Detail Courses for the Undergraduate Studies

Courses of the 2nd Year B.Sc. Engineering

1st Year Odd Semester

Sl. No.	Course No.	Course Title	Contact hours/ Week	Credits
Theory Courses				
1.	Phy 1131	Physics	3.00	3.00
2.	Math 1131	Calculus and Differential Equation	3.00	3.00
3.	Hum 1131	Industrial Economics and Fundamentals of Sociology	3.00	3.00
4.	EEE 1101	Electrical Circuits	3.00	3.00
5.	MSE 1101	Introduction to Material Science & Engineering	3.00	3.00
Sessional Courses				
6.	Phy 1130	Physics Sessional	3.00	1.50
7.	EEE 1102	Electrical Circuits Sessional	3.00	1.50
8.	ME 1150	Engineering Graphics	3.00	1.50
10.	MSE 1102	Introduction to Material Science & Engineering Sessional	1.50	0.75
Total			22.50	20.25

1st Year Even Semester

Sl. No.	Course No.	Course Title	Contact Hours/ Week	Credits
Theory Courses				
1.	Chem 1231	Chemistry	3.00	3.00
2.	Math 1231	Vector Analysis and Matrices	3.00	3.00
3.	CSE 1231	Programming language and Data Structure	3.00	3.00
4.	Hum 1231	Communicative English	3.00	3.00
5.	ME 1233	Engineering Mechanics	3.00	3.00
Sessional Courses				
6.	Chem 1232	Chemistry Sessional	3.00	1.50
7.	CSE 1232	Programming Language and Data Structures Sessional	1.50	0.75
8.	Hum 1232	Communication English Sessional	1.50	0.75
9.	MSE 1250	Computer Fundamentals and Ethics	1.50	0.75
10.	ME 1250	Computer Graphics	3.00	1.50
Total			25.50	20.25

Phy 1131 (Physics)

Lecture: 3 hrs. /week *No. of Credit: 3.00*

Optics: Theories of light, Huygens' principle and construction, Superposition of light waves, Reflection and Refraction of spherical surfaces, Lenses, Combination of Lenses, Equivalent Lens and equivalent focal length. Defects of images formed by lenses, Distortion and curvature of images, achromatism and achromatic combination of lenses.

Waves & Oscillation: Sources of sound, Transmitting medium, Speed of sound, Beats, the Doppler Effect, Sonic booms, Audible Ultrasonic, Infrasonic and Supersonic waves, Acoustics, Different Types of Oscillation.

Structure of Matter: Structure of matter, packing in solids, inter atomic distances and forces of equilibrium, different types of bonds in solids, metallic, Vander-Walls, Covalent and ionic bond.

Modern Physics: Atomic structure, atom model, Nature of Electron orbit, Photo electric Emission and Einstein's Photoelectric equation, Compton effect, De-Broglie's waves, Nuclear Force, Binding energy, Isotope, Isobar, Isotone, Radioactive decay, Half-life, and Mean life, Law of disintegration, successive disintegration, Theory of relativity, relative velocity, mass energy relation.

Phy 1132 (Physics Sessional)

Sessional: 3 hrs. /week *No. of Credit: 1.50*

Sessional based on Phy 1131

Math 1131 (Calculus and Differential Equation)

Lecture: 3 hrs. /week *No. of Credit: 3.00*

Calculus: Limit, continuity and differentiability of a function, differentiation. Leibnitz theorem. Partial differentiation, Euler's theorem, Tangent and normal, Maxima and minima.

Integration by the method of substitutions. Standard integrals. Integration by parts. Definite integral and its properties. Area under plane curves in Cartesian and polar co-ordinates. Surface, area and volume of revolution.

Differential Equations: Formation of ordinary and partial differential equations. Solution of first order differential equations by elementary methods. Solution of differential equation of first order and higher degrees. Solution of general linear equations of second and higher orders with constant coefficient. Solution of Euler's homogeneous linear equations. Partial Differential Equations.

Hum 1131 (Industrial Economics and Fundamentals of Sociology)

Lecture: 3 hrs. /week *No. of Credit: 3.00*

Economics:

The Fundamental Concept of Economics: Definition of economics, Economics and Engineering: Micro-Economics: Basic concept of microeconomics, Demand and Supply, Elasticity, Price System and Equilibrium, Theory of production; short-run production and long-run production, the laws of returns to scale.

Market Structure: Perfect Competition, Monopoly and Monopolistic market. Basic concept of Macro-economics, GDP, GNP and National Income. Project Appraisal: NPV, IRR, BCR, Time value of money, Cash flow.

Sociology: Concept, Scope, Basic Concepts related to Social Studies
Society and Social Evolution: Concept and Stages of Social Evolution with Production Techniques
Industrial revolution: Industrialization, Urbanization, Impact-Technological, Socio-Economic and Intellectual Crises of and Interventions to Family, Socialization and Ageing
Culture and Civilization: Concept, Lag and Conflict, Diffusion, Cultural Layers etc., Early and Contemporary civilizations
Social Structure: Concept, and nature of social structure of Bangladesh
Population & Resources: Dynamics and Projections of the population, Natural, Produced & Human Resources of Bangladesh. Engineering Ethics and Role of Engineers in Society.

EEE 1101 (Electrical Circuits)

Lecture: 3 hrs. /week *No. of Credit: 3.00*

Electrical Circuits: Electrical power sources, Circuit elements, DC circuit analysis, Circuit laws and theorems, methods of analysis, electrical field concept, magnetic field concept and electromagnetism, capacitance and inductance, transient and steady state analyses of electrical networks for different forcing functions; effective and average values of alternating waveforms, phasor and complex-impedance; steady state analysis of ac networks, power and power factor, polyphase systems.

EEE 1102 (Electrical Circuits Sessional)

Sessional: 3 hrs. /week *No. of Credit: 1.50*

Sessional based on EEE 1101

MSE 1101 (Introduction to Material Science & Engineering)

Lecture: 3 hrs. /week *No. of Credit: 3.00*

Introduction to Materials: Scopes and applications of Material Science & Engineering. Selection of materials in view of service and fabrication requirements, and economics.
Engineering Materials: Concept of engineering materials, importance, metals, polymers, ceramics, composite materials, super alloy, semiconductor, and bio-materials.
Properties of Materials: Physical, Electrical, Mechanical, Chemical, Thermal and Optical properties of materials, Factors influencing properties
Solid Materials: Basic alloying features, Solidification of Materials, Diffusion in solids, Defects in Solid

MSE 1102 (Introduction to Material Science & Engineering Sessional)

Sessional: 1.5 hrs. /week *No. of Credit: 0.75*

Sessional based on MSE 1101

ME 1150 (Engineering Graphics)

Sessional: 3 hrs. /week *No. of Credit: 1.50*

Introduction, instruments and their uses, first and third angle projections, orthographic drawing, isometric views, missing lines and views, sectional views and conventional practices, auxiliary views.