UGC AUTONOMOUS

B.Tech in Computer Science and Engineering

(Cyber Security)

Course Structure (2021-2022 Admitted Batch)

I YEAR I SEMISTER

S.No.	Course Code	Course Title	Periods Per weak			Credits	Scheme Of Examination Max.Marks		
			L	T	P		CIE	SEE	Total
THEORY									
1	MA1101BS	LINEAR ALGEBRA & CALCULUS	3	1	0	4	30	70	100
2	CH1102BS	CHEMISTRY	3	1	0	4	30	70	100
3	ME1103ES	ENGINEERING GRAPHICS	1	0	4	3	30	70	100
4	EE1104ES	BASIC ELECTRICAL ENGINEERING	3	0	0	3	30	70	100
PRACTICALS									
5	CH1105BS	CHEMISTRY LAB	0	0	3	1.5	30	70	100
6	ME1106ES	ENGINEERING WORKSHOP	1	0	3	2.5	30	70	100
7	EE1107ES	BASIC ELECTRICAL ENGINEERING LAB	0	0	2	1	30	70	100
MANDATORY/VALUE ADDED COURSES									
8		INDUCTION PROGRAMME	0	0	0	0			
		Total Credits	11	2	12	19	270	630	800

I YEAR II SEMISTER

S.No.	Course Code	Course Title	Periods Per weak			Credits	Scheme Of Examination Max.Marks		
			L	T	P		CIE	SEE	Total
THEORY									
1	MA1201BS	ADVANCED CALCULUS	3	1	0	4	30	70	100
2	AP1202BS	APPLIED PHYSICS	3	1	0	4	30	70	100
3	CS1203ES	PROGRAMMING FOR PROBLEM SOLVING	3	1	0	4	30	70	100
4	EN1204HS	ENGLISH	2	0	0	2	30	70	100
PRACTICALS									
5	AP1205BS	APPLIED PHYSICS LAB	0	0	3	1.5	30	70	100
6	CS1206ES	PROGRAMMING FOR PROBLEM SOLVING LAB	0	0	3	1.5	30	70	100
7	EN1207HS	ENGLISH LANGUAGE AND COMMUNICATION SKILLS LAB	0	0	2	1	30	70	100
8	MC1001ES*	ENVIRONMENTAL SCIENCE	3	0	0	0	30	70	100
MANDATORY/VALUE ADDED COURSES									
9	MC1001ES*	ENVIRONMENTAL SCIENCE	3	0	0	0			
		Total Credits	14	3	8	1	270	630	800

II YEAR I SEMESTER

S.No.	Course Code	Course Title	Periods Per weak			Credits	Scheme Of Examination Max.Marks		
			L	T	P		CIE	SEE	Total
THEORY									
1	EC2101ES	Analog and Digital Electronics	3	0	0	3	30	70	100
2	CY2102PC	Data Structures	3	1	0	4	30	70	100
3	MA2103BS	Computer Oriented Statistical Methods	3	1	0	4	30	70	100
4	CY2104PC	Computer Organization and Architecture	3	0	0	3	30	70	100
5	CY2105PC	Python Programming	2	0	0	2	30	70	100
PRACTICALS									
6	EC2106ES	Analog and Digital Electronics Lab	0	0	2	1	30	70	100
7	CY2107PC	Data Structures Lab	0	0	3	1.5	30	70	100
8	CY2108PC	IT Workshop Lab	0	0	3	1.5	30	70	100
9	CY2109PC	Python Programming Lab	0	0	2	1	30	70	100
MANDATORY/VALUE ADDED COURSES									
9	MC2002*	Gender Sensitization Lab	0	0	2	0	Ref:8.4 Academic Regulations,UG.20		
		Total Credits	14	2	12	21	270	630	800

