

## **1<sup>st</sup> Year Even Semester**

### **ETE 103: Analog Electronics-I**

Credits: 3.00 Contact Hours: 3 Hours/Week

Application of BJT and FETs as amplifier and switches, load line analysis, equivalent circuits using transconductance parameter for low, medium and high frequency operation of BJT and FETs, Ebers-Moll model view; design and analysis of single/multistage amplifiers, power amplifiers- class AB/class B push-pull/class C, differential amplifiers.

Operational amplifiers (Op-Amp): Properties of an ideal Op-Amp, noninverting and inverting amplifiers, integrator, differentiator, weighted summer and other applications of Op-Amp circuits, frequency response and bandwidth, feedback amplifiers, oscillators and waveform generators.

### **ETE 104: Sessional Based on ETE 103**

Credit: 1.50 Contact Hours: 3.00 Hours/Week

Laboratory based on Analog Electronics-I (ETE 103)

### **CSE 141: Computer Fundamentals and Programming**

Credits: 3.00 Contact Hours: 3 Hours/Week

Introduction: Brief history and types of computers, application areas. Working principle of a computer system. Single and multi-user systems.

Hardware: Organization and architecture, CPU, Motherboards &

Microprocessors, Memory units: Primary memory, Secondary memory, Input & output (I/O) Devices, peripheral devices, AT/XT, ISA, FISA, PCI Bus Architecture.

Introduction to Computer Programming, Problem solving techniques, algorithm specification and development. Programming style, debugging and testing, documentation. Program design methodologies, structured and modular program design. Programming Language in C/C++: Data types, operators and conversions, Statements. Control structures, array of pointers, Structure, union and bit-field, External files.

### **CSE 142: Sessional Based on CSE 141**

Credit: 1.50 Contact Hours: 3.00 Hours/Week

Laboratory based on Computer Fundamental and Programming (CSE 141)

### **EEE 109: Network Analysis & Synthesis**

Credits: 3.00 Contact Hours: 3 Hours/Week

Network functions- The concept of complex frequency- driving point and transfer functions- Impulse response- Poles and Zeros of network functions and

their locations and effects on the time and frequency domain. Restriction of poles and zeros in the driving point and transfer function. Magnitude and phase plots from s-plane phasors, Bode plots. The dominant pole approximation- The time constant method of obtaining the response. Parameters of two-port network: Definition of z, y, ABCD & h-parameters and their determination for given network, conversion formulae. Coupled circuit, single tuned and double tuned circuit effect of coefficient and coupling, Selectivity, Image impedance, Characteristic impedance and propagation constant. Wave filters- L. P. F., H. P. F., B. P. F., B. R. F., Constant-k and m-derived, terminating half sections- Attenuators and equalizers. Positive real function, synthesis of passive one port LC, RL, and RC network.

### **Hum 113: Financial Accounts & Economic Analysis**

Credit: 4.00 Contact Hours: 4 Hours/Week

**Accountancy:** Basic accounting principles, Transactions, Journal, Ledger and Accounts. Cash book, Bank Reconciliation statement. Preparation of financial statement. Cost accounts and its objects. Cost classification. Elements of cost, preparation of cost sheet. Overhead allocation. Use of relevant costs in decision-making. Standard costing. Material cost variance. Break even analysis.

**Economics:** Nature of the economics theory- applicability of the 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- difference curve, Producer's equilibrium-isoquant. Production-factors of production, production possibility curve equilibrium of firm, fixed cost and variable cost, the short run and the long run. The cost curves and supply curves, law of returns and external economics and diseconomies. 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 applicability in Bangladesh, some planning tools-capital output ratio, input analysis, planning in Bangladesh-five year plans of Bangladesh, development problems related to agriculture, industry and population of Bangladesh.

### **Math 153: Engg. Mathematics-II**

Credits: 3.00 Contact Hours: 3 Hours/Week

**Ordinary differential equations:** Degree and order of ODE, Formation of differential equations, Solution of first order Differential equations by various methods, Solution of first order but higher degree ODE, Solution of general linear equations of second and higher order with constant coefficients, Solution of homogeneous linear equations and its applications, Solutions of Differential equations of higher order when dependent and independent variable are absent, Solution of differential equation by the method based on factorization of operators.

**Partial differential equations:** Four rules for solving simultaneous equations of the form  $dxP=dyQ=dzr$ ; Lagrange's method of solving PDE of order one,

Integral surfaces passing through a given curve, Non linear PDE of order one (Complete, Particular, Singular and general integrals) ; Standard forms  $f(p,q)=0$ ,  $z=px+qy+f(p,q)$ ,  $f(p,q,z) = 0$ ,  $f_1(x,p)=f_2(y,q)$ , Charpit's method, Second order PDE; Its nomenclature and classifications to canonical (Standard) parabolic, elliptic, hyperbolic, Solution by separations of variables, Linear PDE with constant coefficients.

**Series solution:** Solution of differential equations in series by the method of Frobenius, Bessel's functions, Legendre's Polynomials and their properties.

**Co-ordinate Geometry:** Co-ordinate geometry of three dimension- System of coordinates, transformation of co-ordinates, distance between two points, section formula, projection, direction cosines, equations of planes and lines