understand how statistical and transactional data are handled and preprocessed How to use and implements the multidimensional data cubes and techniques which can handle these data’s.

3 How different types of prediction and classification based model and methods can handle these techniques.

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4 They can use OLAP tools and able to take backup and recovery of data.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S				S						
2	S	S		S				M			M	
3	S	S			S				M		M	
4	S	S	S		S					M		M

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	
		Graded Assignments		Two Assignments	10	Log of record	
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl.	Educational Component	Weightage

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No.		(%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Model Question Paper:

Guidelines for Question Paper Setting:

The question paper must be prepared based on the blue print without changing the weigh age of model fixed for each unit.

The question paper pattern provided should be adhered to

- The paper should have 10 questions in all, wherein it will have 2 questions from each unit.
- Student shall be asked to attempt in all 5 questions, 1 Question from each unit.
- Student shall be given Internal choice in every Unit.

Questions should not be set from the recapitulation topics.

Course Title: Desktop Publishing & Multimedia		Course Code	: DCS305
Semester	: V	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: 3**:0:0**	Credits	: 3 **Credits**
Type of course	: **Lecture**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: Diploma in Computer Science			

Pre-requisites:

Basic Computer

Course Objectives:

1 To introduce the preliminary concepts of Multimedia.

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2 We will discuss theVarious benefits and applications of multimedia.

3 To introduce the different multimedia building blocks such as Text , Images Animation, Audio, Video.

4 To introduce the how images are captured and incorporated into a multimedia presentation.

5 Different image file formats and the different color representations have been discussed.

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Course Content:

Topic and Contents	Hours	Marks
UNIT 1 Introduction to Multimedia	07	20
a. Definition, classification (discrete, continuous, passive, interactive), properties. Medium perception, representation, presentation, storage, and transmission, b. MM hardware, application areas, stages of MM project, design issues (speed, simplicity, clarity, consistency, ease of use, and navigation)	03 04	
UNIT 2 Text	08	20
a. Text importance, encoding, fonts (type, size, style, leading, and kerning), text in MM (font design, menus, buttons, fields, portrait, landscape), b. editing design tools, hypertext vs. hypermedia, Sound terminology (acoustic, electromagnetic wave, cycle, frequency, amplitude, decibel)	04 04	
UNIT 3 File Formats	08	20
(h) MIDI files (creation, size, advantages, and disadvantages). MIDI vs. digital audio, Speech: generation (TTS), recognition (STT), applications, (i) Sound summary, Digital image (bitmap, vector graphic), Bitmap (pixels, color encoding, palette, and models, resolution), (j) Vector graphics (types, properties, drawing, advantages, disadvantages, file size)	03 03 02	
UNIT 4 Animation	06	20

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(h) transition, cell animation (key frames, tweening, layers, morphing, formats), Video: concepts, standards, capturing, analog vs. digital, TV vs, computer video, (i) compression and streaming. Encoding requirements (entropy, source, and adaptive),	03 03	
UNIT 5 Compression	06	20
h. Compression (symmetric vs. asymmetric, dialogue mode vs. retrieval mode, RLE, Huffman), i. Compression techniques (JPEG and MPEG).	03 03	
TOTAL	**36**	**100**

Reference:

1 Tay Vaughan."Multimedia, Making IT Works", TMH.

2 Khalid Sayood."Introduction to data compression"Pearson Education.

3 Rosch, "Multimedia Bible ",Sams publishing.

Course outcomes:

On successful completion of the course, the student will be able to:

1 Multimedia is a woven combination of text, audio, video, images and animation.

2 The importance of text in multimedia and the difference between fonts and typefaces

3 Character sets used in computers and their significance

4 The Student learns various technique of Data compression.

5 Audio is an important component of multimedia which can be used to provide

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S										
2	S	S				S			M			M
3	S	S	S							M		
4	S	S	S	S							M	M
5	S	S			S					M		

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

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The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	
		Graded Assignments		Two Assignments	10	Log of record	
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Model Question Paper:

Guidelines for Question Paper Setting:

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The question paper must be prepared based on the blue print without changing the weigh age of model fixed for each unit.

The question paper pattern provided should be adhered to

- The paper should have 10 questions in all, wherein it will have 2 questions from each unit.
- Student shall be asked to attempt in all 5 questions, 1 Question from each unit.
- Student shall be given Internal choice in every Unit.

Questions should not be set from the recapitulation topics.

Course Title: Mobile Computing		Course Code	: DCS306
Semester	: VI	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: 3**:0:0**	Credits	: 3 **Credits**
Type of course	: **Lecture**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: Diploma in Computer Science			

Pre-requisites:

Basic Computer Network

Course Objectives:

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1 To introduce about the mobile computing, basic concept of wireless LAN and how the data are transmitted by infrastructure and Ad-Hoc basis.

2 Explaining the concept of GPRS , GSM and UMTS network

3 How the mobile agent is useful in wireless networking and the architecture of mobile agents and fault tolerance techniques.

4 How we store the mobile data, storage management, consistency of the database and the replication of the mobile data base.

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5 To introduce the Ad-Hoc network algorithm Like TORA , DSDV, AODV , GSR DSR and the implementation.

Course Content:

Topic and Contents	Hours	Marks
UNIT 1 Introduction	07	20
a. Issues in mobile computing, overview of wireless telephony: cellular concept, GSM: air-interface, channel structure, b. location management: HLR-VLR, hierarchical, handoffs, channel allocation in cellular systems, CDMA, GPRS.	04 03	
UNIT 2 Wireless Networking	07	20
a. Wireless LAN Overview: MAC issues, IEEE 802.11, Blue Tooth, Wireless multiple access protocols, TCP over wireless, b. Wireless applications, data broadcasting, Mobile IP, WAP: Architecture, protocol stack, application environment, applications.	04 03	
UNIT 3 Data management	07	20
a. Data management issues, data replication for mobile computers, b. adaptive clustering for mobile wireless networks, File system, Disconnected operations.	04 03	

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UNIT 4 Mobile Agents	06	20
a. Mobile Agents computing, security and fault tolerance, b. transaction processing in mobile computing environment.	03 03	
UNIT 5 Ad Hoc networks	08	20
a. Ad Hoc networks introduction, localization, MAC issues, Routing protocols, global state routing (GSR), b. Destination sequenced distance vector routing (DSDV), Dynamic source routing (DSR), Ad Hoc on demand distance vector routing (AODV), c. c. Temporary ordered routing algorithm (TORA), QoS in Ad Hoc Networks, applications.	03 02 03	
TOTAL	**36**	**100**

Reference:

1 J. Schiller, "Mobile Communications", Addison Wesley.

2 Charles Perkins, "Mobile IP", Addison Wesley.

3 Charles Perkins, "Ad hoc Networks" , Addison Wesley**.**

4 Upadhyaya, "Mobile Computing", Springer

Course outcomes:

On successful completion of the course, the student will be able to:

1 Get knowledge about the how are data transmitted on wireless and the benefits of transferring the data using infrastructure and Ad-Hoc basis

2 What is GPRS, GSM techniques of wireless network?

3 How the mobile agents work and the usefulness of mobile agents architecture

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4 How the mobile data are stored and problems related to store the mobile data.

5 How the Ad-Hoc algorithm works

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S										
2	S	S									M	
3	S	S		S							M	
4	S	S			S				M			M
5	S	S										M

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	
		Graded Assignments		Two Assignments	10	Log of record	
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

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Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Model Question Paper:

Guidelines for Question Paper Setting:

The question paper must be prepared based on the blue print without changing the weigh age of model fixed for each unit.

The question paper pattern provided should be adhered to

- The paper should have 10 questions in all, wherein it will have 2 questions from each unit.
- Student shall be asked to attempt in all 5 questions, 1 Question from each unit.
- Student shall be given Internal choice in every Unit.

Questions should not be set from the recapitulation topics.

Course Title: Network Security & Management		Course Code	: DCS307
Semester	: V	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: 3**:0:0**	Credits	: 3 **Credits**
Type of course	: **Lecture**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: Diploma in Computer Science			

Pre-requisites:

Basic Computer

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Course Objectives:

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1. To introduce about the security concept and cryptography apply on the information which are transmitted on the network
2. explaining the DES, IDEA, AES, symmetric key algorithm and practice on them
3. explaining the asymmetric key algorithm like RSA, digital signature, SHA, HMAC algorithm and practice on them
4. Explaining viruses, firewalls and security on electronic transaction and practice on them.
5. to introduce how we can transfer our information on network by using S/MIME,PGP protocols and practice on them

Course Content:

Topic and Contents	Hours	Marks
UNIT 1 Introduction	06	20
(g) Introduction to security attacks, services and mechanism, introduction to cryptography. **(h)** Conventional Encryption: Conventional encryption model, classical encryption techniques- substitution ciphers and transposition ciphers, cryptanalysis, stereography, stream and block ciphers	03 03	
UNIT 2 Modern Block Ciphers	07	20
a. Modern Block Ciphers: Block ciphers principals, Shannon's theory of confusion and diffusion, festal structure, data encryption standard(DES), strength of DES, differential and linear crypt analysis of DES, block cipher b. modes of operations, triple DES, IDEA encryption and decryption, strength of IDEA, confidentiality using conventional encryption, traffic confidentiality, key distribution, random number generation	03 04	
UNIT 3 Introduction to graph	07	20
a. ring and field, prime and relative prime numbers, modular arithmetic Fermat's and Euler's theorem, primality testing, Euclid's Algorithm, Chinese Remainder theorem, discrete	03 04	

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logarithms. b. Principals of public key crypto systems, RSA algorithm, security of RSA, key management, Diffle-Hellman key exchange algorithm, introductory idea of Elliptic curve cryptography, Elganel encryption		
UNIT 4 Message Authentication and Hash Function	08	20
a. Message Authentication and Hash Function: Authentication requirements, authentication functions, message authentication code b. Hash functions, birthday attacks, security of hash functions and MACS, MD5 message digest algorithm, Secure hash algorithm (SHA). c. Digital Signatures: Digital Signatures, authentication protocols, digital signature standards (DSS), proof of digital signature algorithm	03 03 02	
UNIT 5 Authentication Applications	07	20
Kerberos and X.509, directory authentication service, electronic mail security-pretty good privacy (PGP), S/MIME	04 04	
TOTAL	**36**	**100**

Reference:

- "Cryptography and Network Security" - William Stallings - LPE edition.
- "Cryptography and Network Security" – Atul Kahate - TMH Publication
- "Information security: Principal And practice "- Mark Stamp –Willy publication

Course outcomes:

On successful completion of the course, the student will be able to:

1. Get knowledge about the security and cryptographic rules which are applied on the information
2. How the symmetric key algorithm like DES, IDEA, AES will work on the network
3. How the asymmetric key algorithm like RSA, digital signature, SHA, HMAC will work on the network
4. How virus can damaged our system and advantages of using firewall

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5. How our E-mail are transferred on the network and how security are taken on the network

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S			S					M	M	
2	S		S					M				
3	S	S		S		S			M		M	
4	S	S		S			M			M		M
5	S	S		S					M		M	

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	
		Graded Assignments		Two Assignments	10	Log of record	
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

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Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Model Question Paper:

Guidelines for Question Paper Setting:

The question paper must be prepared based on the blue print without changing the weigh age of model fixed for each unit.

The question paper pattern provided should be adhered to

- The paper should have 10 questions in all, wherein it will have 2 questions from each unit.
- Student shall be asked to attempt in all 5 questions, 1 Question from each unit.
- Student shall be given Internal choice in every Unit.

Questions should not be set from the recapitulation topics.

Course Title: System Anaylsis & Designing		Course Code	: DCS309
Semester	: V	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: 3**:0:0**	Credits	: 3 **Credits**
Type of course	: **Lecture**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: Diploma in Computer Science			

Pre-requisites:

Fundamental of Computer.

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Course Objectives:

1. Learn System concepts and system development life cycle.
2. Can perform secure feasible study.
3. Know about tools of System Design.
4. Learn the concept of system testing & quality.
5. Know the concept of system security.

Course Content:

Topic and Contents	Hours	Marks
UNIT 1 System Concept	07	20
a. Definition, Characteristics, Elements of system, Physical and abstract system, open and closed system, man-made information systems. b. System Development Life Cycle: Various phases of system development, Considerations for system planning and control for system success. System Planning.	03 04	
UNIT 2 Initial Investigation	07	20
a. Determining user's requirements and analysis, fact finding process and techniques. b. Feasibility study: Determination of feasibility study, Technical, Operational & Economic Feasibilities, System performance constraints, and identification of system objectives, feasibility report. c. Cost/Benefit Analysis of the new/proposed system	02 03 02	
UNIT 3 Structured Analysis and Design	06	20
a. Tools of System Analysis b. Structured Design: Tools of System Design with I/O and Form Design.	03 03	
UNIT 4 Documentation for the new system	08	20
a. User Manual, system development manual, programming manual, programming specifications, operator manual. b. System testing & quality: System testing and quality assurance, steps in system implementation and software maintenance.	03 05	
UNIT 5 System security	07	20

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a. Data Security, Disaster/ recovery and ethics in system development, threat and risk analysis. b. Hardware and software procurement – In-house purchase v/s hiring and lease	04 03	
TOTAL	**36**	**100**

Reference:

1. System Analysis & Design by V K Jain, Dreamtech Press
2. Modern System Analysis & Design by A Hoffer, F George, S Valaciah Low Priced Ed. Pearson Education

Course outcomes:

On successful completion of the course, the student will be able to:

1. Learn System concepts and system development life cycle.
2. Can perform secure feasible study.
3. Know about tools of System Design.
4. Learn the concept of system testing & quality.
5. Know the concept of system security.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S										
2	S	S	S									
3	S	S			S						M	
4	S	S										
5	S	S			S							M

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	

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		Graded Assignments		Two Assignments	10	Log of record	
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Model Question Paper:

Guidelines for Question Paper Setting:

The question paper must be prepared based on the blue print without changing the weigh age of model fixed for each unit.

The question paper pattern provided should be adhered to

- The paper should have 10 questions in all, wherein it will have 2 questions from each unit.
- Student shall be asked to attempt in all 5 questions, 1 Question from each unit.
- Student shall be given Internal choice in every Unit.

Questions should not be set from the recapitulation topics.

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Course Title: PHP Lab		Course Code	: DCS225
Semester	: IV	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: 0**:0:3**	Credits	: 2 **Credits**
Type of course	: **Practical**	Total Contact Hours	: **30**
Continuous Internal Evaluation	: **60 Marks**	SEE	: **40 Marks**
Programmes: Diploma in Computer Science			

Pre-requisites:

Basic C

Course Objectives:

1. Work with PHP
2. Identify and implement basic data types in PHP.
3. Implement control statement using PHP.
4. Identify and implement strings in PHP.
5. Understand, analyze and build web applications using PHP.

Course Content:

1. Write a Program to check and print whether a given number is even or odd.3.
2. Write a program to compute net amount from the given quantity purchased and rate per quantity.Discount @10% is allowed if the quantity purchased exceeds 100.4.
3. Write a program to find largest among three numbers using ternary operators.5.
4. Write a program to print sum of digits of a given number. (using while loop)6.
5. Write a program to print Fibonacci series upto a given number.7.
6. Write a program to enter numbers till the user wants. At the end it should display the count ofpositive, negative and zeros entered. (Using do-while loop)8.
7. Write a function countWords ($str) that takes any string of characters and finds the Number of timeseach word occurs. You should ignore the distinction between capital and lowercase letters.9.

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8. Create a form with one text field and submit buttons for string length, string reverse and uppercase,lowercase, string replace. Display the result accordingly.10.

9. Write a Menu-Driven program to implement a calculator which performs only addition, subtraction,multiplication and division. The operation should happen based on the user choice. (use switch case)11.

10. Write a function to swap two string values using call by value and call by references.12.

11. Write a program that will accept an array of integers as input, and output an array where for eachitem in the source array, the new array will perform the following operations:
    - For even numbers divide by 2
    - For odd numbers multiply by 3

Reference:

Lab manual

Course outcomes:

On successful completion of the course, the student will be able to:

1. Work with PHP
2. Implement basic data types in PHP.
3. Implement control statement using PHP.
4. Implement strings in PHP.
5. Build web applications using PHP.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S							M			
2	S	S										
3	S	S		S							M	
4	S	S		S		S						M
5	S	S		S							M	M

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
ASSIGNMENTS	CIE	Attendance	Student	Every lab	10	Attendance Register	

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		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Course Title: ASP.Net with C# Lab		Course Code	: DCS312
Semester	: VI	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: 0**:0:3**	Credits	: 2 **Credits**
Type of course	: **Practical**	Total Contact Hours	: **30**
Continuous Internal Evaluation	: **60 Marks**	SEE	: **40 Marks**
Programmes: Diploma in Computer Science			

Pre-requisites:

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HTML, Programming

Course Objectives:

1. Implement SQL commands.
2. Implementation of data source in different views.
3. Implement Ado.net.
4. Create master page.
5. Insert data in menu list and learn tier architecture.

Course Content:

1. Introduction to SQL data source , grid view, detail view, Data list
2. By using SQL data source insert the data in the grid view, detail view, repeater, form view , Data list
3. By using grid view insert the record in the grid view and select particular record and find out the detail to the another grid view with in page or another page.
4. 5. By using Ado.net insert the record in the database and also the display the record.(with different validation controls)
6. Use of the master page
7. Use of themes
8. Insert the data in the drop down menu and select the particular record from the drop down menu and find out the related information into the another drop down menu
9. Use of three tier architecture
10. Use of the config file

Reference:

Lab manual

Course outcomes:

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On successful completion of the course, the student will be able to:

1. Use SQL commands.
2. Implement data source in different views.
3. Implement Ado.net.
4. Create master page with various features.
5. Know the concept of tier architecture and implement it.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S										
2	S	S										
3	S	S										
4	S	S										
5	S	S										

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
RECT ASSESSM	Student feedback		Students	Middle of the course	-NA-	Feedback forms	

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	End of Course survey		End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Course Title: Data Mining & data warehousing Lab	Course Code : DCS314
Semester : VI	Core / Elective : **Elective**
Teaching Scheme in Hrs (L:T:P) : 0**:0:3**	Credits : 2 **Credits**
Type of course : **Practical**	Total Contact Hours : **30**
Continuous Internal Evaluation : **60 Marks**	SEE : **40 Marks**
Programmes: Diploma in Computer Science	

Pre-requisites:

Data base management System

Course Objectives:

6 The objective of the lab exercises is to use data mining techniques to use standard databases available to understand DM processes using any DM tool.

