

COURSE OUTCOMES

Diploma in Electrical Engineering (FIRST SEMESTER SUBJECTS)

1. COMMUNICATION SKILLS – I

After undergoing the subject, the students will be able to

SN	Course Outcomes
1	Understand the importance of effective communication
2	Describe the process of communication
3	Communicate effectively in different contexts
4	Identify parts of speech
5	Write correct sentences using appropriate vocabulary
6	Reproduce and match words and sentences in a paragraph
7	Write various types of paragraphs, notices for different purposes and composition on picture with appropriate format
8	Read unseen texts with comprehension

2. APPLIED MATHEMATICS – I

After undergoing the subject, the students will be able to

SN	Course Outcomes
1	Apply Binomial theorem to solve engineering problems
2	Apply determinants properties and Cramer's rule to solve engineering problems
3	Apply dot & cross product of vectors to find the solution of engineering problems
4	Use complex numbers in various engineering problem
5	Apply differential calculus and higher order to solve engineering problems
6	After undergoing this course, the students will be able to
7	Find velocity, acceleration, errors and approximation in engineering problems with application of derivatives

3. APPLIED PHYSICS – I

4: After undergoing the subject, the students will be able to

SN	Course Outcomes
1	Identify the use of S.I. system of measurement with accuracy and how it is used in engineering
2	Represent physical quantities as scalars and vectors, applying the physical laws and concepts of linear and circular motion in everyday life.
3	Solve difficult problems (walking of man, horse and cart problem, flying of bird/ aircraft, etc.)
4	Analyse and design banking of roads/railway tracks and apply conservation

	of momentum principle to Explain rocket propulsion, recoil of gun etc.
5	Derive work, power and energy relationship and solve problems about work and power.
6	Define work, energy and power and their units.
7	Describe conservation of energy and its applications
8	Understand the concept of rotational motion of a rigid body and its applications
9	Apply the physical laws and concepts of gravity, its variation with longitude and latitude and its uses in space satellite etc.
10	Understand the concept of elasticity, surface tension, pressure and the laws governing movement of fluids.
11	Express physical work in term of heat and temperature; Measure temperature in various processes on different scales (Celsius, Kelvin, Fahrenheit etc.)
12	Distinguish between conduction, convection and radiation, identify the different methods for reducing heat losses
13	Understand the laws of thermodynamics, Carnot cycle and their applications.

4. APPLIED CHEMISTRY

6. After undergoing the subject, the students will be able to

SN	Course Outcomes
1	Classify various substances based on state of aggregation
2	Substantiate the laws and principles on which structure of atom is established.
3	Explain and predict properties of substances.
4	Explain sources of water and various characteristics of water (quantitatively).
5	Explain cause and factors which can adversely affecting natural water quality and remedial measures available for water purification
6	Think critically, develop and adapt water conservation techniques.
7	Explain corrosion of metal and their preventive measures.
8	Explain chemical nature and causes of corrosion
9	Apply correct and efficient methods of corrosion prevention.
10	Explain chemistry of fuels and their relative advantages.
11	Select most efficient fuel for the engine and engineering applications.
12	Suggest how to subside air pollution caused by the use of fossil fuels
13	Explain the chemistry of various polymers and plastics
14	Verify suitability and select polymer/rubber/plastic materials for engineering applications.

5. ENGINEERING DRAWING – I

7. After undergoing the subject, the students will be able to

SN	Course Outcomes
1	Identify and use of different grades of pencils and other drafting instruments which are used in engineering field
2	Draw free hand sketches of various kinds of objects
3	Utilize various types of lines used in engineering drawing
4	Read and apply different dimensioning methods on drawing of objects.
5	Use different types of scales and their utilization in reading and reproducing drawings of objects and maps.
6	Draw 2 - dimensional view of different objects viewed from different angles (orthographic views)
7	Draw and interpret complete inner hidden details of an object which are otherwise not visible in normal view
8	To make projections of Solid
9	Generate isometric (3D) drawing from different 2D (orthographic) views/sketches
10	Identify conventions for different engineering materials, symbols, sections of regular objects and general fittings used in Civil and Electrical household appliances
11	Use basic commands of AutoCAD.

