COURSE OBJECTIVE: The purpose of this course is to:

1. Acquaint the student in the basic economic concepts and their operational significance and
2. Stimulate him to think systematically and objectively about contemporary economic problems.

UNIT-I


UNIT-II


UNIT-III

Meaning of Demand, Individual and Market demand schedule, Law of demand, shape of demand curve, Elasticity of demand, measurement of elasticity of demand, factors effecting elasticity of demand, practical importance & applications of the concept of elasticity of demand.

UNIT-IV

Meaning of production and factors of production; Law of variable proportions, Returns to scale, Internal and External economies and diseconomies of scale.

Various concepts of cost - Fixed cost, variable cost, average cost, marginal cost, money cost, real cost opportunity cost. Shape of average cost, marginal cost, total cost etc. in short run and long run.

UNIT-V

Meaning of Market, Types of Market - Perfect Competition, Monopoly, Oligopoly, Monoplistic Competition (Main features of these markets)

Supply and Law of Supply, Role of Demand & Supply in Price Determinition and effect of changes in demand and supply on prices.

UNIT-VI


Books Recommended:
TEXT BOOKS:

REFERENCE BOOKS:
1. A Text Book of Economic Theory Stonier and Hague (Longman’s Landon)
NOTE: Eight questions are to be set at least one question from each unit and the students will have to attempt five questions in all.

**MATH-201-E**

**MATHEMATICS-III**

**COMMON FOR ALL BRANCHES**

<table>
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<tr>
<th>L</th>
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<th>Class Work</th>
<th>Exam.</th>
<th>Total</th>
<th>Duration of exam.</th>
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<tr>
<td>3</td>
<td>2</td>
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<td>50 Marks</td>
<td>100 Marks</td>
<td>150 Marks</td>
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**Part-A**

Fourier Series and Fourier Transforms: Euler’s formulae, conditions for a Fourier expansion, change of interval, Fourier expansion of odd and even functions, Fourier expansion of square wave, rectangular wave, saw-toothed wave, half and full rectified wave, half range sine and cosine series.

Fourier integrals, Fourier transforms, Shifting theorem (both on time and frequency axes), Fourier transforms of derivatives, Fourier transforms of integrals, Convolution theorem, Fourier transform of Dirac-delta function.

**Part-B**

Functions of Complex Variable: Definition, Exponential function, Trigonometric and Hyperbolic functions, Logarithmic functions. Limit and Continuity of a function, Differentiability and Analyticity.

Cauchy-Riemann equations, necessary and sufficient conditions for a function to be analytic, polar form of the Cauchy-Riemann equations. Harmonic functions, application to flow problems. Integration of complex functions. Cauchy-Integral theorem and formula.

Power series, radius and circle of convergence, Taylor's Maclaurin's and Laurent's series. Zeroes and singularities of complex functions, Residues. Evaluation of real integrals using residues (around unit and semi circle only).

**Part-C**

Probability Distributions and Hypothesis Testing: Conditional probability, Bayes theorem and its
applications, expected value of a random variable. Properties and application of Binomial, Poisson and Normal distributions.

Testing of a hypothesis, tests of significance for large samples, Student’s t-distribution (applications only), Chi-square test of goodness of fit.
Linear Programming: Linear programming problems formulation, Solving linear programming problems using
(i) Graphical method (ii) Simplex method (iii) Dual simplex method.

TEXT BOOKS:


REFERENCE BOOKS:

4. Probability and statistics for Engineers : Johnson. PHI.

Note: Examiner will set eight questions, taking two from Part-A, three from Part-B and three from Part-C.
Students will be required to attempt five question taking atleast one from each part.
UNIT 1 CONDUCTING MATERIALS:
Review of energy bands, description of materials, drift velocity, collision time, Mean free path, mobility, conductivity, relaxation time, factors affecting conductivity of materials, types of thermal conductivity, Wiedmann-Franz law, super conductivity, effect of magnetic field, conducting materials, applications.

UNIT 2 DIELECTRIC MATERIALS:
Behaviour of dielectric materials in static electric field, Dipole moments, Polarization, Dielectric constant, Polarizability, Susceptibility, mechanisms of polarization, behaviour in alternating field, dielectric loss, loss tangent, types of dielectric & insulating materials, electrostriction, Piezo-electricity, Applications.

UNIT 3 MAGNETIC MATERIALS:
Permeability, Magnetic susceptibility, magnetic moment, Magnetization, Dipole moment, types of magnetic materials, Magnetostriiction, eddy current & hysteresis losses, applications.

UNIT 4 SEMICONDUCTORS:
Review of Si and Ge as semiconducting materials, Continuity Equation, P-N junction, Drift & Diffusion, Diffusion & Transition capacitances of P-N junction.

UNIT 5 CONSTRUCTION AND CHARACTERISTICS OF DEVICES:
Brief introduction to Planar Technology for device fabrication., metal-semiconductor junctions (ohmic and non-ohmic), breakdown mechanisms in p-n junction, zener diode, electrical and optical excitation in diodes, LED, solar cells and photo-detectors.

UNIT 6 BIPOLAR AND MOS DEVICES:
BJT, UJT, JFET, MOSFETS

UNIT 7 POWER DEVICES:
Thyristor, Diac, Triac, GTO, IGBT, VMOS

TEXT BOOKS:
1. Electrical Engineering Materials: A.J. Dekker; PHI.
3. Electronic Devices & Circuits: Millman & Halkias; MGH.

REFERENCE BOOKS:

NOTE: Eight questions are to be set in all by the examiner taking at least one question from each unit. Students will be required to attempt five questions in all.
EE-203-E                   NETWORK THEORY

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3 1 0  

CLASS WORK : 50  
EXAM : 100