II YEAR II SEMESTER

S. No.	Course Code	Course Title	Periods Per weak			Credits	Scheme Of Examination Max.Marks		
			L	T	P		CIE	SEE	Total
THEORY									
1	CY2201PC	Discrete Mathematics	3	0	0	3	30	70	100
2	SM2202MS	BusinessEconomics&FinancialAnalysis	3	0	0	3	30	70	100
3	CY2203PC	OperatingSystems	3	0	0	3	30	70	100
4	CY2204PC	ComputerNetworks	3	1	0	4	30	70	100
5	CY2205PC	ObjectOrientedProgrammingusing Java	3	1	0	4	30	70	100
PRACTICALS									
6	CY2206PC	OperatingSystemsLab	0	0	3	1.5	30	70	100
7	CY2207PC	ComputerNetworksLab	0	0	3	1.5	30	70	100
8	CY2208PC	JavaProgrammingLab	0	0	2	1	30	70	100
MANDATORY/VALUE ADDED COURSES									
9	MC2001*	ConstitutionofIndia	3	0	0	0	Ref:8.4 Academic Regulations,UG. 20		
		Total Credits	18	2	8	21	240	560	800

MA1101BS :LINEAR ALGEBRA & CALCULUS

Course Code	Category	Hours/ Week			Credits	Maximum Marks		
		L	T	P		CIE	SEE	TOTAL
MA1101BS	Basic Sciences	3	1	0	4	30	70	100
Contact Classes: 48	Tutorial Classes: 16	Practical Classes: Nil				Total Classes:64		

Course Objectives: To learn
1. Types of matrices and their properties.
2. Concept of a rank of the matrix and applying this concept to know the consistency and solving the system of linear equations.
3. Concept of Eigen values and eigenvectors and to reduce the quadratic form to canonical form.
4. Concept of Fourier Series.
5. Concept of nature of the series.
6. Geometrical approach to the mean value theorems and their application to the mathematical problems
7. Evaluation of surface areas and volumes of revolutions of curves.
8. Evaluation of improper integrals using Beta and Gamma functions.
9. Partial differentiation, concept of total derivative
10. Finding maxima and minima of function of two and three variables.

Course Outcomes: After learning the contents of this paper the student must be able to
1. Write the matrix representation of a set of linear equations and to analyse the solution of the system of equations
2. Find the Eigen values and Eigen vectors
3. Reduce the quadratic form to canonical form using orthogonal transformations.
4. Analyse the nature of sequence and series.
5. Solve the applications on the mean value theorems.
6. Evaluate the improper integrals using Beta and Gamma functions
7. Find the extreme values of functions of two variables with/ without constraints.

UNIT-1: Matrices

Matrices: Introduction. Rank of a matrix by Echelon form and Normal form, Inverse of Non-singular matrices by Gauss-Jordan method; System of linear equations; solving system of Homogeneous and Non-Homogeneous equations. Gauss elimination method; Gauss Seidel Iteration method, LU Decomposition Method.

UNIT-2: Eigen values and Eigen vectors

Vectors Linear Transformation and Orthogonal Transformation: Eigen values and Eigen vectors and their properties. Diagonalization of a matrix; Cayley-Hamilton Theorem (without proof); finding the inverse an d power of a matrix by Cayley-

Hamilton Theorem; Quadratic forms and Nature of Quadratic forms; Reduction of Quadratic form to Canonical form by Orthogonal Transformation.

UNIT-3: Fourier series

Definition of periodic function, Fourier expansion of periodic function in $(0,2\pi) and (-\pi, \pi)$. Determination of Fourier coefficients – Fourier series of even and odd functions – Half – Range Fourier Sine and Cosine expansions.

UNIT-IV: Calculus

Mean value theorems : Rolle's theorem , Lagrange's Mean value theorem with their Geometrical Interpretation and applications , Cauchy's Mean value theorem. Definition of Improper Integral : Beta and Gamma functions and their applications.

UNIT-V: Multivariable calculus (Partial Differentiation and applications)

Definitions of limit and continuity. Partial Differentiation ; Euler's Theorem ; Total derivative ; Jacobian ; Functional dependence & independence , Maxima and minima of functions of two variables and three variables using method of Lagrange multipliers.

TEXTBOOKS:

1. B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010
2. Erwin kreyszig, Advanced Engineering Mathematics, 9th Edition, John Wiley & Sons,2006.
3. G.B. Thomas and R.L. Finney, Calculus and Analytic geometry, 9thEdition,Pearson, Reprint, 2002.

