Summary of Courses

1st year 1st semester (Exempted)

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Course No.</th>
<th>Course Title</th>
<th>Theory hrs/week</th>
<th>Sessional hrs/week</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Math-1411</td>
<td>Mathematics-I</td>
<td>3</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>2.</td>
<td>Ph-1413</td>
<td>Physics-I</td>
<td>3</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>3.</td>
<td>Ph-1414</td>
<td>Physics-I Sessional</td>
<td>0</td>
<td>3</td>
<td>1.5</td>
</tr>
<tr>
<td>4.</td>
<td>Ch-1415</td>
<td>Chemistry-I</td>
<td>3</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>5.</td>
<td>Ch-1416</td>
<td>Chemistry-I Sessional</td>
<td>0</td>
<td>3</td>
<td>1.5</td>
</tr>
<tr>
<td>6.</td>
<td>CSE-1811</td>
<td>Computer Fundamentals</td>
<td>3</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>7.</td>
<td>CSE-1812</td>
<td>Computer Fundamentals Sessional</td>
<td>0</td>
<td>3</td>
<td>1.5</td>
</tr>
<tr>
<td>8.</td>
<td>Hum-1417</td>
<td>Government and Sociology</td>
<td>4</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>16</td>
<td>9</td>
<td>20.5</td>
</tr>
</tbody>
</table>

Contact Hours: 16T +9S = 25 hrs/ week
Total credits: 20.5
No. of Theory Courses: 5
No. of Lab / Sessional courses: 3

DETAILED SYLLABUS

Math-1411 Mathematics-I
3 Hours/week 3.00 Credits

Algebra: Permutation & Combination, Binominal theorem for positive, negative and fractional index, exponential series & logarithmic series, determinant, solution of simultaneous equations with the help of determinant.

Differential Calculus: Function and limit, differential co-efficient from first principle, differentiation of functions, successive differentiation, Maclaurin’s and Taylor’s theorem Tangent and Normal, Maxima and minima.


Ph-1413 Physics-I
3 Hours/week 3.00 Credits


Sound: Concepts and nature of sound, velocity of sound, resonance, ultrasonic.


Light: Behaviour and nature of light, colour, reflection of light through plain and spherical surfaces, optical instruments.

Ph-1414 Physics-I Sessional
3 Hours/week 1.50 Credits
Sessional based on Physics (Ph-1413)
Ch-1415 Chemistry-I
3 Hours/week 3.00 credits

Valency and chemical equation, different types of chemical reactions catalysis and catalysts, acid, base and salt, properties of gases, laws of chemical combinations, Dalton’s atomic theory, Avogadro’s hypothesis, chemical.

Ch-1416 Chemistry –I Sessional
3 Hours/week 1.50 Credits

Sessional Based on Chemistry –I (Ch-1415)

CSE-1811 Computer Fundamentals
3 Hours/week 3.00 Credits


CSE-1812 Computer Fundamentals Sessional
3 Hours/week 1.50 Credits

Sessional Based on Computer Fundamentals (CSE-1811).

Hum-1417 Government & Sociology
4 Hours/week 4.00 Credits

Government: Difference between state and government, relationship between state and government, sources of law, different forms of constitutions, merits and demerits of different forms of constitutions, modern classification of forms of government, democratic form of government, distinctions between cabinet form and presidential form of government, distinctions between unitary form and federal form of government, main organs of government.
Sociology: Scope, some basic concepts, social evolution and techniques of production, culture and civilization, social structure of Bangladesh, population and world resources, oriental and occidental societies, industrial revolution, family urbanization and industrialization, urban ecology, co-operative and socialist movement, rural sociology.
Summary of Courses

1st year 2nd semester

<table>
<thead>
<tr>
<th>Sl.No.</th>
<th>Course No.</th>
<th>Course Title</th>
<th>Theory hrs/week</th>
<th>Sessional hrs/week</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>CSE-1121</td>
<td>Structured Programming Language</td>
<td>4</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>2.</td>
<td>CSE-1122</td>
<td>Structured Programming Language Sessional</td>
<td>0</td>
<td>3</td>
<td>1.5</td>
</tr>
<tr>
<td>3.</td>
<td>CSE-1823</td>
<td>Digital Logic &amp; System Design</td>
<td>3</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>4.</td>
<td>CSE-1824</td>
<td>Digital Logic &amp; System Design Sessional</td>
<td>0</td>
<td>3/2</td>
<td>0.75</td>
</tr>
<tr>
<td>5.</td>
<td>CSE-1124</td>
<td>Drawing &amp; CAD Project Sessional</td>
<td>0</td>
<td>3/2</td>
<td>0.75</td>
</tr>
<tr>
<td>6.</td>
<td>Math-1421</td>
<td>Mathematics – II</td>
<td>4</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>7.</td>
<td>Ph-1423</td>
<td>Physics – II</td>
<td>4</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>8.</td>
<td>Ph-1424</td>
<td>Physics – II Sessional</td>
<td>0</td>
<td>3/2</td>
<td>0.75</td>
</tr>
<tr>
<td>9.</td>
<td>Hum-1427</td>
<td>English and Economics</td>
<td>3</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td></td>
<td>18</td>
<td>7.5</td>
<td>21.75</td>
</tr>
</tbody>
</table>

Contact Hours: 18T + 7.5 S = 25.50 hrs/week
No. of Theory Courses: 5
No. of Lab / Sessional courses: 4

