SEMESTER - IV

SL No.	Course No.	Course Title	Contact Hours/ Week	Credit
1.	CE 205	Numerical Methods & Computer Programming	4	4
2.	CE 207	Geology and Geomorphology	2	2
3.	CE 213	Mechanics of Material-II	3	3
4.	Math 203	Mathematics – IV	4	4
5.	Hum 203	Accounting & Economics	3	3
6.	CE 206	Numerical Methods & Computer Programming Sessional	3	1.5
7.	CE 214	Mechanics of Material Sessional-II	3	1.5
8.	CE 220	Details of Estimating	1.5	0.75
Total			**23.5**	**19.75**

No. of Theory Courses = 05 Total Contact Hour = 23.50
No. of Sessional Courses = 03 Total Credit =19.75

SEMESTER – IV

CE 205 Numerical Methods & Computer Programming

Lecture:4 hrs/ week **Credit:4.00**

Basic components of computer system, FORTARN and C/C^{++} language, numerical solution of algebraic and transcendental equations, matrices, solution of systems of linear equations, curve-fitting by least squares, finite differences, divided differences, interpolation, computer applications to Civil Engineering problems, numerical differentiation and integration, numerical solution of differential equations.

CE 207 Geology and Geomorphology

Lecture:2 hrs/ week **Credit:2.00**

Mineralogy: Identification of minerals, common rock forming minerals, physical properties of minerals.

Mineraloids: Rocks: types of rock, cycle of rock change, sedimentation and metamorphism, earthquake and seismic map of Bangladesh.

Structural Geology: Faults, type of Faults, dome and basin, fold, fold types, Erosional process, quantitative analysis of erosional land forms, land subsidence, land slide.

Geomorphology: Channel development, channel widening, valley shape, stream terraces: channel pattern and river basins, channel morphology, drainage pattern, geology and geomorphology of Bangladesh.

CE 213 Mechanics of Materials-II

Lecture:3 hrs/ week **Credit:3.00**
Prereq. CE 211

Torsional stresses in shafts and tubes, helical springs, combined stresses, transformation of stresses. Deflection of beam by direct integration, moment area and conjugate beam methods. Buckling of columns.

Math 203 Mathematics-IV

Lecture:4 hrs/ week Credit: 4.00

Vector analysis: Fundamental of vector algebra, scalar and vector product of two vectors. Triple and multiple products, vector differentiation, gradient, divergence and curl. Vector integration, divergence, Gauss's, Green's and Stoke's theorem and their application.

Laplace transformation: Definition, Laplace transforms of some elementary function. Inverse Laplace transforms. Laplace transforms of derivatives. Solution of differential equation by Laplace transforms.

Statistics: Measures of central tendency, measures of dispersion, moments, skewness and kurtosis. Elementary probability theory and discontinuous probability distribution e.g. Binomial, Poisson

and normal elementary sampling theory, estimation and confidence limit, hypothesis testing, correlation and regression analysis.

Hum 203 Accounting & Economics

Lecture:3 hrs/ week Credit: 3.00

Principles of accounting: accounts, transaction, the accounting procedure and financial statements. Cost in general: objectives and classifications. Overhead costing. Cost sheet under job costing operating costing and process costing. Marginal costing: tools and techniques, cost-volume-profit analysis. Relevant costing: analyzing the profitability within the firm, guidelines for decision making. Long-run planning and control: capital budgeting.

Definition of economics. Economics and Engineering. Principles of Economics.

Micro economics: The theory of demand and supply and their elasticity's. Price determination. Nature of an economic theory, applicability of economic theories to the problems of developing countries. Indifference curve technique. Marginal analysis. Optimization. Market. Production, Production function, types of productivity. Rational region of production of an engineering firm. The short run and the long run. Fixed cost and variable cost. Internal and external economics and diseconomies.

Macro-economics: savings, investment. National income analysis. Inflation. Monetary policy, fiscal policy and trade policy with reference to Bangladesh. Planning in Bangladesh.

CE 206 Numerical Methods & Computer Programming Sessional

Contact Hours:3 hrs/ week **Credit:1.50**

Operating system for microcomputers, development of FORTRAN programs and solution of problems using a computer, solution of Civil Engineering problems by microcomputers.

CE 214 Mechanics of Materials Sessional -II

Contact Hours:3 hrs/ week **Credit:1.50**

Tension test and impact test of mild steel specimen, hardness test of metals, compression test of timber specimen. helical spring test, static bending test, direct shear test and slender column test.

CE 220 Details of Estimating

Sessional:1.5 hrs/ week **Credit:0.75**

Detailed estimate of all items of work of a building, details estimate of all items of work of a bridge, truss, culvert and a simple girder bridge.