7 Using IBM OLAP Miner – Understand the use of data mining for evaluating the content of multidimensional cubes.

8 Using Teradata Warehouse Miner – Create mining models that are executed in SQL.

9 Import metadata from specific business intelligence tools and populate a Meta data repository.

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10 Design and build a Data Warehouse using bottom up approach titled 'Citizen Information System'.

Course Content:

1. Gain insight for running pre- defined decision trees and explore results using MS OLAP Analytics.
2. Using IBM OLAP Miner – Understand the use of data mining for evaluating the content of multidimensional cubes.
3. Using Teradata Warehouse Miner – Create mining models that are executed in SQL. (Portal work : The objective of this lab exercises is to integrate pre-built reports into a portal application)
4. 5. Publish and analyze a business intelligence portal.

Metadata & ETL Lab: The objective of this lab exercises is to implement metadata import agents to pull metadata from leading business intelligence tools and populate a metadata repository. To understand ETL processes

6. Import metadata from specific business intelligence tools and populate a meta data repository.
7. Publish metadata stored in the repository.
8. Load data from heterogeneous sources including text files into a pre-defined warehouse schema.

CASE STUDY:

9. Design a data mart from scratch to store the credit history of customers of a bank. Use this credit profiling to process future loan applications.
10. Design and build a Data Warehouse using bottom up approach titled 'Citizen

Reference:

Lab manual

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Course outcomes:

On successful completion of the course, the student will be able to:

1 Exercises shall be given on how to use and implement the data mining tools.

2 Exercise using IBM OLAP Miner

3 Exercise using Tera data Warehouse Miner

4 Case study to Design a data mart from scratch to store the credit history of customers of a bank. Use this credit profiling to process future loan applications.

5 Case study to Design and build a Data Warehouse using bottom up approach titled 'Citizen Information System'.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S					S			M		
2	S	S										
3	S	S		S			S	M			M	
4	S	S								M		
5	S	S			S		M					

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		

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	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Course Title: OOPs Lab in Java		Course Code	: DCS315
Semester	: V	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: 0**:0:3**	Credits	: 2 **Credits**
Type of course	: **Practical**	Total Contact Hours	: **30**
Continuous Internal Evaluation	: **60 Marks**	SEE	: **40 Marks**
Programmes: Diploma in Computer Science			

Pre-requisites:

Basic C programming, OOPS concepts

Course Objectives:

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1 Develop an in depth understanding of programming in Java: data types, variables, operators, operator precedence, Decision and control statements, arrays, switch statement, Iteration Statements, Jump Statements, Using break, Using continue, return.

2 Write Object Oriented programs in Java: Objects, Classes constructors, returning and passing objects as parameter, Inheritance, Access Control, Using super, final with inheritance Overloading and overriding methods, Abstract classes, Extended classes.

3 Develop understanding to developing Strings a

4 Develop understanding of exception handling and Exception handling fundamentals, Exception types, uncaught exceptions, try, catch and multiple catch statements.

5 Usage of throw, throws and finally.

6 Develop applications involving Applet: Applet Fundamentals, using paint method and drawing polygons.

Course Content:

1. For to print on Screen.
2. For to calculate area of a circle.
3. Demo of arithmetic operators
4. On Boolean Operators.
5. Demo of Character
6. Demo of Comparison Operator.
7. Program for implement method over-loading.
8. Program for implement method over-ridding.
9. Program for implementation of exception handling
10. Applet programs

Reference:
Lab manual

Course outcomes:
On successful completion of the course, the student will be able to:

1 Students learn Object Oriented Programming features.

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2 Students learn inheritance, polymorphism,

3 Learn access control and overloading and overriding.

4 Students learn exception handling and file handling.

5 Students able to develop applet applications.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S								M		M
2	S	S		S				M				
3	S	S	S		S						M	
4	S	S	S			S				M		
5	S	S	S			S				M		M

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

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Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Course Title: Python Lab	Course Code : DCS317
Semester : V	Core / Elective : **Core**
Teaching Scheme in Hrs (L:T:P) : 0**:0:3**	Credits : 2 **Credits**
Type of course : **Practical**	Total Contact Hours : **30**
Continuous Internal Evaluation : **60 Marks**	SEE : **40 Marks**
Programmes: Diploma in Computer Science	

Pre-requisites:

Basic Computer

Course Objectives:

1. execute a Python script at the shell prompt
2. use Python types, expressions, and None
3. use string literals and string type
4. use Python statements (if...elif..else, for, pass, continue, . .)
5. understand the difference between expressions and statement
6. understand assignment semantics
7.

Course Content:

1. Create a program Python script at the shell prompt
2. Write a program using Python types, expressions, and None
3. Write a program using string literals and string type
4. Write a program using Python statements (if...elif..else, for, pass, continue, . .)

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5. Write a program understand the difference between expressions and statement
6. Write a program understand assignment semantics
7. Write a program using write and call a simple function.
8. Write a program using read from and write to a text file.
9. Write a program understand interpreter and compilers: CPython, PyPy, Cython
10. Write a program using demonstration of IDE's: IDLE, IPython, IPython Notebook, hosted environments

Reference:

Lab manual

Course outcomes:

On successful completion of the course, the student will be able to:

1. Students can create websites what they want from any multimedia software tools.
2. Students can make games by using multimedia concepts.
3. There are so many application of multimedia in various fields like in education, in schools, in business, in communication.
4. So students by performing in this lab can make their future in one of field.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S			S					M		
2	S			S				M				M
3	S		S						M			
4	S	S	S				M				M	
5	S	S			S			M				M

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	

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		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Course Title: Network Security Lab		Course Code	: DCS319
Semester	: V	Core / Elective	: **Elective**
Teaching Scheme in Hrs (L:T:P)	: 0**:0:3**	Credits	: 2 **Credits**
Type of course	: **Practical**	Total Contact Hours	: **30**
Continuous Internal Evaluation	: **60 Marks**	SEE	: **40 Marks**
Programmes: Diploma in Computer Science			

Pre-requisites:

C Programming, OOPs

Course Objectives:

1. Learn encryption and decryption techniques
2. Implement fiestel Cipher model
3. Work with Diffie- Hellman Key Exchange

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4. Implement Hashing Techniques and RSA algorithm
5. Implement enveloping of keys

Course Content:

1. Write a Program in C++ to encrypt & decrypt a text message using stream cipher.
2. Write a Program in C++ to encrypt & decrypt a text message using block cipher.
3. Write a Program in C++ to encrypt & decrypt a text/document file.
4. Write a Program in C++ to implement fiestel Cipher model.
5. Write a Program in C++ to implement Diffie- Hellman Key Exchange.
6. Write a Program in C++ to implement Hashing Techniques.
7. Write a Program in C++ to implement RSA Algorithm.
8. Write a Program in C++ to implement enveloping of keys

Reference:

Lab manual

Course outcomes:

On successful completion of the course, the student will be able to:

1. Implement encryption and decryption techniques
2. Implement fiestel Cipher model
3. Implement Diffie- Hellman Key Exchange
4. Implement Hashing Techniques and RSA algorithm
5. Implement enveloping of keys

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S					S					M
2	S	S				S					M	
3	S	S		S					M			
4	S	S		S						M		
5	S	S			S						M	

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

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Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Course Title: **MAT LAB**		Course Code	: **DEE377**
Semester	: **VI**	Core / Elective	: **Elective**
Teaching Scheme in Hrs (L:T:P)	: **0:0:3**	Credits	: **2 Credits**
Type of course	: **Practical**	Total Contact Hours	: **30**
Continuous Internal Evaluation	: **60 Marks**	SEE	: **40 Marks**

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Programmes: **Diploma in Electrical Engineering**

Pre-requisites:

Basics in Computer Programming, different curves of basic Electrical signals.

Course Objectives:

1. Apply and evaluate Simulation technique for the basic concept of Electrical Signals.
2. Analyse the knowledge of curves via Simulation.
3. Evaluate the different input signals used in Filters.
4. Analyse the Low Pass and High Pass filters.
5. Create the basic concept of simulation (MAT lab).

Course Content:

LIST OF EXPERIMENTS	
01.	WAP to draw the curve of the line
02.	WAP to draw the curve of Cos (x).
03.	WAP to draw the curve of exp(x).
04.	WAP to draw the curve of sine
05.	WAP to draw the curve of a line
06.	WAP to draw the curve of parabola.
07.	WAP to design an Ahebshev type-1 low pass filter.
08.	WAP a program for the chebyster type-1 high pars filter.
09.	WAP to design band reject filter.
10.	WAP to Implements logic gates AND and OR.

Course outcomes:

On successful completion of the course, the student will be able to:

1. Find the Information of any input signal used in electrical equipments.
2. Find the solution of problem dependent on Low and High pass filters.
3. Determine the difference between Band reject and Band Pass Filters.
4. Solve the problems related to AND and OR gate.

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Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S				M						S	
2		S						M				
3	M		S									
4	S	S								S		

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	30
2	Applying the knowledge acquired from the course	35
3	Analysis and Evaluation	35

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
ASSIGNMENTS	CIE	Attendance	Student	Every lab	10	Attendance Register	

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		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Course Title:**BASIC ECONOMICS AND SOCIAL SCIENCES**		Course Code	:**DHS231**
Semester	: **III**	Core / Elective	: **Elective**
Teaching Scheme in Hrs (L:T:P)	: **2:0:0**	Credits	: **3Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **25**
Continuous Internal Evaluation	: **40Marks**	SEE	: **60Marks**
Programmes: **Diploma in Electrical Engineering**			

Pre-requisites:

Knowledge of Basic Physics at Sec. and Sr. Sec. Level.

Course Objectives:

6. This course supposed to give the knowledge of basic concept of economics.
7. Analyse the Applications and scope of Micro Economics.
8. AnalysetheConcept of Demand and supply.
9. Evaluate the Basic concept of economics in social reforms in India.
10. Analyse the problems faced by Political Economy.

Course Content:

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Topic and Contents	Hours	Marks
UNIT-1:Introduction	05	20
Definition,Various definitions, meaning, nature and scope of economics. Production possibility curve, economics law and their nature. Relation between science engineering technology and economics. **Micro Economics:** Definition, meaning and scope of Micro Economics. Importance and limitations.		
UNITS-2: Production & Cost	05	20
Meaning of production and factors of production, law of variable proportion, return to scale, internal and external economics and dis-economics of scale. **Cost:**Various concept of cost, fixed cost, variable cost, average cost, marginal cost, money cost, real cost.		
UNITS-3: Concept of Demand and supply	05	20
Meaning of demand, individual and market demand schedule, law of demand, shape of demand curve, elasticity of demand, measurement of elasticity of demand and factors affecting elasticity of demand, Law of Supply, role of demand and supply in price determination and effect of change in demand and supply prices.		
UNIT-4:Introduction to social Sciences	05	20
Social Change: Causes and impacts, Reforms in India.		
UNIT 5: Political Economy	05	20
New Economic reform, Nature and characteristic of Indian economy, Entrepreneurship and Small scale business management. Privatization-meaning		
TOTAL	**25**	**100**

Reference:

1. Micro Economics by M. L. Sethi
2. Micro Economics by T.R Jain

Course outcomes:

On successful completion of the course, the student will be able to:

5. The course content gives full knowledge to learn nature and scope of economics.
6. Find the solution of problem dependent on Micro Economics.
7. Solve the problems related to Law of Demand, Law of Supply.
8. Enable students to solve difficulties face in social reforms and political economics.

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Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S				S			M			
2	M	S		S				S			S	
3	S	M			S				M			
4	S	S		S			S					S

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	30
2	Applying the knowledge acquired from the course	40
3	Analysis and Evaluation	30

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSESSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8

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		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course
	End of Course survey			End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Model Question Paper:

Guidelines for Question Paper Setting:

The question paper must be prepared based on the blue print without changing the weigh age of model fixed for each unit.

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The question paper pattern provided should be adhered to

- The paper should have 10 questions in all, wherein it will have 2 questions from each unit.
- Student shall be asked to attempt in all 5 questions, 1 Question from each unit.
- Student shall be given internal choice in every Unit.

Questions should not be set from the recapitulation topics.

Course Title: **ENTREPRENEURSHIP**		Course Code	: **DHS232**
Semester	: **IV**	Core / Elective	: **Elective**
Teaching Scheme in Hrs (L:T:P)	: **2:0:0**	Credits	: **2 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **35**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: **Diploma in Electrical Engineering**			

Pre-requisites:

Knowledge of Basic Business Market and Industry.

Course Objectives:

11. This course supposed to give the knowledge of how an entrepreneur can make his business successful.
12. Analyse the Location of Industrial Units.
13. Analyse how the size and pricing of a firm can affect the business.
14. Evaluate the Financing of Small Industries.
15. Analyse the problems faced by small enterprises.
16. Create the basic concept of Entrepreneurship.

Course Content:

Topic and Contents	Hours	Marks
UNIT-1: PROMOTION OF ENTREPRENEURSHIP	08	20
Meaning, definition and functions of an entrepreneur, qualities of a good entrepreneur; Role of Entrepreneur in economic development. Government measures for the promotion of small scale industries with special reference to Haryana. Cultural factors in developing entrepreneurship.		

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UNITS-2: OWNERSHIP AND LOCATION OF INDUSTRIAL UNITS	06	20
Different forms of Industrial Organization. Theories of Industrial location. Process of preparing project reports.		
UNITS-3: SIZE OF FIRM AND PRICING	07	20
Concept of optimum firm, factors determining optimum size, Technical, Managerial, Marketing Uncertainties and risk. Pricing Methods, Policies and procedures.		
UNIT-4: FINANCING OF SMALL INDUSTRIES	08	20
Importance and need: Commercial Banks and term lending in India; Banks and under-writing of capital issues; Brief description about the role of other financial agencies as: • Industrial Finance Corporation of India • State Financial Corporation • Industrial Development Bank of India • Unit Trust of India.		
UNIT 5: PROBLEMS FACED BY SMALL ENTERPRISES	06	20
Problems connected with Marketing: • Management of New Products • Power, Finance, Raw Material • Under-utilization of capacity Causes of under utilization; Rehabilitation of Sick Mills.		
TOTAL	**35**	**100**

Reference:

1. Entrepreneurship of Small Industries- Deshpande Manohar D. (Asian Publisher, New Delhi)
2. Environment & Entrepreneur- Tandon B.C. (Asian Publishers, New delhi)
3. The Industrial Economy of India- Kuchhal S.C. (Chaitanya, Allahabad)
4. Emerging Trends in Entrepreneurship Development Theories & Practices- Singh P. Narendra (International Founder, New Delhi)

Course outcomes:

On successful completion of the course, the student will be able to:

9. The course content gives full knowledge to learn hoe an entrepreneur can succeed.
10. Find the solution of problem dependent on industrial units.

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11. Solve the problems related to Location and pricing of industrial units.
12. Enable students to solve difficulties face by small units.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S			S	S			M			
2	S	M				S				S		
3		M		S	S			S				S
4	S	M					S				S	

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	30
2	Applying the knowledge acquired from the course	40
3	Analysis and Evaluation	30

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What	To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes

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DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at SGVU	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course
	End of Course survey			End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Model Question Paper:

Guidelines for Question Paper Setting:

The question paper must be prepared based on the blue print without changing the weigh age of model fixed for each unit.

The question paper pattern provided should be adhered to

- The paper should have 10 questions in all, wherein it will have 2 questions from each unit.
- Student shall be asked to attempt in all 5 questions, 1 Question from each unit.
- Student shall be given internal choice in every Unit.

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Questions should not be set from the recapitulation topics.

Course Title: **INDUSTRIAL MANAGEMENT**		Course Code	: **DHS301**
Semester	: **V**	Core / Elective	: **Elective**
Teaching Scheme in Hrs (L:T:P)	: **3:0:0**	Credits	: **3 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: **Diploma in Electrical Engineering**			

Pre-requisites:

Knowledge of Industries and their working.

Course Objectives:

17. To achieve the target and goals in an organisation it is essential to co-ordinate the entire system. For this purpose a diploma holder should have the knowledge of principles of industrial management, auditing and environmental aspects.
18. Apply the Purpose of organization and administration.
19. Analyse the Inters relation between skills and levels of management.
20. Evaluate the Scientific management.
21. Analyse the Study of different forms of layout.
22. Create the basic concept of conflict management.

Course Content:

Topic and Contents	Hours	Marks
UNIT-1: INTRODUCTION TO INDUSTRIAL MANAGEMENT	06	12
• Brief history of industries in India, Brief definition of management, organization and administration. • Characteristics of management, Principle of management, Function of management like, planning, organization, direction, co-ordination etc.		
UNITS-2: MANAGEMENT	08	12
• Level of management, skills of management, inters relation between skills and levels of management. • Scientific management, Introduction to Schools of Management thoughts		
UNITS-3: INTRODUCTION TO ORGANIZATION	08	12

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Study of basic type of organization for ex. Line and staff organization, project organization, metrics organization, Informal organization.		
UNIT-4: INTRODUCTION TO INDUSTRIAL PSYCHOLOGY	06	12
• Motivation theory and study of Maxlow, Need, Hierarchy Theory, Planned Location, Planned Layout. • Study of different forms of layout like line layout, process layout, product layout, combinational layout, sixth position layout etc.		
UNIT 5: INTRODUCTION TO MATERIAL MANAGEMENT	08	12
Objective of planned layout, introduction to material management, scope of material management, study of inventory control method, introduction to different types of inventory control techniques, introduction to work study, motion study etc, introduction to conflict management.		
TOTAL	**36**	**60**

Reference:

1. Khanna O.P.: Industrial Engineering.
2. T.R. Banga: Industrial Engineering & Management.
3. Mahajan: Industrial & Process Management.