REFERENCES:

1. N.P. Bali and Manish Goyal, A text book of Engineering Mathematics, Laxmi Publications, Reprint, 2008.

2. Ramana B.V., Higher Engineering Mathematics, Tata McGraw Hill New Delhi, 11thReprint, 2010

CH1102BS :CHEMISTRY

Course Code	Category	Hours/ Week			Credits	Maximum Marks		
		L	T	P		CIE	SEE	TOTAL
CH1102BS	Basic Sciences	3	1	0	4	30	70	100
Contact Classes: 48	Tutorial Classes: 16	Practical Classes: Nil				Total Classes:64		

Course objectives:

1. To impart the basic knowledge of atomic, molecular and electronic modifications which makes the student to understand the technology based on them.
2. To develop specialized knowledge in the analysis of water and waste water which are essential for the engineers and in industry.
3. Learn about the fundamentals of electrode reactions and electrochemical cells
4. To provide an understanding of the corrosion principles and engineering methods used to minimize and prevent corrosion.
5. To familiarize students about the characteristics and applications of different polymers and engineering materials in every day life.
6. To acquire the skills pertaining to spectroscopy and to apply them for medical and other fields.

Course outcomes:

1. The knowledge of atomic, molecular and electronic changes, band theory related to conductivity.
2. Apply knowledge and understanding of water treatment process to real world problems.
3. Interpret the knowledge of electrochemical phenomenon involved in developing batteries and understanding fuel cells fundamentals.
4. Ability to determine appropriate method of protection against corrosion for a metal based on its applications in different fields.
5. Classify and characterize different polymers engineering materials and apply its knowledge to select suitable materials for specific applications.
6. The required skills to get clear concepts on basic spectroscopy and applications to medical and other fields.

UNIT - I:

Molecular structure and Theories of Bonding:

Atomic and molecular orbitals. Linear combination of atomic orbitals (LCAO), molecular orbitals of diatomic orbitals, molecular orbital energy level diagrams for N_2, O_2 and F_2 molecules. Crystal field theory (CFT): Salient features of CFT- Crystal Field Splitting of transition metal ion d-orbitals in Tetrahedral, Octahedral and

Square planar geometries. Band structure of solids and effect of doping on conductance.

UNIT-II

Water and its treatment: Introduction – hardness of water – causes of hardness – types of hardness: temporary and permanent -expression and units of hardness. Numerical problems. Disadvantages of hard water.

Boiler troubles: Scales and Sludges, caustic embrittlement, boiler corrosion, Softening of water by internal treatment of Boiler feed water and ion- exchange processes. Desalination of water – Reverse osmosis. Sewage water treatment. Potable water treatment - Disinfection of potable water by chlorination and Ozonization.

UNIT-III

Electrochemistry, Batteries and Corrosion:

Electrochemistry: Electrochemical cells- Electrode, electrode potential, standard electrode potential, types of electrodes- Calomel and glass electrodes. Nernst equation, electrochemical series and its applications. Batteries: Cell and battery - Primary (Lithium cell) and secondary batteries (Lead – acid storage battery, Lithium ion battery, advantages and applications of solid state battery) Fuel cells: Hydrogen-oxygen, solid polymer electrolytic fuel cell, Bio chemical fuel cells-------
Advantages and Applications. Corrosion and its control –Concept of corrosion, Types of corrosion, mechanism of Chemical & Electro chemical corrosion. Types of electro chemical corrosion (Galvanic corrosion, Pitting, Water line corrosion, stress corrosion). Factors affecting corrosion. Corrosion control methods -Principle of cathodic protection- Sacrificial Anodic Protection (SAP), Impressed Current Cathodic Protection (ICCP) . Protective coatings: Metallic coatings- Hot dipping, metal cladding, cementation, electroplating of copper, electro less plating of nickel**, paints.**

UNIT-IV

Engineering materials:

Ceramics: Properties & types of ceramics. Engineering applications of ceramics. **Polymers:** Defnition, classification, properties of polymers. Plastics-Compounding of plastics, Engineering applications of plastics (PVC, Teflon, Bakelite), Fibres - Applications of Nylon 6. FRP- Types, advantages and applications. Natural rubber and its vulcanization. Elastomers- Applications. Conducting polymers and its applications-Mechanism of conduction and doping in poly acetylene. Applications of bio degradable polymers. **Composites:** Classification, Constituents, advantages, applications. **Lubricants:** Classification, properties and mechanism of lubrication.

UNIT-V

Spectroscopic techniques and applications:

Principles of Spectroscopy, Selection rules and applications of electronic spectroscopy. Vibrational and rotational spectroscopy. Basic concepts of Nuclear Magnetic resonance spectroscopy, Chemical shift. Introduction to Magnetic Resonance Imaging.