.6. BASICS OF INFORMATION TECHNOLOGY

After undergoing the subject, the students will be able to

SN	Course Outcomes
1	Identify Computer Hardware Components, Network Components and Peripherals.
2	Explain the role of an Operating System.
3	Install System and Application Software
4	Explain the function of the system components including Processor, Motherboard and Input-output devices.
5	Use Word Processing Software to prepare document
6	Use Spreadsheet Software to create workbooks and automate calculation
7	Use Presentation Software to create interactive presentation.
8	Perform fundamental tasks common to most application software including print, scan, save, edit, cut, copy, paste, format, spell and grammar check.
9	Find and evaluate information on the Web.
10	Install Antivirus.
11	Safeguard against Online Frauds, threats and crimes.
12	Use online office tools(Google suits)

7. GENERAL WORKSHOP PRACTICE – I

After undergoing the subject, the students will be able to

SN	Course Outcomes
1	Identify tools and equipment used and their respective functions
2	Identify different types of materials and their basic properties
3	Use and take measurements with the help of basic measuring tools/equipment.
4	Select proper tools for a particular operation
5	Select materials, tools, and sequence of operations to make a job as per given specification/drawing.
6	Prepare simple jobs independently and inspect the same
7	Follow safety procedures and precautionary measures.
8	Use safety equipment and Personal Protection Equipment.

(Second Semester Subjects)

COURSE OUTCOMES

1. APPLIED MATHEMATICS – II

After undergoing this course, the students will be able to:

SN	Course Outcomes
1	Calculate simple integration by methods of integration
2	Evaluate the area under curves, surface by using definite integrals
3	Calculate the area and volume under a curve along areas
4	Solve the engineering problems with numerical methods.
5	Understand the geometric shapes used in engineering problems by co-ordinate geometry.

2. APPLIED PHYSICS – II

After undergoing this course, the students will be able to:

SN	Course Outcomes
1	Define wave motion its types (Transverse and Longitudinal), Periodic and Simple Harmonic Motion, solve simple problems.
2	Define the terms: frequency, amplitude, wavelength, velocity of a wave.
3	Explain various Engineering, Medical and Industrial applications of Ultrasonics.
4	Apply acoustics principles to various types of buildings to get best sound effect
5	Explain diffraction, interference, polarization.
6	Define capacitance and its unit. They will be able to explain the function of capacitors in simple circuits, solve simple problems using $C=Q/V$
7	Explain the role of free electrons in insulators, conductors and semiconductors, qualitatively the terms: potential, potential difference, electromotive force.
8	Explain the concept of electric current, resistance and its measurement.
9	List the effects of an electric current and their common applications, State and apply Ohm's law, calculate the equivalent resistance of a variety of

	resistor combinations, determine the energy consumed by an appliance, distinguish between AC and DC electricity
10	Explain Biot-Savart Law, Ampere's law, Lorenz Force.
11	State the laws of electromagnetic induction, describe the effect on a current-carrying conductor when placed in a magnetic field
12	Explain operation of moving coil galvanometer, simple DC motor

3. BASIC ELECTRICAL ENGINEERING

After undergoing the subject, the students will be able to

SN	Course Outcomes
1	Identify and able to take readings on various electrical equipments (voltmeter, ammeter, CRO, wattmeter, multi-meter)
2	Determination of voltage-current relationship in a DC circuit under specific physical conditions
3	Measure resistance of an ammeter and a voltmeter
4	Verify DC circuits (Thevenin, Nortons, Superposition theorem, Maximum Power Transfer Theorem)
5	Verify Kirchoff's Current and Voltage Laws in a dc circuit
6	Find the ratio of inductance of a coil having air-core and iron-core respectively and to observe the effect of introduction of a magnetic core on coil inductance
7	Test a lead - acid storage battery
8	Measure power and power factor in a single phase R-.L-.C. Circuit and calculation of active and reactive powers in the circuit.
9	Measure voltages and currents in polyphase a.c. circuits for star and delta connections.

4. BASICS OF MECHANICAL AND CIVIL ENGINEERING

After undergoing the subject, the students will be able to:

SN	Course Outcomes
1	Use of various energy sources.
2	Solve basics problems related to fuel and combustion.
3	Have an idea of loading on machine components
4	Explain the application of different types of bearings.
5	Explain the uses of different types of gears and springs. Explain the working principle of different lubrication systems.
6	Explain the working principle of different lubrication systems.