Course outcomes:

On successful completion of the course, the student will be able to:

13. Enable students for Essential Imperatives and Steps in Industrial & Process Management.
14. Find the solution of problem dependent on planning & organization.
15. Determine the Need of Schools of Management thoughts.
16. Solve the problems related to Hierarchy Theory & Planned Location.
17. Enable students to use application of material management and scope of material management.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12

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1	S				S							S
2	S						S			M		
3	S			S								
4		S										
5	S			M					S			

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	40
3	Analysis and Evaluation	25

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSM	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course

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	End of Course survey		End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

EMPLOYABILITY SKILLS – II

EM 102 **C (L, T, P) = 1 (1, 0, 0)**

S.NO.	TOPIC	DETAILS	CONTACT HOURS
1	Communication	Role Play, Reading, Formal writing skills Listening, Interaction Process, Interpersonal Relationship	15
2	Attitude& Manners	Motivation, Team Building, Winning Strategy, CAN DO,	5
3	Preparation, presentation	Presentation skills, Preparation Skills,	4
4	Industry	Concept & Importance of SIP, Industrial Mentoring & Networking	1

EMPLOYABILITY SKILLS – IV

EM 202 **C (L, T, P) = 1 (1, 0, 0)**

S.NO.	TOPIC	DETAILS	CONTACT HOURS
1	Aptitude Test Preparation	Numerical, Reasoning, Logical, Verbal	10
2	Employability Enhancement	Impactful Summer Internships, Statement of Purpose, Application / Cover Letter Writing, Email Application, Online Search & Registration	5

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3	Interview Skills	Telephonic Interviews, Video Interviews, Group Discussion Techniques, Mocks – Recording & Playback	6
4	Miscellaneous	Industry Related Preparation, Company Specific Preparation, Current Affairs, Business News, General Knowledge	5

Course Title: **ADVANCE MATHEMATICS**		Course Code	: **MA231**
Semester	: **III**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **3:0:0**	Credits	: **3 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: **Diploma in Electrical Engineering**			

Pre-requisites:

Knowledge of Basic Mathematics at Sec. and Sr. Sec. Level.

Course Objectives:

23. This course supposed to give the knowledge of basic concept of Linear Programming.
24. Analyse the Applications of PERT and CPM Network.
25. Analyse the Concept of Transportation problem.
26. Evaluate the Basic concept of Laplace transform.
27. Analyse the problems faced in Numerical differentiation and Integration.

Course Content:

Topic and Contents	Hours	Marks
UNIT-1: LINEAR PROGRAMMING	08	20
Mathematical Formulation of Linear Programming problem. • Graphical method of solving Linear Programming problem. • Simple method for solving Linear Programming problem.		

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• Duality in Linear Programming problem.		
UNITS-2: PROJECT SCHEDULING	06	20
Project Scheduling by PERT and CPM Network Analysis. Sequencing Theory: • General Sequencing problem • N-jobs through 2 machines & 3 machines • 2-jobs through m machine.		
UNITS-3: TRANSPORTATION PROBLEM	08	20
Find the initial solution using: • North West Corner rule, Least Cost Method. Assignment problem: • Solving Assignment problem		
UNIT-4: TRANSFORM CALCULUS	06	20
Laplace transform with its simple properties.		
UNIT 5: NUMERICAL METHODS	08	20
Finite differences and Interpolation, Numerical differentiation and Integration. Numerical solution of ordinary differential equations		
TOTAL	**36**	**100**

Reference:

1. Advanced Mathematics for Engineers by Chandrika Prasad
2. Higher Engineering Mathematics by B.S. Grewal
3. Higher Engineering Mathematics by Y.N. Gaur and C.L. Koul
4. Higher Engineering Mathematics by K.C. Jain and M.L. Rawat

Course outcomes:

On successful completion of the course, the student will be able to:

18. The course content gives full knowledge to learn Linear Programming.
19. Find the solution of problem dependent on Project Scheduling.
20. Solve the problems related to Transportation.
21. Enable students to solve difficulties face in Numerical method and transform Calculus.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S			M			S	M				
2	S		S			M				S		
3		M			S				M			

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4	S	S					M					

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	30
2	Applying the knowledge acquired from the course	35
3	Analysis and Evaluation	35

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSM	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course

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	End of Course survey		End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Model Question Paper:

Guidelines for Question Paper Setting:

The question paper must be prepared based on the blue print without changing the weigh age of model fixed for each unit.

The question paper pattern provided should be adhered to

- The paper should have 10 questions in all, wherein it will have 2 questions from each unit.
- Student shall be asked to attempt in all 5 questions, 1 Question from each unit.
- Student shall be given internal choice in every Unit.

Questions should not be set from the recapitulation topics.

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Edition-2018

DEPARTMENT OF
DIPLOMA IN COMPUTER SCIENCE

Head, Department of Diploma Engg.
Gyan Vihar School of Engg. & Tech.
JAIPUR

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LIST OF COURSES OFFERED
Edition-2018-19

DEPARTMENT OF
DIPLOMA IN COMPUTER SCIENCE

Head, Department of Diploma Engg.
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GYAN VIHAR SCHOOL OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF DIPLOMA IN CSE
EDITION – 2018-19

Course Code	Course Name	Credits	Contact Hrs/Wk.			Exam Hrs.	Weightage (in%)	
			L	T/S	P		CE	ESE
DCS203	Computer System Programming	3	3	0	0	3	40	60
DCS204	Fundamentals of Data Structure and Algorithm	3	3	1	0	3	40	60
DCS205	Operating System Basics & Pc Packages	3	3	0	0	3	40	60
DCS206	Web Technology	3	3	0	3	3	40	60
DCS207	Fundamentals of Information Technology	3	3	0	0	3	40	60
DCS208	Computer Organization & Architecture	3	3	0	3	3	40	60
DCS209	Open Source Technology	3	3	0	0	3	40	60
DCS210	Data Base Management System	3	3	0	0	3	40	60
DCS212	E- Commerce in Business	3	3	0	0	3	40	60
DCS215	Computer System Programming Lab	2	0	0	3	2	60	40
DCS216	Fundamentals of Data Structure & Algorithm Lab	2	0	0	3	2	60	40
DCS219	Operating System Lab	2	0	0	3	2	60	40
DCS220	LAN and windows 2000 Administration Lab	2	0	0	3	2	60	40
DCS221	Office Automation Lab	2	0	0	3	2	60	40
DCS222	OOPS(C++) Lab	2	0	0	3	2	60	40
DCS223	Open Source Technology Lab	2	0	0	3	2	60	40
DCS224	Web Technology LAB	2	0	0	3	2	60	40
DCS225	PHP Lab	2	0	0	3	2	60	40
DCS228	DBMS Lab	2	0	0	3	2	60	40
DCS302	ASP.NET with C#	3	3	0	0	3	40	60
DCS303	OOPs through Java	3	3	0	0	3	40	60
DCS304	Data Mining & data warehousing	3	3	0	0	3	40	60
DCS305	Desktop Publishing & Multimedia	3	3	0	0	3	40	60
DCS306	Mobile Computing	3	3	0	0	3	40	60
DCS307	Network Security & Management	3	3	0	0	3	40	60
DCS309	System Anaylsis & Designing	3	3	0	0	3	40	60
DCS312	ASP.Net with C# Lab	2	0	0	3	2	60	40
DCS314	Data Mining & data warehousing Lab	2	0	0	3	2	60	40
DCS315	OOPs Lab in Java	2	0	0	3	2	60	40
DCS317	Python Lab	2	0	0	3	2	60	40
DCS319	Network Security Lab	2	0	0	3	2	60	40
DEE377	MAT Lab	2	0	0	3	2	60	40
DEP301	Industry Summer Internship Project	3	0	0	3	2	60	40
DEP302	Industry Association Project	6	0	0	3	2	60	40
DHS231	Basic Economics & Social Science	2	2	0	0	3	40	60
DHS232	Entrepreneurship	2	2	0	0	3	40	60
DHS301	Industrial Management	3	3	0	0	3	40	60
EM102	Employability Skills II	1	0	2	0	2	60	40
EM201	Employability Skills – III	1	0	2	0	2	60	40
EM202	Employability Skills IV	1	2	0	0	2	60	40
MA231	Advance Mathematics	3	3	0	0	3	40	60
PC201	Proficiency in Co-Curricular Activity	2	0	0	0	0	100	
PC202	Proficiency in Co-Curricular Activity	2	0	0	0	0	100	
PC301	Proficiency in Co-Curricular Activity	2	0	0	0	0	100	
PC302	Proficiency in Co-Curricular Activity	2	0	0	0	0	100	
PT 301	Practical Training Seminar	2	0	0	3	2	60	40

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GYAN VIHAR SCHOOL OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF DIPOLMA IN ENGINEERING
DIPLOMA IN COMPUTER- SCIENCE (3 Year Course)

Year: II **Edition-2018 -19** **Semester: III**

Course Code	Course N ame	Credits	Contact Hrs/Wk.			Exam Hrs.	Weightage (in%)	
			L	T/S	P		CE	ESE
	University Core							
MA231	Advance Mathematics	3	3	0	0	3	40	60
PC201	Proficiency in Co-Curricular Activity	2	0	0	0	0	100	
EM102	Employability Skills II	1	0	2	0	2	60	40
	Program Core							
DCS203	Computer System Programming	3	3	0	0	3	40	60
DCS205	Operating System Basics & Pc Packages	3	3	0	0	3	40	60
DCS215	Computer System Programming Lab	2	0	0	3	2	60	40
DCS219	Operating System Lab	2	0	0	3	2	60	40
DCS221	Office Automation Lab	2	0	0	3	2	60	40
DCS223	Open Source Technology Lab	2	0	0	3	2	60	40
DCS225	PHP Lab	2	0	0	3	2	60	40
	University Elective							
DHS231	Basic Economics & Social Science	2	2	0	0	3	40	60
	Program Elective							
DCS209	Open Source Technology	3	3	0	0	3	40	60
DCS207	Fundamentals of Information Technology	3	3	0	0	3	40	60

Course Code	Course Name	Credits	Contact Hrs/Wk.			Exam Hrs.	Weightage (in%)	
			L	T/S	P		CE	ESE
	University Core							
PC202	Proficiency in Co-Curricular Activity	2	0	0	0	0	100	
EM201	Employability Skills – III	1	0	2	0	2	60	40
	Program Core							
DCS204	Fundamentals of Data Structure and Algorithm	3	3	1	0	3	40	60
DCS216	Fundamentals of Data Structure & Algorithm Lab	2	0	0	3	2	60	40
DCS206	Web Technology	3	3	0	3	3	40	60
DCS208	Computer Organization & Architecture	3	3	0	3	3	40	60
DCS220	LAN and windows 2000 Administration LAB	2	0	0	3	2	60	40
DCS222	OOPS(C++) Lab	2	0	0	3	2	60	40
DCS224	Web Technology LAB	2	0	0	3	2	60	40
DCS228	DBMS Lab	2	0	0	3	2	60	40
	University Elective							
DHS232	Entrepreneurship	2	2	0	0	3	40	60
*	Any course may be opted from other Department							
	Program Elective							
DCS212	E- Commerce in Business	3	3	0	0	3	40	60

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DCS210	Data Base Management System	3	3	0	0	3	40	60

Year: II **Edition-2018** **Semester: IV**

Course Code	Course Name	Credits	Contact Hrs/Wk.			Exam Hrs.	Weightage (in%)	
			L	T/S	P		CE	ESE
	University Core							
PC301	Proficiency in Co-Curricular Activity	2	0	0	0	0	100	
EM202	Employability Skills IV	1	2	0	0	2	60	40
DEP301	Industry Summer Internship Project	2	0	0	3	2	60	40
	Program Core							
DCS303	OOPs through Java	3	3	0	0	3	40	60
DCS305	Desktop Publishing & Multimedia	3	3	0	0	3	40	60
DCS315	OOPs Lab in Java	2	0	0	3	2	60	40
DCS319	Network Security Lab	2	0	0	3	2	60	40
DCS307	Network Security & Management	3	3	0	0	3	40	60
	University Elective							
DHS301	Industrial Management	2	2	0	0	3	40	60
	Program Elective							
DCS309	System Anaylsis & Designing	3	3	0	0	3	40	60
PT 301	Practical Training Seminar	2	0	0	3	2	60	40

Year: III **Edition-2018** **Semester: V**

Year: III **Edition-2018** **Semester: VI**

Course Code	Course Name	Credits	Contact Hrs/Wk.			Exam Hrs.	Weightage (in%)	
			L	T/S	P		CE	ESE
	University Core							
PC302	Proficiency in Co-Curricular Activity	2	0	0	0	0	100	
DEP302	Industry Association Project	4	0	0	3	2	60	40
	Program Core							
DCS302	ASP.NET with C#	3	3	0	0	3	40	60
DCS310	PHP Lab	2	0	0	3	2	60	40
DCS314	Data Mining & data warehousing Lab	2	0	0	3	2	60	40
DCS312	ASP.Net with C# Lab	2	0	0	3	2	60	40
	University Elective							
PT 302	Seminar	2	0	0	3	2	60	40
DEE377	MAT Lab	2	0	0	3	2	60	40
	Program Elective							
DCS306	Mobile Computing	3	3	0	0	3	40	60
DCS304	Data Mining & data warehousing	3	3	0	0	3	40	60

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DETAIL OF COURSES

DEPARTMENT OF
DIPLOMA IN COMPUTER SCIENCE

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Course Title: Programming	Course Code : DCS203
Semester : III	Core / Elective : **Core**
Teaching Scheme in Hrs (L:T:P) : 3**:0:0**	Credits : 3 **Credits**
Type of course : **Lecture**	Total Contact Hours : **36**
Continuous Internal Evaluation : **40 Marks**	SEE : **60 Marks**
Programmes: Diploma in Computer Science	

Pre-requisites:

Basic Computer Knowledge

Course Objectives:

1. To introduce about computer.
2. learn Computer fundamentals
3. Learn how computer work and about computer languages.
4. To introduce Basic C programming.
5. To introduce structure, pointers.

Course Content:

Topic and Contents	Hours	Marks
UNIT 1 Introduction	06	20
(i) Types of computers and generations Basic, architecture of computers and its building blocks **(j)** Input-Output devices, Memories	03 03	
UNIT 2 Number Systems	07	20
(c) Binary, octal, decimal and hexadecimal representation of numbers Integers and floating point numbers Representation of characters, ASCII and EBCDIC codesBinary Arithmetic: addition, subtraction, complements	04 03	

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(d) Classification of Computer Languages Machine, assembly and high level languages Brief idea of operating system, Assembler, compiler and interpreter		
UNIT 3 Programming in 'C'	08	20
(e) Need of programming languages, Defining problems (f) Flowcharts and algorithm development (g) Data types, constants, variables, operators and expressions (h) Input and output statements, Conditional and control statements	02 02 02 02	
UNIT 4 LOOPS	08	20
Loops (While do while for), break, goto, continue, Arrays, 2D array, user defined functions	08	
UNIT 5 Structures and unions	08	20
j. Structures and unions ; Pointers; File handling	08	
TOTAL	**36**	**100**

Reference:

4. Computer Fundamentals by P.K.Sinha, BPB Publications
5. Fundamentals of information Technology and Computer Programming by V.K.Jain
6. Introduction to Computers and Information Systems by Dr. Sushila Madan, Taxmann Publications

Course outcomes:

On successful completion of the course, the student will be able to:

1. Can learn about computer.
2. learn Computer fundamentals
3. know how computer work and about computer languages.
4. Learn Basic C programming and implement C programs.
5. learn about structure, union, pointers and file handling.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S	M	M	M	M			M			M

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2	S	M			M	M						
3	S	S	S	S	M	M			M			M
4	S	S	S	S	M	M			M			M
5	S	S	S	S	M	M			M			M

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	
		Graded Assignments		Two Assignments	10	Log of record	
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	30
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	45

Model Question Paper:

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Guidelines for Question Paper Setting:

The question paper must be prepared based on the blue print without changing the weigh age of model fixed for each unit.

The question paper pattern provided should be adhered to

- The paper should have 10 questions in all, wherein it will have 2 questions from each unit.
- Student shall be asked to attempt in all 5 questions, 1 Question from each unit.
- Student shall be given Internal choice in every Unit.

Questions should not be set from the recapitulation topics.

Course Title: Fundamentals of Data Structure and Algorithm		Course Code	: DCS204
Semester	: IV	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: 3**:0:0**	Credits	: 3 **Credits**
Type of course	: **Lecture**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: Diploma in Computer Science			

Pre-requisites:

Basic Computer and C Language

Course Objectives:

6. To introduce about the data structure and algorithm, linear data structure and non linear data structure

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7. To introduce about array representation and application of Stack and Queue and Sparse matrix and practice on them
8. To introduce the link list architecture of data structure and the application of it and practice on that.
9. To introduce the tree architecture of data structure and the application of it and practice on that
10. To introduce the graph architecture of data structure and the application of it and practice on that

Course Content:

Topic and Contents	Hours	Marks
UNIT 1 Introduction	06	20
c. Data Structure: Definition, Implementation, Operation, Application, Algorithm writing and convention. d. Analysis of algorithm, Complexity Measures and Notations	03 03	
UNIT 2 Arrays	06	20
b. Definition, Implementation, Representation of arrays, single and multidimensional arrays.	06	
UNIT 3 Stacks	08	20
(k) Definition, Implementation, Application (Tower of Hanoi, (l) Function Call and return, Parentheses Matching)	04 04	
UNIT 4 Linked Lists	08	20

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c. Implementation, Doubly linked list, Circular linked list. d. Queues : Definition, deque, Implementation, Application	04 04	
UNIT 5 Sorting	08	20
c. Bubble, Selection, Insertion, Merge, d. Searching: Linear search, Binary Search, Simple String Searching	04 04	
TOTAL	**36**	**100**

Reference:

5. Seymour Lipschutz- "Data structure and algorithm " - TMH Publication
6. A.S. Tanunbaum - "Data structure and algorithm in C" –TMH Publication
7. T.H.Cormen – "Introduction to algorithm "-PHI publication
8. Gupta,Agarwal,Varshney- "Design and analysis of Algorithm –PHI Publication

Course outcomes:

On successful completion of the course, the student will be able to:

6. Get knowledge about the data structure, how to design an algorithm and importance of data structure
7. How we represent an array in memory and all application of array
8. How we implement the link list and its application
9. How we implement the tree data structure and its application
10. How we implement the graph data structure and its application

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S						M				
2	S	S										
3	S	S		S					M	M		

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4	S	S		S							M	
5	S	S			S					M		M

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	
		Graded Assignments		Two Assignments	10	Log of record	
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Model Question Paper:

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Guidelines for Question Paper Setting:

The question paper must be prepared based on the blue print without changing the weigh age of model fixed for each unit.

The question paper pattern provided should be adhered to

- The paper should have 10 questions in all, wherein it will have 2 questions from each unit.
- Student shall be asked to attempt in all 5 questions, 1 Question from each unit.
- Student shall be given Internal choice in every Unit.

Questions should not be set from the recapitulation topics.

