

**SILVER OAK COLLEGE OF ENGINEERING & TECHNOLOGY**

**ADITYA SILVER OAK INSTITUTE OF TECHNOLOGY**

**Mid Semester Exam Syllabus**

**Basic Electronics (2110016)**

<b>UNIT 1</b>	Circuit Concepts <ul style="list-style-type: none"><li>• Electrical Quantities</li><li>• Lumped Circuit Elements</li><li>• Kirchoff's Laws</li><li>• Meters and Measurements</li><li>• Analogy between Electrical and other Non-Electrical Physical Systems</li><li>• A case study</li></ul>
<b>UNIT 2</b>	Circuit Analysis Techniques: <ul style="list-style-type: none"><li>• Thevenin and Norton Equivalent Circuits</li><li>• Node-Voltage and Mesh-Current Analysis</li><li>• Superposition and Linearity</li></ul>
<b>UNIT 4</b>	Digital Building Blocks <ul style="list-style-type: none"><li>• Digital System Building Blocks</li><li>• Digital System Components</li><li>• Computer Systems</li><li>• Computer Networks</li><li>• A case study</li></ul>

**CPU (2110003)**

<b>Sr. No.</b>	<b>Topics</b>	<b>Teaching Hrs.</b>	<b>Module Weightage</b>
<b>1</b>	<b>Introduction to computer and programming:</b> Introduction ,Basic block diagram and functions of various components of computer, Concepts of Hardware and software, Types of software's, Compiler and interpreter, Concepts of Machine level, Assembly level and high level programming ,Flow charts and Algorithms.	05	10%
<b>2</b>	<b>Fundamentals of C</b> Features of C language, structure of C Program, comments, header files, data types, constants and variables, operators, expressions, evaluation of expressions, type conversion, precedence and associativity, I/O functions	05	15%
<b>3</b>	<b>Control structure in C</b> Simple statements, Decision making statements, Looping statements, Nesting of control structures, break and continue , goto statement	06	15%
<b>4</b>	<b>Array &amp; String</b> Concepts of array , one and two dimensional arrays, declaration and initialization of arrays ,string , string storage , Built-in-string functions	05	15%

## ENVIRONMENTAL STUDIES (2110007)

Sr. No.	Topics	Module Weightage
<b>UNIT I: ENVIRONMENT AND NATURAL SYSTEMS</b>		
<b>1</b>	<b>Introduction to Environment and Environmental Studies:</b> Definition and Components of Environment, Relationship between the different components of Environment, Man and Environment relationship, Impact of technology on Environment, Environmental Degradation, Multidisciplinary nature of the Environment studies, its scope and importance in the present day Education System	6%
<b>2</b>	<b>Ecology and Ecosystems:</b> Introduction: Ecology- Objectives and Classification, Concept of an ecosystem- structure and functions of ecosystem Components of ecosystem- Producers, Consumers, Decomposers Bio-Geo-Chemical Cycles- Hydrologic Cycle, Carbon cycle, Energy Flow in Ecosystem, Food Chains, Food webs, Ecological Pyramids Major Ecosystems: Forest Ecosystem, Grassland Ecosystem, Desert Ecosystem, Aquatic Ecosystem, Estuarine Ecosystem.	11%
<b>UNIT II: HUMAN POPULATION AND ENVIRONMENTAL POLLUTION</b>		
<b>3</b>	<b>Human Population and Environment:</b> Population Growth, World and Indian scenario, Population and Environmental Degradation, Malthusian theory, Optimum Theory, Population explosion – Causes, Effects and Control. <b>Urbanization:</b> Urban population growth and Environmental problems	8%

