Detail Syllabus of 1st Year Odd Semester B.Sc. Engineering

GCE1101 (Introduction to Glass and Ceramics)
Lecture: 3 hrs/week, No. of Credit: 3.00
Introduction to Materials: Basic concept of materials science and engineering, Historical perspective, Classification of materials, Advanced materials, Materials for the future, Modern materials needs.
Introduction to Glass: Definition of glass, Basic concept of glass structure, Physical and chemical properties of glass, Batch materials, Minor ingredients and their functions, Elementary concept of glass manufacturing, Different types of glasses, Applications of glass, Prospect of glass industries in Bangladesh.
Introduction to Ceramics: Definition & Scope of ceramics and ceramic materials, Historical developments, Classification of ceramic materials – conventional and advanced, Refractories, Tiles, White wares, Ceramic insulators, Abrasives etc. Prospect of ceramic industries in Bangladesh.
Properties of Glass and Ceramics: Thermal properties, Optical properties, Electrical properties, Dielectric properties, Magnetic properties.

Math1113 (Engineering Math-I)
Lecture: 3 hrs/week, No. of Credit: 3.00
Differential Calculus: Limit, Continuity, Differentiation and Successive differentiation on various types of function, Leibnitz's theorem, Expansion of functions, Rolle's theorem, Mean value theorem, Taylor's theorem, Partial differentiation, Determination of maximum and minimum values of functions, Point of inflection, Its applications.
Integral Calculus: Review of elementary technique (Integration by the method of substitution, Integration by parts, Successive reduction, Standard integrals), Improper integrals, Beta, Gamma and Error function, Differential inside integral, Applications, Area, Length of curves, Volume.
Geometry:
Two-Dimensional Coordinate Geometry: Change of axis, Pair of straight lines, General equation of second degree, Circle, Parabola, Ellipse, Pole, Polar, Tangent, Normal, Subnormal.
Three-Dimensional Coordinate Geometry: System of coordinate, Distance between two points, Section formula, Projections, Direction cosines, Equation of planes and lines.

Phy1109 (Physics-I)
Lecture: 3 hrs/week, No. of Credit: 3.00
Elasticity: Elasticity, Load, Stress, Strain, Hooke's law, Stress-strain diagram, Different types of elasticity, Poisson's ratio, Work done in a strain, Determination of Young's modulus, Rigidity modulus, Deformation by bending.
Friction and Dynamics of Rigid Bodies: Static and kinetic to frictional force, Laws of properties of friction, Rotation of rigid bodies, Torque, Work done by torque, Theorem of perpendicular and parallel axis.
Electricity: Electric charge, Coulomb's law, The electric Field, Calculation of electric flux and Gauss's law, Some application of Gauss's law, Electric potential V, Relation between E and V, Electric potential energy, Capacitors, Capacitance, Dielectric and atomic view, Dielectric and Gauss's law, Current and resistance, Current and current density: an atomic view, Ampere's law, Faraday's law, Self inductance and Mutual inductance.
Magnetism: Magnetic properties of matter, Magnetomotive force, Magnetic field intensity, Permeability, Susceptibility, Classifications of magnetic materials, Magnetization curves, Magnetostrication.

Chem1109 (Chemistry-I)
Lecture: 3 hrs/week, No. of Credit: 3.00
Atomic Structure: General concept of fundamental particles, Spectrum, Bohr's model, Quantum numbers, Electronic configuration, Photoelectric emission and Einstein's photoelectric equation, Compton effect, De-Broglie's waves.
Periodic Table and Periodic Properties: Features of modern periodic table, s, p, d, and f block elements and their properties, Periodicity, Ionization potential, Electron affinity, Electronegativity, Atomic size.
Chemical Bonding: Classical approach of ionic & covalent bond, Valence bond approach – sigma & pi bonds, Hybridization, Molecular orbital approach, Resonance concept, Shape of molecules.
Chemistry of Group Elements: Alkali metals, Alkaline earth metals, d-block elements.
Quantitative Inorganic Analysis: Electrolytic dissociation, Concept of pH, Buffer solution, Solubility and solubility product, Common ion effects, Problems involving acid base titration, Spectrophotometric analysis.

Hum1111 (Economics)
Lecture: 3 hrs/week, No. of Credit: 3.00
Fundamental Concepts of Economics: Definition of economics, Economics and Engineering, Principles of economics.
Microeconomics: Economic theories; Demand, Supply and Elasticity, Price system, Market & equilibrium, Indifference curve technique, Marginal analysis, Optimization, Market, Production, Production function and types of productivity, Fixed cost and Variable cost, Internal and External economics, Diseconomics.
Macroeconomics: Concepts, Savings, Investment, Measurements and importance of national income in the modern economics.
Economic Growth and Development: Definition, Relationship between growth & development, Economic planning, Development problems in Bangladesh, The role of the state in economic activity, Market and government failures, Economic policy of Bangladesh, Planning in Bangladesh.
International Trade: Size & Scope of trade, Terms in trade, Free trade & Trade protection, Tariffs & Quotas, Trade adjustment, Review of export import-trade policy of government of Bangladesh.

ME1100 (Engineering Drawing)
Sessional: 3 hrs/week, No. of Credit: 1.50
The Graphic Language: Introduction to Drawing and Projection, Theory of projection, First and third angle projection, Drawing equipments & uses of instruments, Size description, Scale, Dimensioning rules.
Mechanical Engineering Drawing: Orthographic projection problems, Multi-view projection problems, Auxiliary views, Pictorial Drawing, Axonometric projection, Oblique projection, Perspective views, Isometric drawing. Sectional views.
Ceramics Drawing: Roller head drawing, Ware making drawing-Modeling drawing, Decals drawing.

Phy1110 (Physics-I Sessional)
Sessional: 1.5 hrs/week, No. of Credit: 0.75
Sessional based on **Phy1109**

Chem1110 (Chemistry-I Sessional)
Sessional: 1.5 hrs/week, No. of Credit: 0.75
Volumetric Analysis: Oxidation-reduction Titration, Acid-base Titration, Iodometric Titration, Complexometric Titration etc.
Spectrophotometric Analysis: Chemical analysis using spectrophotometer.

Hum1112 (English Language Practice)
Sessional: 3 hrs/week, No. of Credit: 1.50
English Phonetics: The places and manners of articulation of the English sound, Vocabulary.
Technical English and Communication Skill: Construction of sentences and paragraphs, Definition of scientific terms - Correction - Commercial correspondence - Preparing tenders and Schedules - Phrases and Idioms prepositions – Comprehension, Composition on current affairs, Amplification - Description and Precise writing, Report writing.
Presentation: Definition, What to say and How to say, Getting through to the Audience, Visual and Aural Aids, Question time.