Suggested Text Books:
1. Physical Chemistry, by P.W. Atkins
2. Engineering Chemistry by P.C.Jain & M.Jain; Dhanpat Rai Publishing Company (P) Ltd., New Delhi.
3. Fundamentals of Molecular Spectroscopy, by C.N. Banwell
4. University Chemistry, by B.M. Mahan, Pearson IV Edition.
5. Engineering Chemistry (NPTEL Web-book), by B.L. Tembe, Kamaluddin and M.S. Krishnan
6. R. V. E. Gadag & A. Nityananda Shetty, Engineering Chemistry, I K International Publishing House Private Limited, New Delhi, 2015 Edition

ME1103ES :ENGINEERING GRAPHICS

Course Code	Category	Hours/ Week			Credits	Maximum Marks		
ME1103ES	**Engineering Sciences**	L	T	P	3	CIE	SEE	TOTAL
		1	0	4		30	70	100
Contact Classes: 16	Tutorial Classes: Nil	Practical Classes: 64				Total Classes:80		

Course objectives:
1. To provide basic concepts in engineering drawing.
2. To impart knowledge about standard principles of orthographic projection of objects.
3. To draw sectional views and pictorial views of solids.

Course Outcomes: At the end of the course, the student will be able to:
1. Preparing working drawings to communicate the ideas and information.
2. Read, understand and interpret engineering drawings.

UNIT – I
Introduction to Engineering Drawing: Principles of Engineering Graphics and their Significance, Conic Sections including the Rectangular Hyperbola – General method only. Cycloid, Epicycloid and Hypocycloid, Scales – Plain & Diagonal.

UNIT- II
Orthographic Projections: Principles of Orthographic Projections – Conventions – Projections of Points and Lines, Projections of Plane regular geometric figures. Auxiliary Planes.

UNIT – III
Projections of Regular Solids – Auxiliary Views - Sections or Sectional views of Right Regular Solids –Prism, Cylinder, Pyramid, Cone – Auxiliary views – Sections of Sphere

UNIT – IV
Development of Surfaces of Right Regular Solids – Prism, Cylinder, Pyramid and Cone,Intersection of Solids: Intersection of – Prism vs Prism- Cylinder Vs Cylinder

UNIT – V
Isometric Projections: Principles of Isometric Projection – Isometric Scale – Isometric Views – Conventions – Isometric Views of Lines, Plane Figures, Simple and Compound Solids – Isometric Projection of objects having non- isometric lines. Isometric Projection of Spherical Parts. Conversion ofIsometric Views to Orthographic Views and Vice-versa –Conventions

Introduction to CAD: (For Internal Evaluation Weightage only):
Introduction to CAD Software Package Commands. - Free Hand Sketches of

2D- Creation of 2DSketches by CAD Package

TEXT BOOKS:
Engineering Drawing N.D. Bhatt / Charotar
Engineering Drawing / N. S. Parthasarathy and Vela Murali/ Oxford

REFERENCE BOOKS:
1. Engineering Drawing / Basant Agrawal and McAgrawal/ McGraw Hill
2. Engineering Drawing/ M. B. Shah, B.C. Rane / Pearson.
3. Computer Aided Engineering Drawing – K Balaveera Reddy et al – CBS Publishers

EE1104ES :BASIC ELECTRICAL ENGINEERING

Course Code	Category	Hours/ Week			Credits	Maximum Marks		
EE1104ES	**Engineering Sciences**	**L**	**T**	**P**	**1**	**CI E**	**SEE**	**TOTAL**
		0	**0**	**2**		**30**	**70**	**100**
Contact Classes: Nil	**Tutorial Classes: Nil**	**Practical Classes: 32**				**Total Classes:32**		

Course Objectives:

1. To introduce the concepts of electrical circuits and its components
2. To understand magnetic circuits, DC circuits and AC single phase & three phase circuits
3. To study and understand the different types of DC/AC machines and Transformers.
4. To import the knowledge of various electrical installations.
5. To introduce the concept of power, power factor and its improvement.•

Course Outcomes:

1. To analyze and solve electrical circuits using network laws and theorems.
2. To understand and analyze basic Electric and Magnetic circuits
3. To study the working principles of Electrical Machines
4. To introduce components of Low Voltage Electrical Installations•

UNIT-I:

D.C. Circuits Electrical circuit elements (R, L and C), voltage and current sources, KVL&KCL, analysis of simple circuits with dc excitation. Superposition, Thevenin and Norton Theorems and maximum power transfer thorem. Time-domain analysis of first-order RL and RC circuits.