Course Title: Operating System Basics & Pc Packages		Course Code	: DCS205
Semester	: III	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: 3**:0:0**	Credits	: 3 **Credits**
Type of course	: **Lecture**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: Diploma in Computer Science			

Pre-requisites:

Basic Computer

Course Objectives:

6. To introduce about operating system and window XP.
7. To learn about various features of window XP.
8. Learn about installation of various software and know about explorer.
9. To introduce Features, Structure of file system, Linux system architecture.
10. Learn word processor ,types of word processor and its features.

Course Content:

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Topic and Contents	Hours	Marks
UNIT 1 Introduction	07	20
(c) Evolution of an operating system, Define Operating system, objectives and functions of an operating system , the operating system as a resource manager, types of an operation system. (d) Differentiate Dos, windows and linux/Unix. Introduction to Windows-XP **:** Windows XP features, windows Desktop Setting, managing windows explorer.	04 03	
UNIT 2 Windows-XP	07	20
(c) Using Taskbar, Start Menu options, My Computer, Recycle Bin, My Network Place, My Documents. creating user Accounts in win-XP. (d) Windows Accessories**: -** Calculator, Note Pad, Word Pad, Paint, Entertainment, Address Book.	04 03	
UNIT 3 Control Panel	07	20
(d) Installation of Software ,Addition of new hardware, installation of modem, (e) Sound card, Printers and Scanner, Date and time, taskbar and start menu. Windows (f) Explorer**:** Creating a new folders and other explore facilities, changing the look and feel of windows(Desktop, Wallpaper, Screen saver etc.).	02 02 03	
UNIT 4 Linux	07	20

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(e) Features, Structure of file system, Linux system architecture(Kernel and Shell). (f) Linux Command: - How to create and manage a text file in linux, cat, pwd, ls, mkdir, cd, , rm, rmdir, cp, who, mv, tty, sty, chmod. (g) Utilities**:** more, file, cmp, comm., diff, passwd, uname, cal, bc. (h) Filter and Pipe: pr, head, tail, grep, egrep, frep, tr.	02 02 02 01	
UNIT 5 MS-WORD	07	20
(d) Define word processor ,types of word processor,creating document in MS word,formatting (e) features of MS-word, word standard toolbar ,text formatting, header and footer, auto text,document (f) security features,table handling features, insertion of files and pictures ,mail merge and macros.	02 02 03	
TOTAL	**36**	**100**

Reference:

1. Microsoft windows XP - PHI
2. operating system – William stallings – pearson education
3. Unix operating System – sumitabha das – Tata McGraw hill
4. Introduction to computers – Norton – McGraw Hill
5. Microsoft office : Ron Mansdield – BPB publication

Course outcomes:

On successful completion of the course, the student will be able to:

6. Know about operating system and window XP.
7. Learn about various features of window XP.
8. Learn about installation of various software and know about explorer.
9. Know about Linux system architecture.
10. Can work with word processor and can use its features.

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Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S		S									
2	S		S							M		
3	S	S			S							
4	S			S							M	
5	S	S				S						M

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	
		Graded Assignments		Two Assignments	10	Log of record	
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)

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1	Remembering and Understanding	25
2	Applying the knowledge acquired from the course	30
3	Analysis and Evaluation	45

Model Question Paper:

Guidelines for Question Paper Setting:

The question paper must be prepared based on the blue print without changing the weigh age of model fixed for each unit.

The question paper pattern provided should be adhered to

- The paper should have 10 questions in all, wherein it will have 2 questions from each unit.
- Student shall be asked to attempt in all 5 questions, 1 Question from each unit.
- Student shall be given Internal choice in every Unit.

Questions should not be set from the recapitulation topics.

Course Title: Web Technology		Course Code	: DCS206
Semester	: IV	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: 3**:0:0**	Credits	: 3 **Credits**
Type of course	: **Lecture**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: Diploma in Computer Science			

Pre-requisites:

Basic Computer

Course Objectives:

6. Understand the various steps in designing a creative and dynamic website.

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7. They will have clear understanding of hierarchy of objects in HTML and XML.
8. Finally they can create good, effective and customized websites.
9. Know regarding internet related technologies. Systematic way of developing a website.
10. They will able to write html, JavaScript, CSS and applet codes.

Course Content:

Topic and Contents	Hours	Marks
UNIT 1 Internet Connection Concepts	07	20
(k) Server, Client and Parts, DNS, Telephone, Cable and Satellite connections- Dialup, ISDN, ADSL and Leased live based connection, **(l)** Cable and DSS a/c, Web TV and Internet, ISP features. TCP and UDP protocols, URL's, CGI, MIME and introduction to SGML.	04 03	
UNIT 2 HTML	07	20
c. Introduction to HTML, Elements of HTML syntax, Head and Body sections, Building HTML documents, Inserting text, images, hyperlinks, Backgrounds and Color Control, ordered and unordered lists, d. content layout & presentation. Tables: use of table tags,DIV and SPAN and various other HTML tags. forms – frames – table	04 03	
UNIT 3 Introduction of intranet	07	20
(m) Intranet v/s LAN, Components of Internet-Workstations and Client software, Server and Network operating system. (n) Network cards, cabling and hubs, steps for creating an intranet. Maintenance and connecting to internet.	03 04	
UNIT 4 Web technology	07	20
(j) Elements of web – clients and servers languages and protocols, web page and web sites, special kinds of web sites, web resources – search engines, massage boards, clubs, news groups and chat (k) web page creation concepts – planning, navigation, themes and publishing. Analyzing web traffic – log file	04 03	

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data, analyzing log file and product for analyzing web traffic.		
UNIT 5 E-mail technology	07	20
c. features and concepts – massage headers, address book, attachment, filtering and forwarding mails. d. Scripting languages HTML –webpage design – java script introduction – control structures – functions – arrays – objects – simple web applications.	04 03	
TOTAL	**36**	**100**

Reference:

1. Roy and Sinha, Internet Technologies by BPB Publications
2. Mukharjee S., Web Designing and Development by TMH

Course outcomes:

On successful completion of the course, the student will be able to:

6. Understand web basics.
7. understand hierarchy of objects in HTML and XML
8. can create good, effective and customized websites
9. Know regarding internet related technologies
10. Can develop an applet application

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S								M		
2	S	S										
3	S	S		S				M			M	
4	S	S		S					M	M		
5	S	S			S						M	M

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

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The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	
		Graded Assignments		Two Assignments	10	Log of record	
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Model Question Paper:

Guidelines for Question Paper Setting:

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The question paper must be prepared based on the blue print without changing the weigh age of model fixed for each unit.

The question paper pattern provided should be adhered to

- The paper should have 10 questions in all, wherein it will have 2 questions from each unit.
- Student shall be asked to attempt in all 5 questions, 1 Question from each unit.
- Student shall be given Internal choice in every Unit.

Questions should not be set from the recapitulation topics.

Course Title: FUNDAMENTALS OF INFORMATION TECHNOLOGY		Course Code	: DCS207
Semester	: III	Core / Elective	: **Elective**
Teaching Scheme in Hrs (L:T:P)	: 3**:0:0**	Credits	: 3 **Credits**
Type of course	: **Lecture**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: Diploma in Computer Science			

Pre-requisites:

Basic Computer

Course Objectives:

6. Know about information technology and data types.
7. To introduce about e-commerce and its advantage
8. Learn about Transmission media and signals types.
9. Know various function of operating system.
10. To introduce application software and GUI interface.

Course Content:

Topic and Contents	Hours	Marks
UNIT 1 Introduction	06	20

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(c) An overview of information technology, difference between data and information, quality, of information, Information system. (d) Important data types: text, image, graphics & animation, audio, video. Data compression and its techniques	03 03	
UNIT 2 Introduction to internet	07	20
(c) www, web browser, search engine, email Introduction to e-commerce and its advantage, security threats to e-commerce, Electronic payment system, (d) E-governance, EDI and its benefits Introduction to cryptography, digital signature and smart card technology	04 03	
UNIT 3 Introduction to LAN, WAN, MAN	07	20
(c) Transmission media Data transmission type: Introduction to OSI reference model (d) Analog and digital signals, modulation Network topologies, client-server architecture, ISDN	04 03	
UNIT 4 Operating System	07	20
(d) Overview, definition and function of operating system, need of operating system (e) Batch processing, spooling, multi-programming, multi-processing (f) Time sharing, online processing, real time system	03 02 02	
UNIT 5	08	20
(c) Application software and their categories, system software (d) User interface GUI, spread sheet Data base software, its features and benefits	04 04	
TOTAL	**36**	**100**

Reference:

5. Information Technology and the Networked Economy, Second Edition **By** McKeown, Patrick G.
6. Internet & Intranet Engineering, Tata McGraw Hill company.
7. Information Technology by Ajit Poonia.
8. Information Technology by D.P. Sharma

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Course outcomes:

On successful completion of the course, the student will be able to:

6. Know about information technology and data types.
7. Learn about e-commerce and its advantage
8. Know Transmission media and signals types.
9. Know various function of operating system.
10. Learn application software and GUI interface.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S										
2	S	S										
3	S		S									
4	S		S									
5	S		S							M		

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	
		Graded Assignments		Two Assignments	10	Log of record	
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at SGVU	

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INDIRECT ASSESSMENT	Student feedback	Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey		End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Model Question Paper:

Guidelines for Question Paper Setting:

The question paper must be prepared based on the blue print without changing the weigh age of model fixed for each unit.

The question paper pattern provided should be adhered to

- The paper should have 10 questions in all, wherein it will have 2 questions from each unit.
- Student shall be asked to attempt in all 5 questions, 1 Question from each unit.
- Student shall be given Internal choice in every Unit.

Questions should not be set from the recapitulation topics.

Course Title: Computer Organization & Architecture		Course Code	: DCS208
Semester	: IV	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: 3**:0:0**	Credits	: 3 **Credits**
Type of course	: **Lecture**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: Diploma in Computer Science			

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Pre-requisites:

Basic Computer Knowledge

Course Objectives:

6 Describe the progression of computer architecture.

7 Understand Instruction execution through instruction cycles. Understand the system interconnection and the different I/O techniques

8 Explain the basic concepts of interrupts and how interrupts are used to implement I/O control and data transfers.

9 Explain the functioning of the arithmetic and logic unit.

10 Explain the functioning of the control unit and look at the different implementations of the control unit.

Course Content:

Topic and Contents	Hours	Marks
UNIT 1 REGISTER TRANSFER LANGUAGE	06	20
(m) Data movement around registers. Data movement from/to memory, arithmetic and logic micro operation. **(n)** Concept of bus and timing in register transfer	03 03	
UNIT 2 CPU ORGANISATION	07	20
c. Addressing Modes, Instruction Format d. CPU organization with large registers, stacks and handling of interrupts & subroutines Instruction pipelining	04 03	
UNIT 3 ARITHMETIC ALGORITHM	07	20
(o) Array multiplier, Booth's algorithm. (p) Addition subtraction for signed unsigned numbers and 2's complement numbers	04 03	
UNIT 4 MICROPROGRAMMED CONTROL	07	20

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(l) Basic organization of micro-programmed controller (m) Horizontal & Vertical formats, Address sequencer	03 03	
UNIT 5 MEMORY ORGANISATION	08	20
k. Concept of RAM/ROM, basic cell of RAM Associative memory, Cache memory organization, Vertical memory organization l. I/O ORGANISATION: Introduction to Peripherals & their interfacing. Strobe based and handshake based m. communication, DMA based data transfer, I/O processor	04 04	
TOTAL	**36**	**100**

Reference:

6. J.P.Hayes -'Computer Architecture & organization', Mc-Graw Hill.
7. Heuring-Computer System Design and Architecture, Pearson Education.
8. M.MORRISMANNO-'Computer System Architecture', Prentice Hall of India.
9. Bartee-Computer Architecture, Tata Mc-Graw Hill.
10. Stallings-Computer Organization and Architecture, Pearson Education.

Course outcomes:

On successful completion of the course, the student will be able to:

6 Describe computer architecture and organization, computer arithmetic, and CPU design.

7 Describe I/O system and interconnection structures of computer.

8 Identify high performance architecture design.

9 Use assembly language to program a microprocessor system.

10 Develop independent learning skills and be able to learn more about different computer architectures and hardware.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S										
2	S	S		S								
3	S	S	S					S				
4	S	S		S						M		M
5	S	S		S				M			M	

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S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	
		Graded Assignments		Two Assignments	10	Log of record	
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Model Question Paper:

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Guidelines for Question Paper Setting:

The question paper must be prepared based on the blue print without changing the weigh age of model fixed for each unit.

The question paper pattern provided should be adhered to

- The paper should have 10 questions in all, wherein it will have 2 questions from each unit.
- Student shall be asked to attempt in all 5 questions, 1 Question from each unit.
- Student shall be given Internal choice in every Unit.

Questions should not be set from the recapitulation topics.

Course Title: Open Source Technology		Course Code	: DCS209
Semester	: IV	Core / Elective	: **Elective**
Teaching Scheme in Hrs (L:T:P)	: 3**:0:0**	Credits	: 3 **Credits**
Type of course	: **Lecture**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: Diploma in Computer Science			

Pre-requisites:

BASIC Computer Knowledge.

Course Objectives:

11. Will know UNIX and LINUX concepts
12. Learn about GNU Project and the Free Software Foundation
13. Know how Linux System Administration works.
14. Learn the concept of Memory Management
15. Know Software package Management

Course Content:

Topic and Contents	Hours	Marks

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UNIT 1 OST overview	08	20
d. Evolution & development of OST and contemporary technologies, Factors leading to its growth. e. Open Source Initiative (OSI), Free Software Foundation and the GNU Project, principle and methodologies. Contexts of OST (India & international). f. Applications of open source (open source teaching and open source media) Risk Factors. Myths regarding open source.	03 03 02	
UNIT 2 Softwares	07	20
d. Philosophy of Software Freedom, Free Software, OSS, Closed software, Public Domain Software, Shared software, Shared source. e. Detail of few OSS like Open Audio, Video, 2d & 3d graphics software, system tools, office tools, f. Networking & internet, Security, Educational tools and Games	02 03 02	
UNIT 3 Models	07	20
c. Open Source Development Model, Starting and Maintaining an Open Source Project d. Open Source Hardware, Open Source Design, Ongoing OS Projects (i.e. examples of few good upcoming software projects.) Case Study: - Linux, Wikipedia.	03 04	
UNIT 4 Licenses and Patents	07	20
c. What Is A License, How to create your own Licenses? d. Important FOSS Licenses (Apache,BSD, GPL, LGPL), copyrights and copy lefts, Patents	03 04	
UNIT 5 Economics of FOSS	06	20
d. Social and Financial impacts of open source technology,: Zero Marginal Cost, e. Income generation opportunities Problems with traditional commercial software, Internationalization, f. Open Source as a Business Strategy.	02 02 02	
TOTAL	**36**	**100**

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Reference:

3. Vikas thada, Review to OST
4. Balaguruswamy concepts of open source concepts

Course outcomes:

On successful completion of the course, the student will be able to:

11. Learn UNIX and LINUX concepts
12. Will know about GNU Project and the Free Software Foundation
13. Know Linux System Administration works.
14. Use the concept of Memory Management
15. Know Software package Management

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S										
2	S	S										
3	S	S										
4	S	S										
5	S	S										

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	

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		Graded Assignments		Two Assignments	10	Log of record	
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Model Question Paper:

Guidelines for Question Paper Setting:

The question paper must be prepared based on the blue print without changing the weigh age of model fixed for each unit.

The question paper pattern provided should be adhered to

- The paper should have 10 questions in all, wherein it will have 2 questions from each unit.
- Student shall be asked to attempt in all 5 questions, 1 Question from each unit.
- Student shall be given Internal choice in every Unit.

Questions should not be set from the recapitulation topics.

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Course Title: Data Base Management System		Course Code	: DCS210
Semester	: IV	Core / Elective	: **Elective**
Teaching Scheme in Hrs (L:T:P)	: 3**:0:0**	Credits	: 3 **Credits**
Type of course	: **Lecture**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: Diploma in Computer Science			

Pre-requisites:

Basic Computer Knowledge

Course Objectives:

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6 This course gives an overview of database management systems. It is intended to be an introductory course in databases. No prior knowledge of data models, query languages or application packages is assumed. Familiarity with software such as Oracle and MS Access is a plus, but is not necessary.

7 To learn the theoretical concepts behind how data models evolved,

8 Study the relational data model in detail, and apply this knowledge to create and maintain a simple database system.

9 To learn the principles of logical and physical storage management, query processing and normalization.

10 To learn indexing structures, transaction processing, security issues and concurrency control.

Course Content:

Topic and Contents	Hours	Marks
UNIT 1 Introduction	06	20

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(o) Overview of DBMS, Basic DBMS terminology, data base system v/s file system, **(p)** data independence. Architecture of a DBMS	03 03	
UNIT 2 Introduction to data models:	06	20
c. entity relationship model, hierarchical model: from network to hierarchical, relational model, d. comparison of network, hierarchical and relational models	03 03	
UNIT 3 Models	08	20
(q) Data modeling using the Entity Relationship Model: ER model concepts, notation for ER diagram, (r) mapping constraints, keys, Concepts of Super Key, candidate key, primary key, Generalization, aggregation, reduction of an ER diagrams to tables, (s) extended ER model, relationships of higher degree	02 03 03	
UNIT 4 Relational model	08	20
(n) storage organizations for relations, relational algebra, relational calculus. (o) Normalization: Functional dependencies, normal forms, first, second, third normal forms, BCNF, inclusion dependencies, loss less join decompositions, (p) normalization using FD, MVD, and JDs, alternative approaches to database design	03 03 03	
UNIT 5 Introduction to SQL	08	20
n. Characteristics of SQL, Advantages of SQL, SQL data types and literals, Types of SQL commands, SQL operators and their procedure, o. Tables, views and indexes, Queries and sub queries, Aggregate functions, insert, update and delete operations, Joins, Unions, Intersection, Minus in SQL	04 04	
TOTAL	**36**	**100**

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Reference:

7 R. ElMasri, and S. Navathe, 1999 Fundamentals of Database Systems, 3rd Edition Benjamin Cummings.

8 J.D. Ullman 1989 Principles of Data and Knowledge Base Systems, Volume 1, Computer Science Press.

9 H.F. Korth, and A. Silberschatz 1991 Database System Concepts, 2nd Edition, McGraw-Hill.

10 Raghu Ramakrishnan and Johannes Gerhke 1997 Database Management Systems, McGraw-Hill, 1st Edition, 2nd printing.

11 J. Melton and A. R. Simon 1993 Understanding the New SQL: A Complete Guide, Morgan-Kaufmann.

12 C. J. Date and H. Darwen 1994 A Guide to the SQL Standard (third edition), Addison-Wesley.

Course outcomes:

On successful completion of the course, the student will be able to:

6 Students learn about the concepts of DBMS and proceeds over the file management system and they will also learn to design the database.