DETAILED SYLLABUS

CSE-1121 Structured Programming Language
4 Hours/ week 4 Credits

Structured programming language: data types, operators, expressions, control structures; Functions and program structure: parameter passing conventions, scope rules and storage classes, recursion; Header files; Preprocessor; Pointers and arrays; Strings; Multidimensional array; User defined data types: structures, unions, enumerations; Input and Output: standard input and output, formatted input and output, file access; Variable length argument list; Command line parameters; Error Handling; Graphics; Linking; Library functions. Reference language: C

CSE – 1122 Structured Programming Language Sessional
3 Hours/ week 1.5 Credits

Sessional based on Structured Programming Language (CSE – 1121)
CSE-1823  Digital Logic & System Design
3 Hours/ week  3 Credits

Digital logic, Boolean algebra, Boolean function, canonical forms, minimization of Boolean functions, logic gates and their truth tables, combinational logic design, arithmetic and data handling logic circuits. Decoders, encoders, multiplexers, demultiplexers, flip-flops, counters, and registers. Review of set theory, reliable design and fault diagnosis hazards, fault detection in combinational circuits, fault location experiments, threshold logic. Synchronous sequential circuits and iterative networks, sequential machine state equivalence and machine minimization, asynchronous sequential circuits, finite state recognizer-regular expressions, transition graphs.

Design using MSI and LSI components, design of memory subsystem using SRAM and DRAM, design of various components of a computer: ALU memory and control unit – hardware and micro-programmed control unit, microprocessor based design. Computer bus design using special purpose controls.

CSE-1824  Digital Logic & System Design Sessional
3/2 Hours/ week  0.75 Credits

Title: Digital Logic & System Design Sessional
Content: Sessional based on Digital Logic & System Design (CSE-1824)

CSE – 1124  Drawing and CAD Sessional
3/2 Hours/ week  0.75 Credits

Introduction, scale drawing, sectional view, isometric views, missing line, auxiliary view, detail and assembly drawing, project on Engineering drawing and CAD using AutoCAD or contemporary packages instructed by the teachers.

Math – 1421  Mathematics – II
4 Hours/ week  4 Credits

Differential Calculus: Limit, continuity and differentiability, differentiation of explicit and implicit function and parametric equations, significance of derivatives, differential co-efficient, successive differentiation of various types of functions. Leibnitz’s theorem, Rolle’s theorem, mean value theorem, Taylor’s theorem in finite and infinite forms, Maclaurin’s theorem in finite and infinite forms. Langrange’s form of remainder’s, Cauchy’s form of remainder. Expansion of functions by differentiation, partial differentiation, Euler’s theorem, tangent, normal, subtangent and subnormal in cartesian and polar coordinates, determination of maximum and minimum values of functions and Points of inflection. Applications, Evaluation of indeterminate forms by L. Hospital’s rule, Curvature, center of curvature and chord of curvature, Evolute and involute, Asymptotes, Envelopes, Curve tracing.

Ph – 1423  Physics – II
4 Hours/ week  4 Credits

Oscillations and Waves:
Oscillations; The simple harmonic wave equation and its solution, Composition of simple harmonic motion- Lissajou’s figures, Damped harmonic motion and its solution, Forced oscillation and resonance, Wave motion; Types of wave motion, Expression for plane progressive wave, Energy calculation of stationary and progressive wave, Interference of sound wave, Beats, Doppler effect.

Optics:
Interference; Huygen’s principle, Young’s experiment, Coherent sources and it’s production methods, Analytical treatment of Interference, Interference from thin films, Newton’s rings, Diffraction; Fresnel and Fraunhofer diffraction, Fraunhofer diffraction by by single and double slit, Plane diffraction grating, Resolving and dispersive power of a grating, Polarization; Polarization by reflection, Refraction, Double refraction, Brewster’s law and Malus law, Elliptical and circular polarization of light.

Structure of Solid:
Crystal structure; Crystalline and amorphous solids, Different types of bonds in crystal and cohesive energy, Different types of crystal structure, Simple cubic, Body centered cubic and Face centered cubic crystal structure, Packing fraction, Miller indices and crystal plane. Defects in solids, Band theory of solids.

Modern Physics:
Relativity; Postulates of special theory of Relativity, Galilean and Lorentz transformation equations, Length contraction, Time dilation, Twin paradox, Variation of mass with velocity, Einstein mass energy relation, Particle properties of wave; Quantum theory of light, Photoelectric effect, Compton effect, Pair production, Gravitational red shift. Wave properties of particle; Concept of de-Broglie wave, Phase velocity and group velocity, Heisenberg’s Uncertainty principle and its application, Atomic Structure; Atom models, Electron orbits, Energy levels and spectral series of Hydrogen atom, Bohr’s correspondence principle, The LASER,

Ph – 1424  Physics – II Sessional
3/2 Hours/ week  0.75 Credits

Sessional based on Physics – II (Ph – 1423)

Hum – 1427  English & Economics
3 Hours/ week  3 Credits


Economics: Nature of the economics theory, applicability of economic theories to the problem of developing countries. Some basic concepts – supply, demand and their elasticity. The relationship among average, margin and total and their derivation. Equilibrium – stable, straight and dynamic equilibrium. Consumer’s equilibrium-indifference curve, producer’s equilibrium-isoquant. Production-factors of production, production possibility curve-equilibrium of a firm, fixed cost and variable cost, the short run and the long run. The cost curves and supply curves, law of returns, internal and external economics and diseconomics. Economics of development and planning, basic concept-saving, investment, GNP, NNP, per-capita income, growth rate, policy instruments of development. Fiscal policy, monetary policy and trade policy, their relative application in Bangladesh, some planning tools-capital output ration, input analysis, planning in Bangladesh-five year plans of Bangladesh, development problems related to agriculture, industry and population of Bangladesh.