UNIT-II:

A.C. Circuits Representation of sinusoidal waveforms, peak and rms values, phasor representation, real power, reactive power, apparent power, power factor, Analysis of single-phase ac circuits consisting of R, L, C, RL, RC, RLC combinations (series and parallel), resonance in series R-L-C circuit. Three-phase balanced circuits, voltage and current relations in star and delta connections.

UNIT-III:

TransformersIdeal and practicaltransformer,equivalentcircuit,losses in transformers, regulation and efficiency. Auto-transformer and three-phase transformer connections.

UNIT-IV:

Electrical Machines Generation of rotating magnetic fields, Construction and working of a three-phase induction motor, Significance of torque-slip characteristic. Loss components and efficiency, starting and speed control of induction motor. Construction and working principle of Single-phase induction motor. Construction, working, torque-speed characteristic and speed control of separately excited dc motor. Construction and working of synchronous generators.

UNIT-V:

Electrical Installations Components of LT Switchgear: Switch Fuse Unit (SFU), MCB, ELCB, MCCB, Types of Wires and Cables, Earthing. Types of Batteries, Important Characteristics for Batteries. Power factor measurement using 2 wattmeter method, Elementary calculations for energy consumption,

TEXT BOOKS/ REFERENCE BOOKS:

1. Basic Electrical Engineering - D.P. Kothari and I.J. Nagrath, 3rd edition 2010, Tata McGraw Hill.
2. D.C. Kulshreshtha, "Basic Electrical Engineering", McGraw Hill, 2009.
3. L.S. Bobrow, Fundamentals of Electrical Engineering", Oxford University Press, 2011
4. Electrical and Electronics Technology, E. Hughes, 10th Edition, Pearson, 2010
5. Electrical Engineering Fundamentals, Vincent Deltoro, Second Edition, Prentice Hall India, 198

CH1105BS :CHEMISTRY LAB

Course Code	Category	Hours/ Week			Credits	Maximum Marks		
		L	T	P	1.5	CIE	SEE	TOTAL
CH1105BS	Basic Sciences	0	0	3		30	70	100
Contact Classes: Nil	Tutorial Classes: Nil	Practical Classes: 48				Total Classes:48		

Course Objectives: The course consists of experiments related to the principles of chemistry required for engineering student. The student will learn:
1. Estimation of hardness and chloride content in water to check its suitability for drinking purpose.
2. To determine the rate constant of reactions from concentrations as an function of time.
3. The measurement of physical properties like adsorption and viscosity.
4. To synthesize the drug molecules and check the purity of organic molecules by thin layer chromatographic (TLC) technique.

Course Outcomes: The experiments will make the student gain skills on:
1. Determination of parameters like hardness and chloride content in water.
2. Estimation of rate constant of a reaction from concentration – time relationships.
3. Determination of physical properties like adsorption and viscosity.
4. Calculation of Rf values of some organic molecules by TLC technique.

List of Experiments:

1. Determination of total hardness of water by complexometric method using EDTA
2. Determination of chloride content of water by Argentometry
3. Estimation of an HCl by Conductometric titrations
4. Estimation of Acetic acid by Conductometric titrations
5. Estimation of HCl by Potentiometric titrations
6. Estimation of Fe2+ by Potentiometry using KMnO4
7. Determination of rate constant of acid catalysed hydrolysis of methyl acetate
8. Synthesis of Aspirin and Paracetamol
9. Thin layer chromatography calculation of Rf values. eg ortho and para nitro phenols
10. Determination of acid value of coconut oil
11. Verification of freundlich adsorption isotherm-adsorption of acetic acid on charcoal
12. Determination of viscosity of castor oil and ground nut oil by using Ostwald's viscometer.
13. Determination of partition coefficient of acetic acid between n- butanol and water.
14. Determination of surface tension of a give liquid using stalagmometer.