7 Students learn, how write database queries to store and retrieve information from database by getting knowledge of relational algebra, relational calculus and SQL.

8 Students come to know about the short comes in designing of relational database and refinement of relations for a good database design.

9 Students learn about the security issues in database in mechanisms or concepts to employ security and transaction management in database.

10 Students learn about indexing and hashing in database.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12

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1	S	S										
2	S	S										
3	S	S		S				M				
4	S	S	S						M			
5	S	S		S						M		M

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	
		Graded Assignments		Two Assignments	10	Log of record	
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

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Model Question Paper:

Guidelines for Question Paper Setting:

The question paper must be prepared based on the blue print without changing the weigh age of model fixed for each unit.

The question paper pattern provided should be adhered to

- The paper should have 10 questions in all, wherein it will have 2 questions from each unit.
- Student shall be asked to attempt in all 5 questions, 1 Question from each unit.
- Student shall be given Internal choice in every Unit.

Questions should not be set from the recapitulation topics.

Course Title: E- Commerce in Business		Course Code	: DCS212
Semester	: III	Core / Elective	: **Elective**
Teaching Scheme in Hrs (L:T:P)	: 3**:0:0**	Credits	: 3 **Credits**
Type of course	: **Lecture**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: Diploma in Computer Science			

Pre-requisites:

Basic Computer Knowledge

Course Objectives:

6. Learn about E- Commerce.
7. Know what is inter and intra ecommerce
8. Learn Network Infrastructure behind E- Commerce
9. Learn Electronic Payments methods.
10. Know Encryption and Transaction security issues.

Course Content:

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Topic and Contents	Hours	Marks
UNIT 1 Introduction:	07	20
(c) Motivation, Forces behind E-Commerce Industry Framework, (d) Brief history of ECommerce, Advantages and Disadvantages of E-Commerce	04 03	
UNIT 2 INTER and INTRA E- Commerce	07	20
c. Inter Organizational E-Commerce d. Intra Organizational E-Commerce	04 03	
UNIT 3 Architectural framework	07	20
d. Network Infrastructure for E-Commerce Network Infrastructure for ECommerce, Market forces behind I Way, e. Component of I way Access Equipment, Global Information Distribution Network, f. Broad band Telecommunication.	03 02 02	
UNIT 4 Electronic Payments	08	20
(q) Overview of Electronics payments, Digital Token based Electronics payment System, Smart Cards, Credit Card I Debit Card based EPS, (r) Emerging financial Instruments, Home Banking, Online Banking	04 03	
UNIT 5 Encryption	08	20
p. World Wide Web & Security, Encryption, Transaction security, Secret Key Encryption, Public Key Encryption, q. Virtual Private Network (VPM), Implementation Management Issues	04 04	
TOTAL	**36**	**100**

Reference:

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1. David Whiteley-E-Commerce Strategy, Technology and Applications, Tata McGraw Hill.
2. Mathew Reynolds-Beginning E-commerce with visual Basic ASP, SQL Server 7.0 and MTS

Course outcomes:

On successful completion of the course, the student will be able to:

6. Know E- Commerce.
7. Use inter and intra ecommerce
8. Use concept of Network Infrastructure behind E- Commerce
9. Use Electronic Payments methods.
10. Encryption and Transaction security issues.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S		S								
2	S	S		S								M
3	S	S		S								M
4	S	S			S						M	M
5	S	S								M		M

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	
		Graded Assignments		Two Assignments	10	Log of record	
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at SGVU	

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INDIRECT ASSESSMENT	Student feedback	Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey		End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	40
2	Applying the knowledge acquired from the course	20
3	Analysis and Evaluation	40

Model Question Paper:

Guidelines for Question Paper Setting:

4. The question paper must be prepared based on the blue print without changing the weigh age of model fixed for each unit.
5. The question paper pattern provided should be adhered to
    - The paper should have 10 questions in all, wherein it will have 2 questions from each unit.
    - Student shall be asked to attempt in all 5 questions, 1 Question from each unit.
    - Student shall be given Internal choice in every Unit.
6. Questions should not be set from the recapitulation topics.

Course Title: Computer System Programming Lab	Course Code : DCS215
Semester : III	Core / Elective : **Core**
Teaching Scheme in Hrs (L:T:P) : 0**:0:3**	Credits : 2 **Credits**

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Type of course	: **Practical**	Total Contact Hours	: **30**
Continuous Internal Evaluation	: **60 Marks**	SEE	: **40 Marks**
Programmes: Diploma in Computer Science			

Pre-requisites:

Basic Computer

Course Objectives:

6. Learn Conditional statement
7. Can implement LOOPS.
8. Know about array and its implementation.
9. To introduce functions both recursive and non-recursive.
10. Learn how to implement pointers and file handling

Course Content:

S.No.	List of Experiments
I	Simple input program integer, real character and string. (Formatted & Unformatted)
II	Conditional statement programs (if, if-else-if, switch-case)
III	Looping Program (for, while, do-white)
IV	Program based on array one dimensions
V	Program based on array two and three dimensions
VI	Program using structure and unions.
VII	Program using Function without recursion
VIII	Program using Function With recursion
IX	Simple programs using pointers
X	File handling

Reference:

Lab manual

Course outcomes:

On successful completion of the course, the student will be able to:

6. Learn Conditional statement
7. How to implement LOOPS.
8. How to implement array both 1D and 2 D.
9. Implement functions both recursive and non-recursive.
10. How to implement pointers and file handling

A

Mapping Course Outcomes with Program Outcomes:

Course	Programme Outcomes

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outcomes	1	2	3	4	5	6	7	8	9	10	11	12
1	S					M		M				S
2	S	S	S	M	S	M		M		M		S
3	S	M	S	M	M	M			M	S		M
4	S	M	M	M	M		M	M	S	S	M	M
5	S	S				M				S	M	

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	30
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	45

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Course Title: Fundamentals of Data Structure & Algorithm Lab		Course Code	: DCS216
Semester	: IV	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: 0**:0:3**	Credits	: 2 **Credits**
Type of course	: **Practical**	Total Contact Hours	: **30**
Continuous Internal Evaluation	: **60 Marks**	SEE	: **40 Marks**
Programmes: Diploma in Computer Science			

Pre-requisites:

Basic computer and C Programming

Course Objectives:

6. Understanding concept of C-language like-looping, array, function ,structure and pointers
7. Implementation of array with Stack, Queue.
8. Know how to implementation of link list, doubly link list and circular link list in C
9. Implementation of various sorting algorithm.
10. Know the concept of two way link list and also Implement two way link list.

Course Content:

1. Program of linear and binary search algorithm
2. Program to insert element at desire position in array.
3. Program to replacing element in array.
4. Program to deletion in array.
5. Implementation of stack and queue using array
6. Implementation of stack and queue using link lists
7. Implementation of circular queue using link lists.
8 Program on Insertion sorting algorithm
9. Program on Selection, Bubble sort algorithm
10. Two-way link lists programs.

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Reference:

Lab manual

Course outcomes:

On successful completion of the course, the student will be able to:

6. Learn the concept of C-language like-looping, array, function ,structure and pointers
7. Implementation of array and linked list with Stack, Queue.
8. Implementation of link list, doubly link list and circular link list in C
9. Implementation of various sorting algorithm.
10. Implement two way link list.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S								M		
2	S		S									
3	S		S					M			M	
4	S		S		S							
5	S	S					M					M

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		

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	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Course Title: Operating System Lab		Course Code	: DCS219
Semester	: III	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: 0**:0:3**	Credits	: 2 **Credits**
Type of course	: **Practical**	Total Contact Hours	: **30**
Continuous Internal Evaluation	: **60 Marks**	SEE	: **40 Marks**
Programmes: Diploma in Computer Science			

Pre-requisites:

Basic Computer.

Course Objectives:

6. Illustrate the linux system administration and commands to handle files and directories.
7. Apply the commands for process management.
8. Illustrate the commands for file systems storage and structure.

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9. To introduce Shell Scripting
10. Implement Scheduling Algorithm

Course Content:

11. Introduction to Operating System, virtual machines and file systems
12. Introduction to file systems
13. Installation of Linux Fedora
14. Linux Commands – 1
15. Linux Commands – 2
16. Linux Commands – 3
17. Introduction to C programming in Linux
18. Introduction to Shell Scripting
19. First Come First Serve CPU Scheduling Algorithm
20. Shortest Job First CPU scheduling algorithm

Reference:
Lab manual

Course outcomes:
On successful completion of the course, the student will be able to:

4. Learn about Operating System
5. Implement Linux commands
6. Implement C programming in Linux
7. To introduce Shell Scripting
8. Implement Scheduling Algorithm

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S				S	S			M			M
2	S	S			S			M	M	M		M
3	S	M	M	M	S			M	M	M		M
4	S		S		S			M	M	M		M
5	S	S							M			M

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

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The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	30
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	45

Course Title: LAN and windows 2000 Administration LAB	Course Code : DCS220
Semester : IV	Core / Elective : **Core**
Teaching Scheme in Hrs (L:T:P) : 0**:0:3**	Credits : 2 **Credits**
Type of course : **Practical**	Total Contact Hours : **30**
Continuous Internal Evaluation : **60 Marks**	SEE : **40 Marks**

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Programmes: Diploma in Computer Science

Pre-requisites:

Basic Computer Knowledge, Programming in C

Course Objectives:

6. Know different types of Network cables
7. Know about different types of network devices
8. Learn the concept of Local Area Network
9. Use basic Commands of Cisco Packet Tracer
10. Learn about network programming

Course Content:

11. Study of different types of Network cables and practically implement the cross-wired cable and straight through cable using clamping tool.
12. Study of network devices in detail.
13. Study of Network IP.
14. Connect the computers in Local Area Network
15. Basic Commands of Cisco Packet Tracer.
16. WAP to connect a dump terminal/PC to the router.
17. WAP to stepping through context-sensitive help to set the time for router.
18. WAP to setting the line console password and enable password.
19. WAP to setting the enable secret password and basic serial connection.
20. WAP to disabling domain-lookup and synchronizing the console line.

Reference:

Lab manual

Course outcomes:

On successful completion of the course, the student will be able to:

6. Learn different types of Network cables
7. Know about different types of network devices
8. Implement of Local Area Network
9. Use basic Commands of Cisco Packet Tracer

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10. Know network programming

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S										
2	S	S				S			M			M
3	S	S		S						M		
4	S	S		S			S			M	M	
5	S	S		S								M

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl.	Educational Component	Weightage

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No.		(%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Course Title: Office Automation Lab		Course Code	: DCS221
Semester	: III	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: 0**:0:3**	Credits	: 2 **Credits**
Type of course	: **Practical**	Total Contact Hours	: **30**
Continuous Internal Evaluation	: **60 Marks**	SEE	: **40 Marks**
Programmes: Diploma in Computer Science			

Pre-requisites:

Basic computer Knowledge

Course Objectives:

6. Learn operating system Installation
7. Can Install Hard disk, RAM,CD, ROM,CPU and other computer components.
8. Can work with MS-word, and use MS word features
9. Learn MS word Mail options.
10. Can work with MS-Excel, and use MS Excel features.

Course Content:

Installation of Operating Systems.
Introduction to control panel, Add remove hardware and software,
Installation of Hard disk, RAM,CD, ROM,CPU, Mother Board, Keyboard, Mouse,
Ms-Word Basics: Working with MS Word; Menus Commands; Toolbars & Buttons; Shortcut Menus, Wizards & Templates; Creating a New Document
Ms-Word Lab 2:Spell Check, Thesaurus, Find & Replace; Headers & Footers; inserting-Page Number, Pictures, File, Auto texts, Symbols etc.
Ms-Word lab 3 Working with Columns, Tabs & Indent; Creation & Working with Tables

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including conversion to and from text; Margins & Space management in Document; adding References and Graphics.
Ms-Word lab 4: Mail Merge, Envelops& Mailing Labels. Importing and exporting to and from various formats.
MS Excel Lab 1: Working with Ms Excel; concepts of Workbook & Worksheets; using Wizards; Various Data Types; Using Different features with Data, Cell and Texts; Inserting
Removing & Resizing of Columns & Rows; Working with Data & Ranges; different Views of Worksheets; Column Freezing,Labels, Hiding, Splitting etc.
Ms Power Point: Working with MS Power Point; Creating a New Presentation; Working with Presentation & Presentation of Slide Show;Printing Presentation.

Reference:

Lab manual

Course outcomes:

On successful completion of the course, the student will be able to:

6. Install operating system.
7. Install Hard disk, RAM,CD, ROM,CPU and other computer components.
8. Work with MS-word, and use MS word features
9. Use MS word Mail options.
10. Work with MS-Excel, and use MS Excel features.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S	S	S		M						S
2	S		S	S	M		M	M				M
3	S	S	S	S								S
4	S	S	S		M							M
5	S	S		S		M	M	M			M	

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What	To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes

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DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	20
3	Analysis and Evaluation	45

Course Title: OOPS(C++) Lab		Course Code	: DCS222
Semester	: IV	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: 0**:0:3**	Credits	: 2 **Credits**
Type of course	: **Practical**	Total Contact Hours	: **30**
Continuous Internal Evaluation	: **60 Marks**	SEE	: **40 Marks**
Programmes: Diploma in Computer Science			

Pre-requisites:

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Basic Computer Knowledge, C Language

Course Objectives:

1. Identify classes, objects, members of a class and the relationships among them needed to solve a specific problem.
2. Demonstrate the concept of constructors and destructors.
3. Demonstrate the concept data encapsulation and inheritance
4. Demonstrate the concept of polymorphism.
5. Demonstrate the concept of virtual functions.

Course Content:

11. Program on Basic Data Types, control statements
12. Write a program to perform the rational number arithmetic.
13. Write a program to perform the matrix operations (addition, subtraction).
14. Write a program to perform the matrix operations (Transpose, Multiplication).
15. Program based on class and objects
16. Program on constructor and destructor
17. Program for to implement data encapsulation and inheritance
18. Program for to implement polymorphism
19. Program based on virtual functions.
20. To implement a calculator with its functionality

Reference:

Lab manual

Course outcomes:

On successful completion of the course, the student will be able to:

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1. Identify classes, objects, members of a class and the relationships among them needed to solve a specific problem.
2. Use the concept of constructors and destructors.
3. Implement data encapsulation and inheritance
4. Implement polymorphism.
5. Implement virtual functions

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S	S	S	M	M			M	M		
2	S	S	S	S	M	M			M	M		
3	S	S	S	S	M	M		M	M	M		M
4	S	S	S	S	M	M		M	M	M		M
5	S	S	S	S	M	M		M	M	M		M

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	

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	End of Course survey		End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Course Title: Open Source Technology Lab	Course Code : DCS223
Semester : IV	Core / Elective : **Core**
Teaching Scheme in Hrs (L:T:P) : 0**:0:3**	Credits : 2 **Credits**
Type of course : **Practical**	Total Contact Hours : **30**
Continuous Internal Evaluation : **60 Marks**	SEE : **40 Marks**
Programmes: Diploma in Computer Science	

Pre-requisites:

Basic Computer Knowledge, Basic Programming

Course Objectives:

16. Will know UNIX and LINUX concepts
17. Learn about GNU Project and the Free Software Foundation
18. Know how Linux System Administration works.
19. Learn the concept of Memory Management
20. Know Software package Management

Course Content:

12. Introduction To Linux An Introduction to UNIX, Linux, and GNU What Is UNIX,
13. What Is Linux, The GNU Project and the Free Software Foundation
14. Installation of Linux Basic Installation, network based installation

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15. Linux System Administration Process Management with Linux,

16. Memory Management, File System management,

17. User Administration, Linux Startup and Shutdown,

18. Software package Management

19. Shell Programming Shells, Scripting Rationale Creating a bash Script, bash Startup Files,

20. A Script's Environment, Exporting Variables, Exit Status, Programming the Shell,

21. Software Tools C Language and Linux,

22. MySQL Database, Network Simulator, SciLAB configuration, Multimedia, etc.

Reference:

Lab manual

Course outcomes:

On successful completion of the course, the student will be able to:

16. Learn UNIX and LINUX concepts
17. Will know about GNU Project and the Free Software Foundation
18. Know Linux System Administration works.
19. Use the concept of Memory Management
20. Know Software package Management

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S										
2	S	S										
3	S	S		S								
4	S	S		S	S					M		
5	S	S									M	

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What	To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes

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DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Course Title: Web Technology LAB		Course Code	: DCS224
Semester	: IV	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: 0**:0:3**	Credits	: 2 **Credits**
Type of course	: **Practical**	Total Contact Hours	: **30**
Continuous Internal Evaluation	: **60 Marks**	SEE	: **40 Marks**
Programmes: Diploma in Computer Science			

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Pre-requisites:

Basic Computer Lab, Programming Knowledge

Course Objectives:

6. Can use HTML basic tags.
7. Learn how to create web page.
8. Learn how to link HTML pages
9. Know the concept of style sheet and implement style sheets.
10. Use Text fields of HTML

Course Content:

11. Create a biodata of self using HTML with a photograph on the page and containing marks in a table.

12. Develop your web page with 2 Photographs display at the same place flip on mouse over.

13. Link to separate HTML file for academic, sports and other interests.

14. Enhance your web page using style sheets frames and setup a hyper link to your friends page.

15. And 5 Make a form for submission of Querying about the interest rates of bank (use Text fields of HTML) and submit buttons of HTML.

16. Make a local query form, which takes in the input the range of marks through Text fields (of Java) and display the list of students having marks in that range in another window.

17. Enhance the above query through password protection.

18. Build a shopping Cart page in which items of 10 types are picked and quantity and a bill is generated by the web page.

