

1st Year 1st Semester

Sl. No	Course Code	Course Title	Hours/Week		Credit
			Theory	Practical/ Sessional	
1	EEE 1101	Electrical Circuit I	3		3
2	EEE 1102	Electrical Circuit I Sessional		3	1.5
3	CSE 1101	Computer Programming	3		3
4	CSE 1102	Computer Programming Sessional		3	1.5
5	CE 1102	Computer Aided Engineering Drawing		3	1.5
6	PHY 1101	Electricity and Magnetism, Modern Physics and Mechanics	3		3
7	PHY 1102	Electricity and Magnetism, Modern Physics and Mechanics Sessional		3	1.5
8	MATH 1101	Differential & Integral Calculus and Co-ordinate Geometry	3		3
9	GED 1101	English for Technical Communication	3		3
			15	12	21

Core Courses

1. EEE 1101 Electrical Circuits I

Contact hours/week: 3, Credits: 3

Circuit variables: voltage, current, power and energy, Voltage and current independent and depended sources, Circuit elements: resistance, inductance and capacitance. Modeling of practical circuits, Ohms law and Kirchhoff's laws, Solution of simple circuits with both dependent and independent sources, Series-parallel resistance circuits and their equivalents, Voltage and current divider circuits, Delta-Wye equivalent circuits, Techniques of general DC circuit analysis (containing both independent and dependent sources): Node-voltage method, Mesh-current method, Source transformations. Thevenin and Norton equivalents, Maximum power transfer. Superposition technique. Properties of Inductances and capacitances. Series-parallel combinations of inductances and capacitances; Concepts of transient and steady state response with dc source. Definitions of ac voltage, current, power, volt-ampere and various factors (including power, peak, form factors etc.) , Introduction to sinusoidal steady state analysis: Sinusoidal sources, phasor, impedance, admittance, reactance, susceptance; voltage, current, power of R, L, C, R-L, R-C, R-L-C circuits with sinusoidal source, Series parallel and Delta-Wye simplifications of circuits with R, L,Cs. Techniques of general ac circuit analysis (containing both independent and dependent sources): Node-voltage method, Mesh current method, Source transformations, Thevenin and Norton Equivalents, Phasor diagrams. Sinusoidal steady state power calculations, RMS values, Real and reactive power. Maximum power transfer, impedance matching. Steady state voltage, current.

2. EEE 1102 Electrical Circuits I Sessional

Contact hours/week: 3, Credit: 1.5

In this course students will perform experiments to verify practically the theories and concepts learned in EEE 1101.

Allied Engineering Courses

3. CSE 1101 Computer Programming

Contact hours/week: 3, Credit: 3

Introduction to digital computers: Programming languages, algorithms and flow charts.
Structured Programming using C: Variables and constants, operators, expressions, control statements, functions, arrays, pointers, structure unions, user defined data types, input-output and files.

Object-oriented Programming using C++: introduction, classes and objects; polymorphism; function and operator overloading; inheritance.

4. CSE 1102 Computer Programming Sessional

Contact hours/week: 3, Credit: 1.5

This course consists of two parts. In the first part, students will perform experiments to verify practically the theories and concepts learned in CSE 1101. In the second part, students will learn program design.

5. CE 1102 Computer Aided Engineering Drawing

Contact hours/week: 3, Credit: 1.5

Introduction: lettering, numbering and heading; instrument and their use; sectional views and isometric views of solid geometrical figures. Plan, elevation and section of multistoried building; building services drawings; detailed drawing of lattice towers. Introduction to CAD and usage of Auto-CAD in Drawing.

General Science Courses

6. PHY 1101 Electricity and Magnetism, Modern Physics and Mechanics

Contact hours/week: 3, Credit: 3

Electricity and Magnetism: Electric charge and Coulomb's law, Electric field, concept of electric flux and the Gauss's law some applications of Gauss's law, Gauss's law in vector form, Electric potential, relation between electric field and electric potential, capacitance and dielectrics, Current, Current density, ohm's law, resistivity, the magnetic field, Ampere's law, Biot Savart law and their applications, Laws of electromagnetic induction, Faraday's law, Lenz's law, self and mutual induction, Electric flux, Magnetic flux, magnetic materials, magnetization curves, Maxwell's equation.

Modern physics: Galilean relativity and Einstein's special theory of relativity, Lorentz transformation equations, Length contraction, Time dilation, relativity of mass and mass energy relation. Photoelectric effect, Compton effect, De Broglie matter waves and its success in explaining Bohr's theory, Constituent of atomic nucleus, Nuclear binding energy, different types of radioactivity, radioactive decay law, half-life, mean life; Nuclear reactions, nuclear fission, nuclear fusion, nuclear chain reaction, atomic power plant.

Mechanics: Linear momentum of a particle, linear momentum of a system of particles, conservation of linear momentum of a particle, angular momentum of a system of particles, Newton's law of Gravitation, Gravitational constant, variation of acceleration of gravity, applications of law of gravitation. Kepler's law of planetary motion, the law of universal Gravitation, the motion planets and satellites, escape velocity. Introductory quantum mechanics; Wave function; Uncertainty principle, postulates, Schrodinger time independent and time dependent equation, expectation value, Probability, Particle in a zero potential, calculation of energy.

7. PHY 1102 Electricity and Magnetism, Modern Physics and Mechanics Sessional

Contact hours/week: 3, Credit: 1.5

In this course students will perform experiments to verify practically the theories and concepts learned in PHY 1101.

8. MATH 1101 Differential & Integral Calculus and Coordinate Geometry

Contact hours/week: 3, Credit: 3

Differential Calculus: Continuity and differentiability; Leibnitz's forms; Lagrange's form of remainders; Cauchy's form of remainder; Expansion of functions; Evaluation of indeterminate forms by L'Hospital's rule; Partial differentiation; Euler's Theorem; Tangent and Normal; Subtangent and subnormal in Cartesian and polar coordinates; Maximum and minimum values of functions of single variable.

Integral Calculus: Definite integrals and its properties; Wallis's formula; Improper integrals; Beta function and Gamma function; Area under a plane curve in Cartesian and polar coordinates; Area of the region enclosed by two curves in Cartesian and polar coordinates; Arc lengths of curves in Cartesian and polar coordinates; Volume of solids of revolution; Area of surface of revolution; Multiple integrals.

Coordinate Geometry: Transformation of coordinate axes and its uses; General equations of second degree and their reduction to standard forms; Pair of straight lines; System of circles; Coaxial circles and limiting points; Equations of parabola, ellipse and hyperbola in Cartesian coordinates; Tangents and normal; Pair of tangents; Chord of contact; Chord in terms of its middle point.; Parametric coordinates; Conjugate diameters; Asymptotes

General Education Courses

9. GED 1101 English for Technical Communication

Contact hours/week: 3, Credit: 3

Introduction: current approaches to learning English, communication today.

Phonetics: phonetics and correct English pronunciation.

Syntax: vocabulary, diction and English sentence; sentence variety and style; grammatical problems.

Reading skill: readability, reading strategies, generating ideas through purposive reading, reading of selected stories, comprehension.

Writing skill: principles of effective writing; generating ideas, planning, organization and development of writing; composition, précis.

Written communication: business communication, tenders and Quotations, journal articles, report.

Listening skill: listening to recorded texts; learning to take useful notes and answering questions.

Speaking skill: dialogue in peer work; participation in discussion and debate; extempore speech; narrating events; story telling; presentation.