References

1. Senior practical physical chemistry, B.D. Khosla, A. Gulati and V. Garg (R. Chand & Co., Delhi)
2. An introduction to practical chemistry, K.K. Sharma and D. S. Sharma (Vikas publishing, N. Delhi)
3. Vogel's text book of practical organic chemistry 5th edition
4. Text book on Experiments and calculations in Engineering chemistry – S.S. Dara

ME1106ES :ENGINEERING WORKSHOP

Course Code	Category	Hours/ Week			Credits	Maximum Marks		
ME1106ES	**Engineering Sciences**	**L**	**T**	**P**	**2.5**	**CI E**	**SEE**	**TOTAL**
		1	**0**	**3**		**30**	**70**	**100**
Contact Classes: 16	**Tutorial Classes: Nil**	**Practical Classes: 48**				**Total Classes:64**		

Course Objectives:

1. To Study of different hand operated power tools, uses and their demonstration.
2. To gain a good basic working knowledge required for the production of various engineeringproducts.
3. To provide hands on experience about use of different engineering materials, tools,equipments and processes those are common in the engineering field.
4. To develop a right attitude, team working, precision and safety at work place.
5. It explains the construction, function, use and application of different working tools, equipmentand machines.
6. To study commonly used carpentry joints.
7. To have practical exposure to various welding and joining processes.
8. Identify and use marking out tools, hand tools, measuring equipment and to work toprescribed tolerances.

Course Outcomes: At the end of the course, the student will be able to:

1. Study and practice on machine tools and their operations
2. Practice on manufacturing of components using workshop trades including pluming, fitting,carpentry, foundry, house wiring and welding.
3. Identify and apply suitable tools for different trades of Engineering processes includingdrilling, material removing, measuring, chiseling.
4. Apply basic electrical engineering knowledge for house wiring practice.

1. TRADES FOR EXERCISES:
At least two exercises from each trade:

1. Carpentry – (T-Lap Joint, Dovetail Joint, Mortise & Tenon Joint)
2. Fitting – (V-Fit, Dovetail Fit & Semi-circular fit)
3. Tin-Smithy – (Square Tin, Rectangular Tray & Conical Funnel)
4. Foundry – (Preparation of Green Sand Mould using Single Piece and Split Pattern)

5.   Welding Practice – (Arc Welding & Gas Welding)
6.   House-wiring – (Parallel & Series, Two-way Switch and Tube Light)
7.   Black Smithy – (Round to Square, Fan Hook and S-Hook)

2. TRADES FOR DEMONSTRATION & EXPOSURE:

Plumbing, Machine Shop, Metal Cutting (Water Plasma), Power tools in construction and WoodWorking

TEXT BOOKS:
1.   Workshop Practice /B. L. Juneja / Cengage
2.   Workshop Manual / K. Venugopal / Anuradha.

REFERENCE BOOKS:
1.   Work shop Manual - P. Kannaiah/ K. L. Narayana/ SciTech
2.   Workshop Manual / Venkat Reddy/ BSP

EE1107ES: BASIC ELECTRICAL ENGINEERING LAB

Course Code	Category	Hours/ Week			Credits	Maximum Marks		
EN1107HS	**Humanities & Sciences**	**L**	**T**	**P**	**1**	**CI E**	**SEE**	**TOTAL**
		0	**0**	**2**		**30**	**70**	**100**
Contact Classes: Nil	**Tutorial Classes: Nil**	**Practical Classes: 32**				**Total Classes:32**		

Course Objectives:

1. To analyze a given network by applying various electrical laws and network theorems
2. To know the response of electrical circuits for different excitations
3. To calculate, measure and know the relation between basic electrical parameters.
4. To analyze the performance characteristics of DC and AC electrical machines

Course Outcomes:

1. Get an exposure to basic electrical laws.
2. Understand the response of different types of electrical circuits to different excitations.
3. Understand the measurement, calculation and relation between the basic electrical parameters
4. Understand the basic characteristics of transformers and electrical machines.