19. Enhance the above page for making a payment through electronic billing system.

20. Associate guest book in your web page.

Reference:

Lab manual

Course outcomes:

On successful completion of the course, the student will be able to:

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6. Use HTML basic tags.
7. Learn to create web page.
8. Learn how to link HTML pages
9. Implement style sheets.
10. Use Text fields of HTML

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S									M	
2	S	S								M		M
3	S	S	S		S			M			M	
4	S	S	S			S			M			M
5	S	S	S					S		M		

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

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Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Course Title: PHP Lab	Course Code : DCS225
Semester : III	Core / Elective : **core**
Teaching Scheme in Hrs (L:T:P) : 0**:0:3**	Credits : 2 **Credits**
Type of course : **Practical**	Total Contact Hours : **30**
Continuous Internal Evaluation : **60 Marks**	SEE : **40 Marks**
Programmes: Diploma in Computer Science	

Pre-requisites:

Basic Computer

Course Objectives:

6. Know Troubleshooting Problems
7. Learn about Motherboard BIOS, BIOS Features
8. Can perform Drive Testing& troubleshooting.
9. Installing Memories
10. Know how Printer Works, Attaching Printer, Installing PrinterDrivers

Course Content:

11. General Troubleshooting Problems

12. Preventive Maintenance

13. Motherboard BIOS, BIOS Features

14. BIOS Troubleshooting, BIOS Upgrades

15. Drive Testing& troubleshooting.

16. Motherboard Components, Expansion Slots

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17. Installing Memories, Upgrade Options & Strategies

18. Troubleshooting Memory

19. How Printer Works, Attaching Printer, Installing PrinterDrivers

20. Error Code, Beep Code, Post Code

Reference:

Lab manual

Course outcomes:

On successful completion of the course, the student will be able to:

6. Can handle Troubleshooting Problems
7. Learn about Motherboard BIOS, BIOS Features
8. Implement Drive Testing& troubleshooting.
9. Installing Memories
10. Attach Printer and Install Printer Drivers

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S				M							
2	S			S	M				M		M	
3	S	S			M					M		M
4	S	S	M		M			M			M	
5	S	S		S			M					

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	

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		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	30
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	45

Course Title: DBMS Lab		Course Code	: DCS228
Semester	: IV	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: 0**:0:3**	Credits	: 2 **Credits**
Type of course	: **Practical**	Total Contact Hours	: **30**
Continuous Internal Evaluation	: **60 Marks**	SEE	: **40 Marks**
Programmes: Diploma in Computer Science			

Pre-requisites:

Basic Computer Knowledge, Basic Programming knowledge

Course Objectives:

6 To discuss about the database and File system.

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7 Different commands used in DDL,

8 Different commands used in DCL, DML etc

9 Use transfer control language commands

10 Learn to implement Nested Queries, Join Queries and Trigger

Course Content:

11. Create a program of Data Definition Language Commands
12. Create a program of Data Manipulation Language Commands
13. Create a program of Data control language
14. Create a program of transfer control language commands
15. Create a program of In Built Functions
16. Create a program of Nested Queries
17. Create a program of Join Queries
18. Create a program of Control Structure
19. Create a program of Procedure and Function
20. Create a program of Trigger

Reference:

Lab manual

Course outcomes:

On successful completion of the course, the student will be able to:

6 Know about the database and File system.

7 Use different commands used in DDL,

8 Use different commands used in DCL, DML etc

9 Use transfer control language commands

10 Implement Nested Queries, Join Queries and Trigger

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S						M				
2	S	S										

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3	S	S	S						M	M		
4	S	S	S								M	
5	S	S			S					M		M

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

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Course Title: ASP.NET with C#		Course Code	: DCS302
Semester	: IV	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: 3**:0:0**	Credits	: 3 **Credits**
Type of course	: **Lecture**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: Diploma in Computer Science			

Pre-requisites:

HTML, Programming Knowledge

Course Objectives:

6. Learn the concept of Asp .net.
7. Know Ado.Net Basics and Ado.Net object model
8. To introduce Catching
9. Learn Application state, Session state
10. Know the concept of Web Services and XML

Course Content:

Topic and Contents	Hours	Marks
UNIT 1 Asp .Net Basics	07	20
d. Understanding the .Net framework – principal, feature, design, gole, Benefits of .Net framework, Event Logging, Performance Counter, Tracing, CTS, CLS, CLR, .Net class library, GIT, Type of GIT, e. Assemblies - version, culture,strong name, Type of Assemblies, Metadata, Manifest, MSIL, Managed and Unmanaged code, Memory Management, Garbage Collection, Security, Reflection, f. WPF, WCF, Window Card Space, GAC, CASPOL, REGEN, ILASM, ILDASM. DLL HELL Problem, Page life cycle.	02 03 02	
UNIT 2 Introduction Ado.NET	06	20
c. Ado.Net Basics, Ado.Net object model, Ado.Net class for OLE DB data source, SQL Server, DataSet, Data View, Data Reader, Data Adapter, Data Table, Data Column, Data Row,	03	

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d. Difference between Ado and Ado.Net, Communication with OLEDB data source using Ado.Net.	03	
UNIT 3 Understanding Caching	08	20
d. Overview, Introduction to Caching, Client dedicated server, Reverse proxy, Absolute expiration and Relative expiration, e. Http Cache Policy, HttpCacheability, Output Cache, HttpCacheVaryByParams, HttpCacheVaryByHeaders, CachingPageOutput f. Data caching, PageFragment Caching, PageOutput caching.	03 03 02	
UNIT 4 State Management	07	20
c. Client state management- View state, Hidden field, Cookies, QueryString, Server state management- Application state, Session state, d. Advantage and Disadvantage of database support.	05 02	
UNIT 5 Web Services and XML	07	20
c. Introduction to xml, Advantage of xml, xml Element, Naming Rules, Attributes, d. Introduction to web service, web service Infrastructure, SOAP, UDDI, WSDL.	04 03	
TOTAL	**36**	**100**

Reference:

4. Beginning ASP.NET 3.5 in C# 2008: From Novice to Professional, Second Edition by Matthew MacDonald
5. ASP .NET Programming with C# & SQL Server (The Web Technologies) by Don Gosselin
6. Developing Web Applications with ASP.NET and C# by Hank Meyne and Scott Davis

Course outcomes:

On successful completion of the course, the student will be able to:

6. Know the concept of Asp .net.
7. Use the basic Ado.Net and Ado.Net object model
8. Know the Catching concept
9. Know and implement Application state, Session state
10. Use the concept of Web Services and XML

Mapping Course Outcomes with Program Outcomes:

Course	Programme Outcomes

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outcomes	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S								M		
2	S	S										
3	S	S									M	
4	S	S										
5	S	S										M

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	
		Graded Assignments		Two Assignments	10	Log of record	
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

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Model Question Paper:

Guidelines for Question Paper Setting:

The question paper must be prepared based on the blue print without changing the weigh age of model fixed for each unit.

The question paper pattern provided should be adhered to

- The paper should have 10 questions in all, wherein it will have 2 questions from each unit.
- Student shall be asked to attempt in all 5 questions, 1 Question from each unit.
- Student shall be given Internal choice in every Unit.

Questions should not be set from the recapitulation topics.

Course Title: OOPs through Java		Course Code	: DCS303
Semester	: V	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: 3**:0:0**	Credits	: 3 **Credits**
Type of course	: **Lecture**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: Diploma in Computer Science			

Pre-requisites:

Basic Computer, OOPs Concepts

Course Objectives:

6 Basic topics considered are programs and program structure.

7 In general, and Java syntax, data types, flow of control, classes, methods, objects, arrays, exception handling, recursion, and graphical user interfaces (GUIs)

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8 Understanding how such applets may access enterprise data bases.

9 Understanding the use of APIs in robust, enterprise three level application developments.

10 Understanding the Java features for secure communications over the internet.

Course Content:

Topic and Contents	Hours	Marks
UNIT 1 Introduction	07	20
c. Overview of Java, Object Oriented Concepts in Java. Abstraction, OOP Principles and Java applications, Java features like security, portability, byte code, d. java virtual machine, object oriented, robust, multithreading, architectural neutral, distributed and dynamic, Data types and Keyword	04 03	
UNIT 2 Operators: and Array	08	20
d. Arithmetic, Bitwise, Relation, increment Decrement, logical, special, Assignment Control Structures, Type Casting , e. Array, Java methods, Classes, Constructor, method overriding, method overloading, abstract class, Inheritance of procedures and Data, f. packages java. lang, java.util and their uses, java.io, basics of networking using Java, Javap, javadoc command And interface, Inner class.	02 03 03	
UNIT 3 String Handling	08	20
d. String handling and various string functions, String Buffer, object class method toString (), hasCode (), equals (), e. Exception handling, multithreaded programming thread priorities, synchronization, messaging, creating and controlling of threads. New(),run(),Wait() ,join() method of thread class, f. Runnable thread and method ,i/o stream, garbage collection, externalization	02 04 02	
UNIT 4 Applet	06	20

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c. Java utilities like Applets, Java applets and their use – Event Handling – AWT and working with Windows – Event Handling – Event Handling Mechanisms, d. Delegation Event Model, Event Class, Event Listener Interfaces, Adapter Classes, Inner Class.	03 03	
UNIT 5 AWT and working with windows AWT	06	20
c. AWT and working with windows AWT, Classes, Window fundamentals, frame windows, frame window in An Applet, d. Working with Graphics, color, fonts and text. , JAR files	05 03	
TOTAL	**36**	**100**

Reference:

4 Herbert Scheldt: JAVA 2 - The Complete Reference, TMH, Delhi

5 Deitel: How to Program JAVA, PHI

6 U.K. Chakraborty and D.G. Dastidar: Software and Systems – An Introduction, Wheeler Publishing, Delhi.

Course outcomes:

On successful completion of the course, the student will be able to:

6 Demonstrate knowledge of Java technology,

7 The Java programming language, and the product life cycle

8 Use various Java programming language constructs to create several Java technology applications

9 Use decision and looping constructs and methods to dictate program flow

10 Implement intermediate Java technology programming and object-oriented (OO) concepts in Java technology programs.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S			S					M		M
2	S	S		S								
3	S	S	S			S			M		M	
4	S	S	S	S				M				
5	S	S							M	M		

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S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	
		Graded Assignments		Two Assignments	10	Log of record	
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Model Question Paper:

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Guidelines for Question Paper Setting:

The question paper must be prepared based on the blue print without changing the weigh age of model fixed for each unit.

The question paper pattern provided should be adhered to

- The paper should have 10 questions in all, wherein it will have 2 questions from each unit.
- Student shall be asked to attempt in all 5 questions, 1 Question from each unit.
- Student shall be given Internal choice in every Unit.

Questions should not be set from the recapitulation topics.

Course Title: Data Mining & data warehousing		Course Code	: DCS304
Semester	: VI	Core / Elective	: **core**
Teaching Scheme in Hrs (L:T:P)	: 3**:0:0**	Credits	: 3 **Credits**
Type of course	: **Lecture**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: Diploma in Computer Science			

Pre-requisites:

Data base management System

Course Objectives:

11 Introduction to Data mining and data warehousing, To introduce how data is preprocessed and noise and clustering is done.

12 Introduction to statistical and transactional data are handled and preprocessed

13 Introduction to data warehousing, data cubes, and star, snowflake techniques to handle multidimensional data's.

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14 What is prediction and classification? Introduction to density based, Grid Based Methods, Model Based Method and 3-tier architecture

15 Introduction to Query Facility, OLAP function and Tools. ROLAP, MOLAP, HOLAP, Security, Backup and Recovery, Tuning Data Warehouse, Testing Data Warehouse.

Course Content:

Topic and Contents	Hours	Marks
UNIT 1 Introduction	07	20
c. Overview, Motivation(for Data Mining),Data Mining- Definition & Functionalities, Data Processing, Form of Data Preprocessing, Data Cleaning: Missing Values, Noisy Data,(Binning, Clustering, Regression, Computer and Human inspection), d. Inconsistent Data, Data Integration and Transformation. Data Reduction:-Data Cube Aggregation, Dimensionality reduction, Data Compression, Numerosity Reduction, Clustering, Discretization and Concept hierarchy generation.	04 03	
UNIT 2 Concept Description	07	20
c. Definition, Data Generalization, Analytical Characterization, Analysis of attribute relevance, Mining Class comparisons, Statistical measures in large Databases. Measuring Central Tendency, Measuring Dispersion of Data, Graph Displays of Basic Statistical class Description, d. Mining Association Rules in Large Databases, Association rule mining, mining Single-Dimensional Boolean Association rules from Transactional Databases– Apriori Algorithm, Mining Multilevel Association rules from Transaction Databases and Mining Multi- Dimensional Association rules from Relational Databases.	04 03	
UNIT 3 Classification and Grid Based Methods	08	20

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c. What is Classification & Prediction, Issues regarding Classification and prediction,Decision tree, Bayesian Classification, Classification by Back propagation, Multilayer feed-forward Neural Network, Back propagation Algorithm, Classification methods K-nearest neighbor classifiers, Genetic Algorithm. d. Grid Based Methods- STING, CLIQUE. Model Based Method –Statistical Approach, Neural Networkapproach, Outlier Analysis	04 04	
UNIT 4 Data Warehousing	07	20
c. Overview, Definition, Delivery Process, Difference between Database System and Data Warehouse, Multi Dimensional Data Model, Data Cubes, d. Stars, Snow Flakes, Fact Constellations, Concept hierarchy, Process Architecture, 3 Tier Architecture, Data Marking	04 03	
UNIT 5 Aggregation	06	20
c. Aggregation, Historical information, Query Facility, OLAP function and Tools. OLAP Servers, ROLAP, MOLAP, HOLAP, d. Data Mining interface, Security, Backup and Recovery, Tuning Data Warehouse, Testing Data Warehouse	03 03	
TOTAL	**36**	**100**

Reference:

2 Kamber “Data Mining and Ware housing”

Course outcomes:

On successful completion of the course, the student will be able to:

5 Get knowledge about data mining and warehousing and how data is preprocessed when amount of data is large

6 They are able to understand how statistical and transactional data are handled and preprocessed How to use and implements the multidimensional data cubes and techniques which can handle these data’s.

7 How different types of prediction and classification based model and methods can handle these techniques.

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8 They can use OLAP tools and able to take backup and recovery of data.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S				S						
2	S	S		S				M			M	
3	S	S			S				M		M	
4	S	S	S		S					M		M

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	
		Graded Assignments		Two Assignments	10	Log of record	
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl.	Educational Component	Weightage

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No.		(%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Model Question Paper:

Guidelines for Question Paper Setting:

The question paper must be prepared based on the blue print without changing the weigh age of model fixed for each unit.

The question paper pattern provided should be adhered to

- The paper should have 10 questions in all, wherein it will have 2 questions from each unit.
- Student shall be asked to attempt in all 5 questions, 1 Question from each unit.
- Student shall be given Internal choice in every Unit.

Questions should not be set from the recapitulation topics.

Course Title: Desktop Publishing & Multimedia		Course Code	: DCS305
Semester	: V	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: 3**:0:0**	Credits	: 3 **Credits**
Type of course	: **Lecture**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: Diploma in Computer Science			

Pre-requisites:

Basic Computer

Course Objectives:

6 To introduce the preliminary concepts of Multimedia.

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7 We will discuss theVarious benefits and applications of multimedia.

8 To introduce the different multimedia building blocks such as Text , Images Animation, Audio, Video.

9 To introduce the how images are captured and incorporated into a multimedia presentation.

10 Different image file formats and the different color representations have been discussed.

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Course Content:

Topic and Contents	Hours	Marks
UNIT 1 Introduction to Multimedia	07	20
c. Definition, classification (discrete, continuous, passive, interactive), properties. Medium perception, representation, presentation, storage, and transmission, d. MM hardware, application areas, stages of MM project, design issues (speed, simplicity, clarity, consistency, ease of use, and navigation)	03 04	
UNIT 2 Text	08	20
c. Text importance, encoding, fonts (type, size, style, leading, and kerning), text in MM (font design, menus, buttons, fields, portrait, landscape), d. editing design tools, hypertext vs. hypermedia, Sound terminology (acoustic, electromagnetic wave, cycle, frequency, amplitude, decibel)	04 04	
UNIT 3 File Formats	08	20
(t) MIDI files (creation, size, advantages, and disadvantages). MIDI vs. digital audio, Speech: generation (TTS), recognition (STT), applications, (u) Sound summary, Digital image (bitmap, vector graphic), Bitmap (pixels, color encoding, palette, and models, resolution), (v) Vector graphics (types, properties, drawing, advantages, disadvantages, file size)	03 03 02	
UNIT 4 Animation	06	20

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(s) transition, cell animation (key frames, tweening, layers, morphing, formats), Video: concepts, standards, capturing, analog vs. digital, TV vs, computer video, (t) compression and streaming. Encoding requirements (entropy, source, and adaptive),	03 03	
UNIT 5 Compression	06	20
r. Compression (symmetric vs. asymmetric, dialogue mode vs. retrieval mode, RLE, Huffman), s. Compression techniques (JPEG and MPEG).	03 03	
TOTAL	**36**	**100**

Reference:

4 Tay Vaughan."Multimedia, Making IT Works", TMH.

5 Khalid Sayood."Introduction to data compression"Pearson Education.

6 Rosch, "Multimedia Bible ",Sams publishing.

Course outcomes:

On successful completion of the course, the student will be able to:

6 Multimedia is a woven combination of text, audio, video, images and animation.

7 The importance of text in multimedia and the difference between fonts and typefaces

8 Character sets used in computers and their significance

9 The Student learns various technique of Data compression.

10 Audio is an important component of multimedia which can be used to provide

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S										
2	S	S				S			M			M
3	S	S	S							M		
4	S	S	S	S							M	M
5	S	S			S					M		

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

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The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	
		Graded Assignments		Two Assignments	10	Log of record	
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Model Question Paper:

Guidelines for Question Paper Setting:

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The question paper must be prepared based on the blue print without changing the weigh age of model fixed for each unit.

The question paper pattern provided should be adhered to

- The paper should have 10 questions in all, wherein it will have 2 questions from each unit.
- Student shall be asked to attempt in all 5 questions, 1 Question from each unit.
- Student shall be given Internal choice in every Unit.

Questions should not be set from the recapitulation topics.

Course Title: Mobile Computing		Course Code	: DCS306
Semester	: VI	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: 3**:0:0**	Credits	: 3 **Credits**
Type of course	: **Lecture**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: Diploma in Computer Science			

Pre-requisites:

Basic Computer Network

Course Objectives:

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6 To introduce about the mobile computing, basic concept of wireless LAN and how the data are transmitted by infrastructure and Ad-Hoc basis.

7 Explaining the concept of GPRS , GSM and UMTS network

8 How the mobile agent is useful in wireless networking and the architecture of mobile agents and fault tolerance techniques.

9 How we store the mobile data, storage management, consistency of the database and the replication of the mobile data base.