<p style="text-align: center;"><b>4</b></p>	<p><b>Environmental pollution:</b>  <b>Types of Environmental Pollution:</b></p> <p>a) <b>Water Pollution:</b> Introduction– Water Quality Standards, Sources of Water Pollution: Industrial ,Agricultural, Municipal; Classification of water pollutants, Effects of water pollutants, Eutrophication</p> <p>b) Marine pollution-</p> <p>c) <b>Air Pollution:</b> Composition of air, Structure of atmosphere, Ambient Air Quality Standards, Classification of air pollutants, Sources of common air pollutants like PM, SO<sub>2</sub>, NO<sub>x</sub>, Natural &amp; Anthropogenic Sources, Effects of common air pollutants</p> <p>d) <b>Land Pollution:</b> Land uses, Land degradation: causes, effects and control, soil erosion</p> <p>e) <b>Noise Pollution:</b> Introduction, Sound and Noise, Noise measurements, Causes and Effects</p> <p>f) <b>Thermal Pollution:</b> Causes and effects</p> <p>g) <b>Role of individual in the prevention of pollution</b></p>	<p style="text-align: center;">22 %</p>
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**ENGINEERING GRAPHICS (2110013)**

<b>SR. NO.</b>	<b>TOPIC NAME</b>
1	Introduction to Engineering Graphics: Drawing instruments and accessories, BIS – SP 46. Use of plane scales, Diagonal Scales and Representative Fraction
2	Engineering Curves: Classification and application of Engineering Curves, Construction of Conics
3	Projections of Points and Lines: Introduction to principal planes of projections, Projections of the points located in same quadrant and different quadrants, Projections of line with its inclination to one reference plane and with two reference planes. True length and inclination with the reference planes
4	Orthographic Projections: Fundamental of projection along with classification, Projections from the pictorial view of the object on the principal planes for view from front, top and sides using first angle projection method and third angle projection method, full sectional view

## Elements of Mechanical Engineering (2110006)

Sr. no	Course content
1.	<b>Introduction:</b> Prime movers, Sources of energy, Types of prime movers, Force and mass, Pressure, Work, Power, Energy, Heat, Temperature, Units of heat, Specific heat capacity, Interchange of heat, Change of state, Mechanical equivalent of heat, Internal energy, Enthalpy, Entropy, Efficiency, Statements of Zeroth Law, First law and Second Law of Thermodynamics.
2.	<b>Energy:</b> Introduction and Applications of Energy Sources like Fossil fuels, Nuclear fuels, Hydel, Solar, Wind, and bio – fuels, Environmental issues like Global warming and Ozane depletion
3	<b>Steam Boilers:</b> Introduction, Classification, Cochran, Lancashire and Babcock and Wilcox boiler, Functioning of different mountings and accessories
4	<b>Internal Combustion Engines:</b> Introduction, Classification, Engine details, four-stroke/ two-stroke cycle Petrol/Diesel engines, Indicated power, Brake Power, Efficiencies
5	<b>Pumps:</b> Types and operation of Reciprocating, Rotary and Centrifugal pumps, Priming

## Vector Calculus & Linear Algebra (2110015)

1	Matrices and Elementary Row Operations: (Types of Matrices, Determinant, Row Operations, Echelon forms, Rank of a Matrix)
2	The Inverse of a Square Matrix (using both adjoint method & Row Operations)
3	System of Linear Equations: (Introduction, Types of system: Homogeneous & Nonhomogeneous system, Cramer's rule)
4	Matrix Equations: (Gauss Elimination & Gauss-Jordan Method) , Applications of
5	Systems of Linear Equations
6	Eigen Values and Eigen Vectors
7	Caley-Hamilton Theorem & applications
8	Similarity, Diagonalization
9	
10	Diagonalization of Symmetric Matrices
11	Application : Quadratic Forms
12	Vector & Scalar Functions and Fields, Derivatives
13	Gradient of Scalar Field (Normal to surface, angle between surfaces) Directional Derivatives
14	Divergence & Curl of a Vector Field (Solenoidal & irrotational Vector Fields, scalar potential function)

