SEMESTER - I

SL No.	Course No.	Course Title	Contact Hour/ Week	Credit
1.	CE 101	Surveying	4	4
2.	CH 101	Chemistry-I	3	3
3.	PH 101	Physics-I	3	3
4.	Math 101	Mathematics-I	3	3
5.	Hum 101	English	2	2
6.	CE 100	Civil Engineering Drawing-I	3	1.5
7.	MES 102	Mechanical Engineering Shops	3	1.5
8.	CH 102	Chemistry Sessional -I	1.5	0.75
9.	PH 102	Physics Sessional-I	1.5	0.75
Total			**24**	**19.5**

No. of Theory Courses = 05
Total Contact Hour =24

No. of Sessional Courses = 04
Total Credit = 19.5

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CE 101 Surveying
Lecture: 4 hrs/ week Credit: 4.00
Introduction: linear measurements, chain survey, traverse survey and plane table survey. Leveling and Contouring: Calculation of areas and volumes, Problems on heights and distances, Curves and curve ranging. Tacheometry: introduction, principles and problems on tacheometry. Astronomical surveying: Definition, instruments, astronomical corrections and systems of time. Photogrametry: Introduction to terrestrial photography, aerial photography, reading of photo mosaic and scale. Project surveying: errors in surveying, remote sensing and introduction to global positioning system (GPS).

CH 101 Chemistry-I
Lecture: 3 hrs/ week Credit: 3.00
Atomic structure, periodic table, chemical bonds. chemistry of cement, silicates and limes. physical and chemical properties of water. Different types of solutions, concentration units, chemical equilibrium. Reactions kinetics: rate of chemical reactions, order and molecularity of reactions, different types of rate expressions, methods of determining rate and order, effect of temperature on reaction rate and energy of activation. Colloid and colloidal solution: classification, preparation, purification, properties, protective action and application of colloids.

CH 102 Chemistry-I Sessional
Contact hours: 1.5 hrs/ week Credit: 0.75
Volumetric analysis: acid-base titration, oxidation-reduction titration salts analysis (qualitative).

PH 101 Physics-I
Lecture: 3 hrs/ week Credit: 3.00
Physical optics: Theories of light: Huygen's principle and construction. Interference of light: Young's double slit experiment, Fresnel bi-prism, Newton's rings, interferometers. Diffraction of light: Fresnel and Fraunhoffer diffraction, diffraction by single slit, diffraction by double slit, diffraction gratings. Polarization of light: production and analysis of polarized light, optical activity, optics of crystals.
Heat and Thermodynamics: temperature, zeroth law of thermodynamics. Thermometers, constant volume, platinum resistance and thermocouple. First law of thermodynamics and its application, molar specific heats of gases, isothermal and adiabatic relations, work done by a gas. Kinetic theory of gases: explanation of gas laws, kinetic interpretation of temperature, equipartition of energy and calculation of ratio of specific heats, mean free path, Vander Waals equation of state, second law of thermodynamics: reversible and irreversible processes, Carnot's cycle, efficiency, Carnot's theorem, entropy.
Waves and Oscillations: Oscillations: Simple harmonic motion, damped simple harmonic oscillations, forced oscillations, resonance, vibrations of membranes and columns. Combination and composition of simple harmonic motions, Lissajous' figures. Transverse and longitudinal nature of waves, travelling and standing waves, intensity of waves, energy calculation of

progressive and stationary waves, phase velocity, group velocity. Sound waves: velocity of longitudinal wave in a gaseous medium and Doppler effect. Architectural acoustics: Sabine's formula, requirements of a good auditorium.

PH 102 Physics Sessional -I
Contact Hours: 1.5 hrs/ week Credit: 0.75
Determination of the specific heat of a liquid by the method of cooling. Determination of the thermal conductivity of a bad conductor by Lee's method. Determination of the pressure coefficient of air by constant volume air thermometer. Determination of the frequency of a tuning fork by Melde's apparatus. Determination of the mechanical equivalent of heat by electrical method. Determination of the focal length of concave lens by auxiliary lens method. Determination of the refractive index of the material of a prism using spectrometer. Determination of the spring constant and the effective mass of a loaded spring.

Math 101 Mathematics-I
Lecture: 3 hrs/ week Credit: 3.00
Differential Calculus: Limit continuity and differentiability, *n*-th derivatives of standard functions. Leibnit'z theorem, Rolle's theorem and Mean value theorem. Expansion in finite and infinite forms, indeterminate form and partial differentiation. Euler's theorem. tangent and normal. Subtangent and subnormal in partial and polar co-ordinates. Maxima and minima of functions of single variables. Curvature.
Integral Calculus: Integration by parts. Standard integral. Integration by the method of successive reduction. Definite integrals. Improper integrals. Beta function. Gama functions. Multiple integrals. Area, Volume of solids of revolution.

Hum 101 English
Lecture: 2 hrs/ week Credit: 2.00
English phonetics: the places and manners of articulation of the English sounds. Vocabulary. English grammar: Construction of sentences, some grammatical problems. Comprehension. Composition on current affairs. Amplification, precis writing, Phrases and idioms. Commercial correspondence and tenders. Technical report writing, Lessons in spoken English, Drafting notes. Short stories written by some well-known classic writers.

CE 100 Civil Engineering Drawing-I
Sessional: 3 hrs/ week Credit: 1.50
Introduction, lettering, numbering and heading, Plane geometry, Pentagon, Hexagon, Octagon, Ellipse, Parabola, Hyperbola. Projection (Solid Geometry): cube, triangular prism, square prism, pentagonal prism, hexagonal prism, cone and cylinder. Development: cube, pyramid, cone and prism. Section and true shape: cube, pyramid, cone prism. Isometric drawing: cube, pyramid and

cone. Oblique drawing: cube, pyramid and cone. Interpretation of solids: Plan, elevation and section of one-storied buildings.

MES 102 Mechanical Engineering Shops
Sessional: 3 hrs/ week Credit: 1.50

Carpentry shop (3/2 hrs/ week):
Wood working tools: wood working machine: Band saw, scroll saw, circular saw, jointer, thickness planer, disc sander, wood lathe, Types of sawing, common cuts in wood works, types of joint, Defects of timber, Natural defects and artificial defects, Seasoning, Preservation, substitute of timber, commercial forms of timber. Characteristics of good timber. Use of fastening, shop practice, practical job, planning and estimating of a given job.
Machine shop (3/4 hrs/ week):
Kinds of tools: common bench and hand tools, marking and layout tools, measuring tools, cutting tools, machine tools, and bench work with job. Drilling, shaper, Lathe and Milling Machines, Introduction, type, size and capacity, uses and applications.
Welding shop (3/4 hrs/ week):
Methods of metal joints, Riveting, grooving soldering, welding, Types of welding, joints and welding practice, position of arc welding and polarity, flat, vertical, horizontal, overhead, Electric arc welding and its machinery, welding of different types of material, Low carbon steel, cast iron, brass, copper, stainless steel, aluminum, Types of electrode, fluxes and their composition, Arc welding defects, Test of Arc welding, Visual, destructive and non-destructive tests.
Types of gas welding system and gas welding equipment, Gases and types of flame, welding of different types of materials, Gas welding defects, test of gas welding.