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10 To introduce the Ad-Hoc network algorithm Like TORA , DSDV, AODV , GSR DSR and the implementation.

Course Content:

Topic and Contents	Hours	Marks
UNIT 1 Introduction	07	20
c. Issues in mobile computing, overview of wireless telephony: cellular concept, GSM: air-interface, channel structure, d. location management: HLR-VLR, hierarchical, handoffs, channel allocation in cellular systems, CDMA, GPRS.	04 03	
UNIT 2 Wireless Networking	07	20
c. Wireless LAN Overview: MAC issues, IEEE 802.11, Blue Tooth, Wireless multiple access protocols, TCP over wireless, d. Wireless applications, data broadcasting, Mobile IP, WAP: Architecture, protocol stack, application environment, applications.	04 03	
UNIT 3 Data management	07	20
c. Data management issues, data replication for mobile computers, d. adaptive clustering for mobile wireless networks, File system, Disconnected operations.	04 03	

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UNIT 4 Mobile Agents	06	20
c. Mobile Agents computing, security and fault tolerance, d. transaction processing in mobile computing environment.	03 03	
UNIT 5 Ad Hoc networks	08	20
d. Ad Hoc networks introduction, localization, MAC issues, Routing protocols, global state routing (GSR), e. Destination sequenced distance vector routing (DSDV), Dynamic source routing (DSR), Ad Hoc on demand distance vector routing (AODV), c. f. Temporary ordered routing algorithm (TORA), QoS in Ad Hoc Networks, applications.	03 02 03	
TOTAL	**36**	**100**

Reference:

5 J. Schiller, "Mobile Communications", Addison Wesley.

6 Charles Perkins, "Mobile IP", Addison Wesley.

7 Charles Perkins, "Ad hoc Networks" , Addison Wesley**.**

8 Upadhyaya, "Mobile Computing", Springer

Course outcomes:

On successful completion of the course, the student will be able to:

6 Get knowledge about the how are data transmitted on wireless and the benefits of transferring the data using infrastructure and Ad-Hoc basis

7 What is GPRS, GSM techniques of wireless network?

8 How the mobile agents work and the usefulness of mobile agents architecture

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9 How the mobile data are stored and problems related to store the mobile data.

10 How the Ad-Hoc algorithm works

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S										
2	S	S									M	
3	S	S		S							M	
4	S	S			S				M			M
5	S	S										M

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	
		Graded Assignments		Two Assignments	10	Log of record	
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

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Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Model Question Paper:

Guidelines for Question Paper Setting:

The question paper must be prepared based on the blue print without changing the weigh age of model fixed for each unit.

The question paper pattern provided should be adhered to

- The paper should have 10 questions in all, wherein it will have 2 questions from each unit.
- Student shall be asked to attempt in all 5 questions, 1 Question from each unit.
- Student shall be given Internal choice in every Unit.

Questions should not be set from the recapitulation topics.

Course Title: Network Security & Management		Course Code	: DCS307
Semester	: V	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: 3**:0:0**	Credits	: 3 **Credits**
Type of course	: **Lecture**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: Diploma in Computer Science			

Pre-requisites:

Basic Computer

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Course Objectives:

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6. To introduce about the security concept and cryptography apply on the information which are transmitted on the network
7. explaining the DES, IDEA, AES, symmetric key algorithm and practice on them
8. explaining the asymmetric key algorithm like RSA, digital signature, SHA, HMAC algorithm and practice on them
9. Explaining viruses, firewalls and security on electronic transaction and practice on them.
10. to introduce how we can transfer our information on network by using S/MIME,PGP protocols and practice on them

Course Content:

Topic and Contents	Hours	Marks
UNIT 1 Introduction	06	20
(q) Introduction to security attacks, services and mechanism, introduction to cryptography. **(r)** Conventional Encryption: Conventional encryption model, classical encryption techniques- substitution ciphers and transposition ciphers, cryptanalysis, stereography, stream and block ciphers	03 03	
UNIT 2 Modern Block Ciphers	07	20
c. Modern Block Ciphers: Block ciphers principals, Shannon's theory of confusion and diffusion, festal structure, data encryption standard(DES), strength of DES, differential and linear crypt analysis of DES, block cipher d. modes of operations, triple DES, IDEA encryption and decryption, strength of IDEA, confidentiality using conventional encryption, traffic confidentiality, key distribution, random number generation	03 04	
UNIT 3 Introduction to graph	07	20
c. ring and field, prime and relative prime numbers, modular arithmetic Fermat's and Euler's theorem, primality testing, Euclid's Algorithm, Chinese Remainder theorem, discrete	03 04	

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logarithms. d. Principals of public key crypto systems, RSA algorithm, security of RSA, key management, Diffle-Hellman key exchange algorithm, introductory idea of Elliptic curve cryptography, Elganel encryption		
UNIT 4 Message Authentication and Hash Function	08	20
d. Message Authentication and Hash Function: Authentication requirements, authentication functions, message authentication code e. Hash functions, birthday attacks, security of hash functions and MACS, MD5 message digest algorithm, Secure hash algorithm (SHA). f. Digital Signatures: Digital Signatures, authentication protocols, digital signature standards (DSS), proof of digital signature algorithm	03 03 02	
UNIT 5 Authentication Applications	07	20
Kerberos and X.509, directory authentication service, electronic mail security-pretty good privacy (PGP), S/MIME	04 04	
TOTAL	**36**	**100**

Reference:

- "Cryptography and Network Security" - William Stallings - LPE edition.
- "Cryptography and Network Security" – Atul Kahate - TMH Publication
- "Information security: Principal And practice "- Mark Stamp –Willy publication

Course outcomes:

On successful completion of the course, the student will be able to:

6. Get knowledge about the security and cryptographic rules which are applied on the information
7. How the symmetric key algorithm like DES, IDEA, AES will work on the network
8. How the asymmetric key algorithm like RSA, digital signature, SHA, HMAC will work on the network
9. How virus can damaged our system and advantages of using firewall

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10. How our E-mail are transferred on the network and how security are taken on the network

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S			S					M	M	
2	S		S					M				
3	S	S		S		S			M		M	
4	S	S		S			M			M		M
5	S	S		S					M		M	

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	
		Graded Assignments		Two Assignments	10	Log of record	
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

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Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Model Question Paper:

Guidelines for Question Paper Setting:

The question paper must be prepared based on the blue print without changing the weigh age of model fixed for each unit.

The question paper pattern provided should be adhered to

- The paper should have 10 questions in all, wherein it will have 2 questions from each unit.
- Student shall be asked to attempt in all 5 questions, 1 Question from each unit.
- Student shall be given Internal choice in every Unit.

Questions should not be set from the recapitulation topics.

Course Title: System Anaylsis & Designing		Course Code	: DCS309
Semester	: V	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: 3**:0:0**	Credits	: 3 **Credits**
Type of course	: **Lecture**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: Diploma in Computer Science			

Pre-requisites:

Fundamental of Computer.

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Course Objectives:

6. Learn System concepts and system development life cycle.
7. Can perform secure feasible study.
8. Know about tools of System Design.
9. Learn the concept of system testing & quality.
10. Know the concept of system security.

Course Content:

Topic and Contents	Hours	Marks
UNIT 1 System Concept	07	20
c. Definition, Characteristics, Elements of system, Physical and abstract system, open and closed system, man-made information systems. d. System Development Life Cycle: Various phases of system development, Considerations for system planning and control for system success. System Planning.	03 04	
UNIT 2 Initial Investigation	07	20
d. Determining user's requirements and analysis, fact finding process and techniques. e. Feasibility study: Determination of feasibility study, Technical, Operational & Economic Feasibilities, System performance constraints, and identification of system objectives, feasibility report. f. Cost/Benefit Analysis of the new/proposed system	02 03 02	
UNIT 3 Structured Analysis and Design	06	20
c. Tools of System Analysis d. Structured Design: Tools of System Design with I/O and Form Design.	03 03	
UNIT 4 Documentation for the new system	08	20
c. User Manual, system development manual, programming manual, programming specifications, operator manual. d. System testing & quality: System testing and quality assurance, steps in system implementation and software maintenance.	03 05	
UNIT 5 System security	07	20

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c. Data Security, Disaster/ recovery and ethics in system development, threat and risk analysis. d. Hardware and software procurement – In-house purchase v/s hiring and lease	04 03	
TOTAL	**36**	**100**

Reference:

3. System Analysis & Design by V K Jain, Dreamtech Press
4. Modern System Analysis & Design by A Hoffer, F George, S Valaciah Low Priced Ed. Pearson Education

Course outcomes:

On successful completion of the course, the student will be able to:

6. Learn System concepts and system development life cycle.
7. Can perform secure feasible study.
8. Know about tools of System Design.
9. Learn the concept of system testing & quality.
10. Know the concept of system security.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S										
2	S	S	S									
3	S	S			S						M	
4	S	S										
5	S	S			S							M

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	

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		Graded Assignments		Two Assignments	10	Log of record	
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Model Question Paper:

Guidelines for Question Paper Setting:

The question paper must be prepared based on the blue print without changing the weigh age of model fixed for each unit.

The question paper pattern provided should be adhered to

- The paper should have 10 questions in all, wherein it will have 2 questions from each unit.
- Student shall be asked to attempt in all 5 questions, 1 Question from each unit.
- Student shall be given Internal choice in every Unit.

Questions should not be set from the recapitulation topics.

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Course Title: PHP Lab		Course Code	: DCS225
Semester	: III	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: 0**:0:3**	Credits	: 2 **Credits**
Type of course	: **Practical**	Total Contact Hours	: **30**
Continuous Internal Evaluation	: **60 Marks**	SEE	: **40 Marks**
Programmes: Diploma in Computer Science			

Pre-requisites:

Basic C

Course Objectives:

6. Work with PHP
7. Identify and implement basic data types in PHP.
8. Implement control statement using PHP.
9. Identify and implement strings in PHP.
10. Understand, analyze and build web applications using PHP.

Course Content:

12. Write a Program to check and print whether a given number is even or odd.3.

13. Write a program to compute net amount from the given quantity purchased and rate per quantity.Discount @10% is allowed if the quantity purchased exceeds 100.4.

14. Write a program to find largest among three numbers using ternary operators.5.

15. Write a program to print sum of digits of a given number. (using while loop)6.

16. Write a program to print Fibonacci series upto a given number.7.

17. Write a program to enter numbers till the user wants. At the end it should display the count ofpositive, negative and zeros entered. (Using do-while loop)8.

18. Write a function countWords ($str) that takes any string of characters and finds the Number of timeseach word occurs. You should ignore the distinction between capital and lowercase letters.9.

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19. Create a form with one text field and submit buttons for string length, string reverse and uppercase,lowercase, string replace. Display the result accordingly.10.

20. Write a Menu-Driven program to implement a calculator which performs only addition, subtraction,multiplication and division. The operation should happen based on the user choice. (use switch case)11.

21. Write a function to swap two string values using call by value and call by references.12.

22. Write a program that will accept an array of integers as input, and output an array where for eachitem in the source array, the new array will perform the following operations:
    - For even numbers divide by 2
    - For odd numbers multiply by 3

Reference:

Lab manual

Course outcomes:

On successful completion of the course, the student will be able to:

6. Work with PHP
7. Implement basic data types in PHP.
8. Implement control statement using PHP.
9. Implement strings in PHP.
10. Build web applications using PHP.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S							M			
2	S	S										
3	S	S		S							M	
4	S	S		S		S						M
5	S	S		S							M	M

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
ASSIGNMENTS	CIE	Attendance	Student	Every lab	10	Attendance Register	

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		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Course Title: ASP.Net with C# Lab		Course Code	: DCS312
Semester	: VI	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: 0**:0:3**	Credits	: 2 **Credits**
Type of course	: **Practical**	Total Contact Hours	: **30**
Continuous Internal Evaluation	: **60 Marks**	SEE	: **40 Marks**
Programmes: Diploma in Computer Science			

Pre-requisites:

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HTML, Programming

Course Objectives:

6. Implement SQL commands.
7. Implementation of data source in different views.
8. Implement Ado.net.
9. Create master page.
10. Insert data in menu list and learn tier architecture.

Course Content:

5. Introduction to SQL data source , grid view, detail view, Data list
6. By using SQL data source insert the data in the grid view, detail view, repeater, form view , Data list
7. By using grid view insert the record in the grid view and select particular record and find out the detail to the another grid view with in page or another page.
8. 5. By using Ado.net insert the record in the database and also the display the record.(with different validation controls)
11. Use of the master page
12. Use of themes
13. Insert the data in the drop down menu and select the particular record from the drop down menu and find out the related information into the another drop down menu
14. Use of three tier architecture
15. Use of the config file

Reference:

Lab manual

Course outcomes:

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On successful completion of the course, the student will be able to:

6. Use SQL commands.
7. Implement data source in different views.
8. Implement Ado.net.
9. Create master page with various features.
10. Know the concept of tier architecture and implement it.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S										
2	S	S										
3	S	S										
4	S	S										
5	S	S										

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
RECT ASSESSM	Student feedback		Students	Middle of the course	-NA-	Feedback forms	

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	End of Course survey		End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Course Title: Data Mining & data warehousing Lab		Course Code	: DCS314
Semester	: VI	Core / Elective	: **Elective**
Teaching Scheme in Hrs (L:T:P)	: 0**:0:3**	Credits	: 2 **Credits**
Type of course	: **Practical**	Total Contact Hours	: **30**
Continuous Internal Evaluation	: **60 Marks**	SEE	: **40 Marks**
Programmes: Diploma in Computer Science			

Pre-requisites:

Data base management System

Course Objectives:

16 The objective of the lab exercises is to use data mining techniques to use standard databases available to understand DM processes using any DM tool.

17 Using IBM OLAP Miner – Understand the use of data mining for evaluating the content of multidimensional cubes.

18 Using Teradata Warehouse Miner – Create mining models that are executed in SQL.

19 Import metadata from specific business intelligence tools and populate a Meta data repository.

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20 Design and build a Data Warehouse using bottom up approach titled 'Citizen Information System'.

Course Content:

5. Gain insight for running pre- defined decision trees and explore results using MS OLAP Analytics.
6. Using IBM OLAP Miner – Understand the use of data mining for evaluating the content of multidimensional cubes.
7. Using Teradata Warehouse Miner – Create mining models that are executed in SQL. (Portal work : The objective of this lab exercises is to integrate pre-built reports into a portal application)
8. 5. Publish and analyze a business intelligence portal.

Metadata & ETL Lab: The objective of this lab exercises is to implement metadata import agents to pull metadata from leading business intelligence tools and populate a metadata repository. To understand ETL processes

11. Import metadata from specific business intelligence tools and populate a meta data repository.
12. Publish metadata stored in the repository.
13. Load data from heterogeneous sources including text files into a pre-defined warehouse schema.

CASE STUDY:

14. Design a data mart from scratch to store the credit history of customers of a bank. Use this credit profiling to process future loan applications.
15. Design and build a Data Warehouse using bottom up approach titled 'Citizen

Reference:

Lab manual

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Course outcomes:

On successful completion of the course, the student will be able to:

6 Exercises shall be given on how to use and implement the data mining tools.

7 Exercise using IBM OLAP Miner

8 Exercise using Tera data Warehouse Miner

9 Case study to Design a data mart from scratch to store the credit history of customers of a bank. Use this credit profiling to process future loan applications.

10 Case study to Design and build a Data Warehouse using bottom up approach titled 'Citizen Information System'.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S					S			M		
2	S	S										
3	S	S		S			S	M			M	
4	S	S								M		
5	S	S			S		M					

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		

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	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Course Title: OOPs Lab in Java		Course Code	: DCS315
Semester	: V	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: 0**:0:3**	Credits	: 2 **Credits**
Type of course	: **Practical**	Total Contact Hours	: **30**
Continuous Internal Evaluation	: **60 Marks**	SEE	: **40 Marks**
Programmes: Diploma in Computer Science			

Pre-requisites:

Basic C programming, OOPS concepts

Course Objectives:

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7 Develop an in depth understanding of programming in Java: data types, variables, operators, operator precedence, Decision and control statements, arrays, switch statement, Iteration Statements, Jump Statements, Using break, Using continue, return.

8 Write Object Oriented programs in Java: Objects, Classes constructors, returning and passing objects as parameter, Inheritance, Access Control, Using super, final with inheritance Overloading and overriding methods, Abstract classes, Extended classes.

9 Develop understanding to developing Strings a

10 Develop understanding of exception handling and Exception handling fundamentals, Exception types, uncaught exceptions, try, catch and multiple catch statements.

11 Usage of throw, throws and finally.

12 Develop applications involving Applet: Applet Fundamentals, using paint method and drawing polygons.

Course Content:

11. For to print on Screen.
12. For to calculate area of a circle.
13. Demo of arithmetic operators
14. On Boolean Operators.
15. Demo of Character
16. Demo of Comparison Operator.
17. Program for implement method over-loading.
18. Program for implement method over-ridding.
19. Program for implementation of exception handling
20. Applet programs

Reference:
Lab manual

Course outcomes:
On successful completion of the course, the student will be able to:

6 Students learn Object Oriented Programming features.

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7 Students learn inheritance, polymorphism,

8 Learn access control and overloading and overriding.

9 Students learn exception handling and file handling.

10 Students able to develop applet applications.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S								M		M
2	S	S		S				M				
3	S	S	S		S						M	
4	S	S	S			S				M		
5	S	S	S			S				M		M

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

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Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Course Title: Python Lab	Course Code : DCS317
Semester : V	Core / Elective : **Core**
Teaching Scheme in Hrs (L:T:P) : 0**:0:3**	Credits : 2 **Credits**
Type of course : **Practical**	Total Contact Hours : **30**
Continuous Internal Evaluation : **60 Marks**	SEE : **40 Marks**
Programmes: Diploma in Computer Science	

Pre-requisites:

Basic Computer

Course Objectives:

8. execute a Python script at the shell prompt
9. use Python types, expressions, and None
10. use string literals and string type
11. use Python statements (if...elif..else, for, pass, continue, . .)
12. understand the difference between expressions and statement
13. understand assignment semantics
14.

Course Content:

11. Create a program Python script at the shell prompt
12. Write a program using Python types, expressions, and None
13. Write a program using string literals and string type
14. Write a program using Python statements (if...elif..else, for, pass, continue, . .)