**Elements of Electrical Engineering (2110005)**

Sr. No.	Topics	Teaching Hrs.	Module Weightage
1	D. C. Circuits:		
a)	Elementary Concepts: Introduction of Electrical Current, Voltage, Power and Energy; Sources of Electrical Energy – Independent and Dependent Source, Source conversion; Ideal electrical circuit elements - Resistor, Inductor and Capacitor; Fundamental laws of electric circuits - Ohm's Law and Kirchhoff's Laws; Analysis of series, parallel and series-parallel circuits; Star – Delta conversion; Node and Mesh analysis.	08	15%
2	A. C. Circuits:		
a)	Single Phase A.C. Circuits: Generation of sinusoidal voltage, Definition of average value, root mean square value, form factor and peak factor; Phasor representation of alternating quantities; Analysis with phasor diagrams of R, L, C, R-L, R-C and R-L-C circuits; Power in AC circuit, Resonance in series circuits.	12	25%



**CPD (2990001)**

Unit- 1= Who is a Contributor?

Unit-2= Contributor's Identity

Unit-3= Contributor's Vision of Success

Unit-4= Contributor's Vision of Career

Unit-5 = Scope Of Contribution

Unit-6= Embarking of Journey to the Contributor ship

Unit-13= Resume Building

Unit-14= Group Discussion

## Engineering Physics (2110011)

Sr.No.	Content	Module Weightage
1.	<b>UNIT : 1 DIELECTRICS</b> Definitions : Electric field intensity, Electric flux, Dielectric parameters Types of Dielectric materials : Solid, Liquid and Gaseous Classification of electrical Claussius-Mosotti equation Uses of Dielectric Materials; Uses of Dielectric Materials; Capacitors: Single and multilayer, Polymeric Film, Electrolytic; Power and Distribution transformers, other applications	15%
2.	<b>UNIT : 2 MAGNETIC MATERIALS</b> Definitions : Magnetic moment, Magnetic dipole, Magnetic Filed strength, Magnetic flux density, Intensity of magnetization, Magnetic dipole moment, Magnetic Field intensity, Magnetic permeability, magnetic susceptibility, Bohr Classification of Magnetic Materials on the basis of magnetic moment Soft and Hard Magnetic Materials Anti-ferromagnetic materials Ferrites	15%
3.	<b>UNIT : 3 ACOUSTIC AND ULTRASONIC:</b> Introduction, Classification and Characteristics of sound Sabine's formula for reverberation (Without Derivations) Introduction of Absorption co-efficient Sound absorbing materials Factors affecting the acoustics of building and their remedies Sound Insulation, Noise Pollutions, Noise Control in machines Properties of ultrasound Generation of ultrasound by (1) piezoelectric method and (2) magnetostriction method Methods for Ultrasound Velocity measurement Applications of ultrasound: Industry, Medicine • NDT through Ultrasonic	15%

**ELEMENTS OF CIVIL ENGINEERING: 2110004**

<b>Sr. No.</b>	<b>Topics</b>	<b>Module Weightage</b>
<b>1</b>	<b>Introduction:</b> Branches of Civil Engineering, Scope of Civil Engineering, Role of Civil Engineer in Society. Impact of infrastructural development on economy of country.	6%
<b>2</b>	<b>Surveying, Leveling and Mapping:</b> <b>Introduction:</b> Definition of Surveying, Aims and applications, Fundamental principles of surveying, Classification of surveying, Plans and maps, Scales, Units of measurement. <b>Linear Measurement:</b> Methods, Instruments used in chain surveying, Selection of stations, Chaining, Ranging, Offsetting, Errors in chaining and correction, Conventional symbols.	20%
<b>3</b>	<b>Building Materials and Construction:</b> Materials: Introduction to construction materials like Stone, Bricks, Lime, Cement, Timber, Sand, Aggregates, Mortar, Concrete and bitumen.	10%
<b>5</b>	<b>Water Resources:</b> Hydrologic cycle, water use and its conservation, Introduction to dams, weirs, barrages and check dams.	10%