5. ANALOG ELECTRONICS

After undergoing the subject, students will be able to:

SN	Course Outcomes
1	Use P.N. junction as rectifier
2	Use Zener diode as voltage stabilizer
3	Use bi-polar transistors and its application as an amplifier and as a switch
4	Analyse amplifier and enhance the gain of amplifier
5	Use unipolar transistors as amplifier
6	Identify and testing of various active and passive components such as resistor, inductor, capacitor, diode and transistor

6. GENERAL WORKSHOP PRACTICE –II

After completing the course, the students will be able to:

SN	Course Outcomes
1	Identify tools and equipment used and their respective functions.
2	Identify different types of materials and their basic properties
3	Use and take measurements with the help of basic measuring tools/equipment.
4	Select materials, tools, and sequence of operations to make a job as per given specification/drawing
5	Prepare simple jobs independently and inspect the same
6	Follow safety procedures and precautionary measures.
7	Use safety equipment and Personal Protection Equipment.

(THIRD SEMESTER SUBJECTS)

1. APPLIED MATHEMATICS –III

After completing the course, the students will be able to:

SN	Course Outcomes
1	Understand matrix operations and uses of matrix in different problems.
2	Apply elementary row and column operations in finding inverse of a matrix
3	Find Eigen values, Eigen vectors of a matrix and their different properties.
4	Understand degree/order of differential equations and their solution techniques
5	Use differential equations in engineering problems of different areas
6	Find Fourier series expansion of a function.
7	Apply Laplace transform and their applications in solving engineering problems.
8	Understand concept of probability distribution and their applications

2. ELECTRICAL INSTRUMENTATION AND MEASUREMENT

After completing the course, the students will be able to:

SN	Course Outcomes
1	Connect and repair different indicating and recording instruments in electric circuits
2	Measure different electrical quantities like current, voltage, power, energy,

	power factor, frequency etc.
3	Select the type and range of instruments to be used for the job
4	Operate CT (Current Transformer) and PT (Potential Transformer) for measurement
5	Select and use suitable sensors for measurements of different non-electrical quantities
6	Use instruments for measuring different electrical quantities
7	Use sensors for measuring non electrical quantities
8	Operate on smart metering system in industry

3. ELECTRICAL AND ELECTRONICS ENGINEERING MATERIALS

After completing the course, the students will be able to:

SN	Course Outcomes
1	Identify electrical and electronics engineering materials/component
2	Select proper conducting material for a particular application
3	Select a proper insulating material for a particular application
4	Suggest an alternate material if proper material is not available
5	Procure various electrical and electronics engineering material available in the market
6	Select proper magnetic material for a particular application
7	Make use of engineering material used for fabrication of particular electrical machine
8	Select gaseous material for particular application

4. DIGITAL ELECTRONICS

After completing the course, the students will be able to:

SN	Course Outcomes
1	Add, multiply, subtract binary to hexa decimal number system
2	Use 1's and 2's compliment method for addition and subtraction
3	Draw the symbols of various gates and write the truth tables for those gates
4	Use boolean laws for the simplification of logical expressions
5	Use boolean laws for the simplification of logical expressions
6	Use the de-morgan's theorem for simplification
7	Apply K-map technique for simplifications
8	Apply half adder, full adder, encoder, decoder, multiplexer and demultiplexer
9	Use various flip-flops in digital circuits
10	Use converted from A/D and D/A conversions
11	Use various types of numbers in digital circuits

5. ELECTRICAL MACHINES – I

After completing the course, the students will be able to:

SN	Course Outcomes
1	Operate and maintain D.C. Generator
2	Operate and maintain D.C. shunt, series and compound motors
3	Execute speed control on D.C. Motors
4	Select which type of D.C. motor suits a particular job
5	Connect and use single phase transformer
6	Operate auto transformers
7	Conduct open CKT and short CKT tests on a single phase transformer
8	Test polarity of windings of a three phase transformer and connect windings in various configurations
9	Operate and maintain three phase transformers