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15. Write a program understand the difference between expressions and statement
16. Write a program understand assignment semantics
17. Write a program using write and call a simple function.
18. Write a program using read from and write to a text file.
19. Write a program understand interpreter and compilers: CPython, PyPy, Cython
20. Write a program using demonstration of IDE's: IDLE, IPython, IPython Notebook, hosted environments

Reference:

Lab manual

Course outcomes:

On successful completion of the course, the student will be able to:

5. Students can create websites what they want from any multimedia software tools.
6. Students can make games by using multimedia concepts.
7. There are so many application of multimedia in various fields like in education, in schools, in business, in communication.
8. So students by performing in this lab can make their future in one of field.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S			S					M		
2	S			S				M				M
3	S		S						M			
4	S	S	S				M				M	
5	S	S			S			M				M

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	

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		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Course Title: Network Security Lab		Course Code	: DCS319
Semester	: V	Core / Elective	: **Elective**
Teaching Scheme in Hrs (L:T:P)	: 0**:0:3**	Credits	: 2 **Credits**
Type of course	: **Practical**	Total Contact Hours	: **30**
Continuous Internal Evaluation	: **60 Marks**	SEE	: **40 Marks**
Programmes: Diploma in Computer Science			

Pre-requisites:

C Programming, OOPs

Course Objectives:

6. Learn encryption and decryption techniques
7. Implement fiestel Cipher model
8. Work with Diffie- Hellman Key Exchange

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9. Implement Hashing Techniques and RSA algorithm
10. Implement enveloping of keys

Course Content:

9. Write a Program in C++ to encrypt & decrypt a text message using stream cipher.
10. Write a Program in C++ to encrypt & decrypt a text message using block cipher.
11. Write a Program in C++ to encrypt & decrypt a text/document file.
12. Write a Program in C++ to implement fiestel Cipher model.
13. Write a Program in C++ to implement Diffie- Hellman Key Exchange.
14. Write a Program in C++ to implement Hashing Techniques.
15. Write a Program in C++ to implement RSA Algorithm.
16. Write a Program in C++ to implement enveloping of keys

Reference:

Lab manual

Course outcomes:

On successful completion of the course, the student will be able to:

6. Implement encryption and decryption techniques
7. Implement fiestel Cipher model
8. Implement Diffie- Hellman Key Exchange
9. Implement Hashing Techniques and RSA algorithm
10. Implement enveloping of keys

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S					S					M
2	S	S				S					M	
3	S	S		S					M			
4	S	S		S						M		
5	S	S			S						M	

S: Strong relationship M: Moderate relationship

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

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Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Attendance	Student	Every lab	10	Attendance Register	
		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	25
3	Analysis and Evaluation	40

Course Title: **MAT LAB**		Course Code	: **DEE377**
Semester	: **VI**	Core / Elective	: **Elective**
Teaching Scheme in Hrs (L:T:P)	: **0:0:3**	Credits	: **2 Credits**
Type of course	: **Practical**	Total Contact Hours	: **30**
Continuous Internal Evaluation	: **60 Marks**	SEE	: **40 Marks**

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Programmes: **Diploma in Electrical Engineering**

Pre-requisites:

Basics in Computer Programming, different curves of basic Electrical signals.

Course Objectives:

28. Apply and evaluate Simulation technique for the basic concept of Electrical Signals.
29. Analyse the knowledge of curves via Simulation.
30. Evaluate the different input signals used in Filters.
31. Analyse the Low Pass and High Pass filters.
32. Create the basic concept of simulation (MAT lab).

Course Content:

LIST OF EXPERIMENTS	
01.	WAP to draw the curve of the line
02.	WAP to draw the curve of Cos (x).
03.	WAP to draw the curve of exp(x).
04.	WAP to draw the curve of sine
05.	WAP to draw the curve of a line
06.	WAP to draw the curve of parabola.
07.	WAP to design an Ahebshev type-1 low pass filter.
08.	WAP a program for the chebyster type-1 high pars filter.
09.	WAP to design band reject filter.
10.	WAP to Implements logic gates AND and OR.

Course outcomes:

On successful completion of the course, the student will be able to:

22. Find the Information of any input signal used in electrical equipments.
23. Find the solution of problem dependent on Low and High pass filters.
24. Determine the difference between Band reject and Band Pass Filters.
25. Solve the problems related to AND and OR gate.

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Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S				M						S	
2		S						M				
3	M		S									
4	S	S								S		

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	30
2	Applying the knowledge acquired from the course	35
3	Analysis and Evaluation	35

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
ASSIGNMENTS	CIE	Attendance	Student	Every lab	10	Attendance Register	

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		Performance+ Record+ viva		Every lab	30	Lab Record	
		Project		Every lab	20	Project Report	
				Total	**60**		
	ESE	End Sem Evaluation		End of the course	40	Answer scripts at SGVU	
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	
	End of Course survey			End of course		Questionnaire	

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Course Title: **BASIC ECONOMICS AND SOCIAL SCIENCES**		Course Code	: **DHS231**
Semester	: **III**	Core / Elective	: **Elective**
Teaching Scheme in Hrs (L:T:P)	: **2:0:0**	Credits	: **3 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **25**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: **Diploma in Electrical Engineering**			

Pre-requisites:

Knowledge of Basic Physics at Sec. and Sr. Sec. Level.

Course Objectives:

33. This course supposed to give the knowledge of basic concept of economics.
34. Analyse the Applications and scope of Micro Economics.
35. Analyse the Concept of Demand and supply.
36. Evaluate the Basic concept of economics in social reforms in India.

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37. Analyse the problems faced by Political Economy.

Course Content:

Topic and Contents	Hours	Marks
UNIT-1: Introduction	05	20
Definition meaning, nature and scope of economics.		
UNITS-2: Micro Economics	05	20
Definition, meaning and scope of Micro Economics. Importance and limitations.		
UNITS-3: Concept of Demand and supply	05	20
Utility Analysis, Law of Demand, Law of Supply		
UNIT-4: Introduction to social Sciences	05	20
Social Change: Causes and impacts, reforms in India.		
UNIT 5: Political Economy	05	20
New Economic reform, Entrepreneurship and Small scale business management.		
TOTAL	**25**	**100**

Reference:

3. Micro Economics by M. L. Sethi
4. Micro Economics by T.R Jain

Course outcomes:

On successful completion of the course, the student will be able to:

26. The course content gives full knowledge to learn nature and scope of economics.
27. Find the solution of problem dependent on Micro Economics.
28. Solve the problems related to Law of Demand, Law of Supply.
29. Enable students to solve difficulties face in social reforms and political economics.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S				S			M			
2	M	S		S				S			S	
3	S	M			S				M			
4	S	S		S			S					S

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S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	30
2	Applying the knowledge acquired from the course	40
3	Analysis and Evaluation	30

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9

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INDIRECT ASSESSMENT	Student feedback	Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course
	End of Course survey		End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Model Question Paper:

Guidelines for Question Paper Setting:

The question paper must be prepared based on the blue print without changing the weigh age of model fixed for each unit.

The question paper pattern provided should be adhered to

- The paper should have 10 questions in all, wherein it will have 2 questions from each unit.
- Student shall be asked to attempt in all 5 questions, 1 Question from each unit.
- Student shall be given internal choice in every Unit.

Questions should not be set from the recapitulation topics.

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Course Title: **ENTREPRENEURSHIP**		Course Code	: **DHS232**
Semester	: **IV**	Core / Elective	: **Elective**
Teaching Scheme in Hrs (L:T:P)	: **2:0:0**	Credits	: **2 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **35**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: **Diploma in Electrical Engineering**			

Pre-requisites:

Knowledge of Basic Business Market and Industry.

Course Objectives:

38. This course supposed to give the knowledge of how an entrepreneur can make his business successful.
39. Analyse the Location of Industrial Units.
40. Analyse how the size and pricing of a firm can affect the business.
41. Evaluate the Financing of Small Industries.
42. Analyse the problems faced by small enterprises.
43. Create the basic concept of Entrepreneurship.

Course Content:

Topic and Contents	Hours	Marks
UNIT-1: PROMOTION OF ENTREPRENEURSHIP	08	20
Meaning, definition and functions of an entrepreneur, qualities of a good entrepreneur; Role of Entrepreneur in economic development. Government measures for the promotion of small scale industries with special reference to Haryana. Cultural factors in developing entrepreneurship.		
UNITS-2: OWNERSHIP AND LOCATION OF INDUSTRIAL UNITS	06	20
Different forms of Industrial Organization. Theories of Industrial location. Process of preparing project reports.		
UNITS-3: SIZE OF FIRM AND PRICING	07	20

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Concept of optimum firm, factors determining optimum size, Technical, Managerial, Marketing Uncertainties and risk. Pricing Methods, Policies and procedures.		
UNIT-4: FINANCING OF SMALL INDUSTRIES	08	20
Importance and need: Commercial Banks and term lending in India; Banks and under-writing of capital issues; Brief description about the role of other financial agencies as: • Industrial Finance Corporation of India • State Financial Corporation • Industrial Development Bank of India • Unit Trust of India.		
UNIT 5: PROBLEMS FACED BY SMALL ENTERPRISES	06	20
Problems connected with Marketing: • Management of New Products • Power, Finance, Raw Material • Under-utilization of capacity Causes of under utilization; Rehabilitation of Sick Mills.		
TOTAL	**35**	**100**

Reference:

5. Entrepreneurship of Small Industries- Deshpande Manohar D. (Asian Publisher, New Delhi)
6. Environment & Entrepreneur- Tandon B.C. (Asian Publishers, New delhi)
7. The Industrial Economy of India- Kuchhal S.C. (Chaitanya, Allahabad)
8. Emerging Trends in Entrepreneurship Development Theories & Practices- Singh P. Narendra (International Founder, New Delhi)

Course outcomes:

On successful completion of the course, the student will be able to:

30. The course content gives full knowledge to learn hoe an entrepreneur can succeed.
31. Find the solution of problem dependent on industrial units.
32. Solve the problems related to Location and pricing of industrial units.
33. Enable students to solve difficulties face by small units.

Mapping Course Outcomes with Program Outcomes:

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Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S	S			S	S			M			
2	S	M				S				S		
3		M		S	S			S				S
4	S	M					S				S	

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	30
2	Applying the knowledge acquired from the course	40
3	Analysis and Evaluation	30

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9

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		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at SGVU	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course
	End of Course survey			End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Model Question Paper:

Guidelines for Question Paper Setting:

The question paper must be prepared based on the blue print without changing the weigh age of model fixed for each unit.

The question paper pattern provided should be adhered to

- The paper should have 10 questions in all, wherein it will have 2 questions from each unit.
- Student shall be asked to attempt in all 5 questions, 1 Question from each unit.
- Student shall be given internal choice in every Unit.

Questions should not be set from the recapitulation topics.

Course Title: **INDUSTRIAL MANAGEMENT**	Course Code : **DHS301**
Semester : **V**	Core / Elective : **Elective**

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Teaching Scheme in Hrs (L:T:P)	: **3:0:0**	Credits	: **3 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: **Diploma in Electrical Engineering**			

Pre-requisites:

Knowledge of Industries and their working.

Course Objectives:

44. To achieve the target and goals in an organisation it is essential to co-ordinate the entire system. For this purpose a diploma holder should have the knowledge of principles of industrial management, auditing and environmental aspects.
45. Apply the Purpose of organization and administration.
46. Analyse the Inters relation between skills and levels of management.
47. Evaluate the Scientific management.
48. Analyse the Study of different forms of layout.
49. Create the basic concept of conflict management.

Course Content:

Topic and Contents	Hours	Marks
UNIT-1: INTRODUCTION TO INDUSTRIAL MANAGEMENT	06	12
• Brief history of industries in India, Brief definition of management, organization and administration. • Characteristics of management, Principle of management, Function of management like, planning, organization, direction, co-ordination etc.		
UNITS-2: MANAGEMENT	08	12
• Level of management, skills of management, inters relation between skills and levels of management. • Scientific management, Introduction to Schools of Management thoughts		
UNITS-3: INTRODUCTION TO ORGANIZATION	08	12
Study of basic type of organization for ex. Line and staff organization, project organization, metrics organization, Informal organization.		

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UNIT-4: INTRODUCTION TO INDUSTRIAL PSYCHOLOGY	06	12
• Motivation theory and study of Maxlow, Need, Hierarchy Theory, Planned Location, Planned Layout. • Study of different forms of layout like line layout, process layout, product layout, combinational layout, sixth position layout etc.		
UNIT 5: INTRODUCTION TO MATERIAL MANAGEMENT	08	12
Objective of planned layout, introduction to material management, scope of material management, study of inventory control method, introduction to different types of inventory control techniques, introduction to work study, motion study etc, introduction to conflict management.		
TOTAL	**36**	**60**

Reference:

1. Khanna O.P.: Industrial Engineering.
2. T.R. Banga: Industrial Engineering & Management.
3. Mahajan: Industrial & Process Management.

Course outcomes:

On successful completion of the course, the student will be able to:

34. Enable students for Essential Imperatives and Steps in Industrial & Process Management.
35. Find the solution of problem dependent on planning & organization.
36. Determine the Need of Schools of Management thoughts.
37. Solve the problems related to Hierarchy Theory & Planned Location.
38. Enable students to use application of material management and scope of material management.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S				S							S
2	S						S			M		
3	S			S								
4		S										
5	S			M					S			

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S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	35
2	Applying the knowledge acquired from the course	40
3	Analysis and Evaluation	25

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course

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	End of Course survey		End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

EMPLOYABILITY SKILLS – II

EM 102 **C (L, T, P) = 1 (1, 0, 0)**

S.NO.	TOPIC	DETAILS	CONTACT HOURS
1	Communication	Role Play, Reading, Formal writing skills Listening, Interaction Process, Interpersonal Relationship	15
2	Attitude& Manners	Motivation, Team Building, Winning Strategy, CAN DO,	5
3	Preparation, presentation	Presentation skills, Preparation Skills,	4
4	Industry	Concept & Importance of SIP, Industrial Mentoring & Networking	1

EMPLOYABILITY SKILLS – IV

EM 202 **C (L, T, P) = 1 (1, 0, 0)**

S.NO.	TOPIC	DETAILS	CONTACT HOURS
1	Aptitude Test Preparation	Numerical, Reasoning, Logical, Verbal	10
2	Employability Enhancement	Impactful Summer Internships, Statement of Purpose, Application / Cover Letter Writing, Email Application, Online Search & Registration	5

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3	Interview Skills	Telephonic Interviews, Video Interviews, Group Discussion Techniques, Mocks – Recording & Playback	6
4	Miscellaneous	Industry Related Preparation, Company Specific Preparation, Current Affairs, Business News, General Knowledge	5

Course Title: **ADVANCE MATHEMATICS**		Course Code	: **MA231**
Semester	: **III**	Core / Elective	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **3:0:0**	Credits	: **3 Credits**
Type of course	: **Lecture + Assignments**	Total Contact Hours	: **36**
Continuous Internal Evaluation	: **40 Marks**	SEE	: **60 Marks**
Programmes: **Diploma in Electrical Engineering**			

Pre-requisites:

Knowledge of Basic Mathematics at Sec. and Sr. Sec. Level.

Course Objectives:

50. This course supposed to give the knowledge of basic concept of Linear Programming.
51. Analyse the Applications of PERT and CPM Network.
52. Analyse the Concept of Transportation problem.
53. Evaluate the Basic concept of Laplace transform.
54. Analyse the problems faced in Numerical differentiation and Integration.

Course Content:

Topic and Contents	Hours	Marks
UNIT-1: LINEAR PROGRAMMING	08	20
Mathematical Formulation of Linear Programming problem. • Graphical method of solving Linear Programming problem. • Simple method for solving Linear Programming problem.		

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• Duality in Linear Programming problem.		
UNITS-2: PROJECT SCHEDULING	06	20
Project Scheduling by PERT and CPM Network Analysis. Sequencing Theory: • General Sequencing problem • N-jobs through 2 machines & 3 machines • 2-jobs through m machine.		
UNITS-3: TRANSPORTATION PROBLEM	08	20
Find the initial solution using: • North West Corner rule, Least Cost Method. Assignment problem: • Solving Assignment problem		
UNIT-4: TRANSFORM CALCULUS	06	20
Laplace transform with its simple properties.		
UNIT 5: NUMERICAL METHODS	08	20
Finite differences and Interpolation, Numerical differentiation and Integration. Numerical solution of ordinary differential equations		
TOTAL	**36**	**100**

Reference:

4. Advanced Mathematics for Engineers by Chandrika Prasad
5. Higher Engineering Mathematics by B.S. Grewal
6. Higher Engineering Mathematics by Y.N. Gaur and C.L. Koul
4. Higher Engineering Mathematics by K.C. Jain and M.L. Rawat

Course outcomes:

On successful completion of the course, the student will be able to:

39. The course content gives full knowledge to learn Linear Programming.
40. Find the solution of problem dependent on Project Scheduling.
41. Solve the problems related to Transportation.
42. Enable students to solve difficulties face in Numerical method and transform Calculus.

Mapping Course Outcomes with Program Outcomes:

Course outcomes	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	S			M			S	M				
2	S		S			M				S		
3		M			S				M			

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4	S	S					M					

S: Strong relationship M: Moderate relationship

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Educational Component	Weightage (%)
1	Remembering and Understanding	30
2	Applying the knowledge acquired from the course	35
3	Analysis and Evaluation	35

Course Assessment and Evaluation:

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

Method	What		To whom	When/where (Frequency in the course)	Max Marks	Evidence collected	Contributing to course outcomes
DIRECT ASSMENT	CIE	Mid Term Test	Student	Two tests	20	Midterm Answer books	1 to 8
		Weekly Test		Two Weekly Test	10	Weekly Test Copies	7 to 9
		Graded Assignments		Two Assignments	10	Log of record	1 to 6
				Total	**25**		
	ESE	End Sem Evaluation		End of the course	60	Answer scripts at BTE	1 to 9
INDIRECT ASSESSMENT	Student feedback		Students	Middle of the course	-NA-	Feedback forms	1 to 4, delivery of the course

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	End of Course survey		End of course		Questionnaire	1 to 9, Effectiveness of delivery of instructions and assessment methods

CIE – Continuous Internal Evaluation **ESE** –End Semester Examination

Model Question Paper:

Guidelines for Question Paper Setting:

The question paper must be prepared based on the blue print without changing the weigh age of model fixed for each unit.

The question paper pattern provided should be adhered to

- The paper should have 10 questions in all, wherein it will have 2 questions from each unit.
- Student shall be asked to attempt in all 5 questions, 1 Question from each unit.
- Student shall be given internal choice in every Unit.

Questions should not be set from the recapitulation topics.

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