6. ENVIRONMENTAL STUDIES

SN	Course Outcomes
1	Comprehend the importance of ecosystem and sustainable
2	Demonstrate interdisciplinary nature of environmental issues
3	Identify different types of environmental pollution and control measures.
4	Take corrective measures for the abatement of pollution.
5	Explain environmental legislation acts
6	Define energy management, energy conservation and energy efficiency
7	Demonstrate positive attitude towards judicious use of energy and environmental protection
8	Practice energy efficient techniques in day-to-day life and industrial processes.
9	Adopt cleaner productive technologies
10	Identify the role of non-conventional energy resources in environmental protection
11	Analyze the impact of human activities on the environment

(FOURTH SEMESTER SUBJECTS)

1. COMMUNICATION SKILLS – II

After undergoing the subject, the students will be able to

SN	Course Outcomes
1	Frame correct sentences with illustrations
2	Comprehend the language correctly
3	Interpret the language correctly
4	Use given material in new situations.
5	Correspond effectively using various types of writings like letters, memos etc
6	Communicate effectively in English with appropriate body language making

	use of correct and appropriate vocabulary and grammar in an organised set up and social context.
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2. INDUSTRIAL ELECTRONICS AND CONTROL

After undergoing the subject, the students will be able to

SN	Course Outcomes
1	Use Power diode with load R and R-L.
2	Use SCR, TRIAC and Diac as per requirement of circuit
3	Control fan speed using Triac and Quadriac
4	Control speed of D.C. shunt motor or universal motor
5	Repair UPS and Inverter
6	Maintain storage batteries
7	Maintain panels used in the modern control process

3. ELECTRICAL DESIGN, DRAWING AND ESTIMATING – I

After undergoing the subject, the students will be able to

SN	Course Outcomes
1	Recognize various electrical devices and their symbols
2	Recognize various electrical devices placed on the panels/distribution boards and to design the panels
3	Recognize the internal details of various electrical machines and devices
4	Read schematic and wiring diagrams of electrical devices
5	Read and interpret electrical installation plan
6	Communicate about circuits and devices through sketches and drawings
7	Determine various types of wiring systems and their use
8	Practice and execute any type of wiring
9	Estimate and determine the cost of wiring installation
10	Estimate the material required for HT and LT lines
11	Prepare a tender document for a particular job
12	Estimate the material required for pole-mounted sub-stations

4. POWER PLANT ENGINEERING

After undergoing the subject, the students will be able to

SN	Course Outcomes
1	Distinguish and select suitable resource of energy required for a particular area and environment
2	Calculate effective cost generation
3	Explain the working of various plants for power generation

5. TRANSMISSION AND DISTRIBUTION OF ELECTRICAL POWER

6. .
After undergoing the subject, the students will be able to

SN	Course Outcomes
1	Select suitable supporting structure, insulators, conductors and other accessories for transmission lines and distribution lines
2	Prepare layout plan for HT and LT lines/distribution system
3	Prepare estimate for HT and LT (OH and underground cables) lines
4	Operate and maintain indoor and outdoor substations
5	Use various methods for improvement of power factor
6	Assess the revenue and energy loss in power distribution

6.ENERGY CONSERVATION

After undergoing the subject, the students will be able to

SN	Course Outcomes
1	Define principles and objectives of energy management and energy audit.
2	Understand Energy Conservation Act 2001 and its features.
3	Understand various forms & elements of energy
4	Identify electrical and thermal utilities. Understand their basic principle of operation and assess performance of various equipments.
5	Identify areas of energy conservation and adopt conservation methods in various systems
6	Evaluate the techno economic feasibility of the energy conservation technique adopted.

7. UNIVERSAL HUMAN VALUES

After undergoing the subject, the students will be able to

SN	Course Outcomes
1	Understand the essential complementarity between 'VALUES' and 'SKILLS' to ensure sustained happiness and prosperity, which are the core aspirations of all human beings
2	Identify happiness and prosperity based on a correct understanding of the Human reality and the rest of Existence. Such a holistic perspective forms the basis of Universal Human Values and movement towards value-based living in a natural way
3	Analyze plausible implications of such a Holistic understanding in terms of ethical human conduct, trustful and mutually fulfilling human behavior and mutually enriching interaction with Nature
4	Understand orientational input in value education to the young enquiring minds.