List of experiments/demonstrations:

1. Verification of Ohms Law

2. Verification of KVL and KCL

3. Transient Response of Series RL , RC and RLC circuits using DC excitation

4. Resonance in series RLC circuit

5. Calculations and Verification of Impedance and Current of RL, RC and RLC series circuits

6. Measurement of Voltage, Current and Real Power in primary and Secondary Circuits of a SinglePhase Transformer

7. Load Test on Single Phase Transformer (Calculate Efficiency and Regulation)

8. Three Phase Transformer: Verification of Relationship between Voltages and Currents (StarDelta, Delta-Delta, Delta-star, Star-Star)

9. Measurement of Active and Reactive Power in a balanced Three-phase circuit

10. Open circuit Characteristics of a Separately/Self Excited DC Shunt/Compound Generator

11. Performance Characteristics of a Separately/Self Excited DC Shunt/Compound Motor

12. Torque-Speed Characteristics of a Separately/Self Excited DC Shunt/Compound Motor

13. Performance Characteristics of a Three-phase Induction Motor

14. Torque-Speed Characteristics of a Three-phase Induction Motor

15. No-Load Characteristics of a Three-phase Alternator

MA1201BS: ADVANCED CALCULUS

Course Code	Category	Hours/ Week			Credits	Maximum Marks		
		L	T	P	4	CIE	SEE	TOTAL
MA1201BS	Basic Sciences	3	1	0		30	70	100
Contact Classes: 48	Tutorial Classes: 16	Practical Classes: Nil				Total Classes:64		

Course Objectives: To learn
1. Methods of solving the differential equations of first and higher order.
2. Evaluation of multiple integrals and their applications
3. The physical quantities involved in engineering field related to vector valued functions
4. The basic properties of vector valued functions and their applications to line, surface and volume integrals

Course Outcomes: After learning the contents of this paper the student must be able to
1. Identify whether the given differential equation of first order is exact or not
2. Solve higher differential equation and apply the concept of differential equation to real world problems
3. Evaluate the multiple integrals and apply the concept to find areas, volumes, centre of mass and Gravity for cubes, sphere and rectangular parallelopiped
4. Evaluate the line, surface and volume integrals and converting them from one to another

UNIT-I: First Order Ordinary Differential Equations

Exact, linear and Bernoulli's equations ; Applications : Newton's law of cooling , Law of natural growth and decay ; Equations not of first degree : equations solvable for p, Applications: LR circuit problems.

UNIT-II: Ordinary Differential Equations of   Higher Order

Second order linear differential equations with constant coefficients : Non-Homogeneous terms of the type e^{ax},sin ax, cos ax, polynomials in x, $e^{ax}V(x)$ and xV(x); method of variation of parameters, Applications: LCR circuit problems.

UNIT-III: Multivariable Calculus (Integration)

Evaluation of Double Integrals (Cartesian coordinates) ; change of order of Integration (only Cartesian form) ; Evaluation of triple Integrals : Change of variables (Cartesian to polar) for double and (Cartesian to Spherical And Cylindrical polar coordinates) for triple integrals.Applications: Areas (double integrals) and volumes (by double integrals and triple integrals).

UNIT-IV: Vector Differentiation

Vector oint functions and scalar point functions. Gradient, Divergence and Curl. Directional derivatives, Tangent plane and normal line. Vectors Identities. Scalar potential functions. Solenoidal and Irrotational vectors.

UNIT-V: Vector Integration

Line, Surface and Volume Integrals. Theorems of Greens, Gauss and Stokes (without proofs) and their applications.

TEXT BOOKS:

1. B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010
2. Erwin kreyszig, Advanced Engineering Mathematics, 9th Edition, John Wiley & Sons,2006
3. G.B. Thomas and R.L. Finney, Calculus and Analytic geometry, 9thEdition, Pearson, Reprint, 2002.

REFERENCES:

1. Paras Ram, Engineering Mathematics, 2nd Edition, CBS Publishes
2. S. L. Ross, Differential Equations, 3rd Ed., Wiley India, 1984

AP1202BS: APPLIED PHYSICS

Course Code	Category	Hours/ Week			Credits	Maximum Marks		
AP1202BS	**Basic Sciences**	**L**	**T**	**P**	**4**	**CIE**	**SEE**	**TOTAL**
		3	**1**	**0**		**30**	**70**	**100**
Contact Classes: 48	**Tutorial Classes: 16**	**Practical Classes: Nil**				**Total Classes:64**		

Course Objectives:
1. Students will demonstrate skills in scientific inquiry, problem solving and laboratory techniques.
2. Students will be able to demonstrate competency and understanding of the concepts found in Quantum Mechanics, Fiber optics and lasers, Semiconductor physics and Electromagnetic theory and a broad base of knowledge in physics.
3. The graduates will be able to solve non-traditional problems that potentially draw on knowledge in multiple areas of physics.
4. To study applications in engineering like memory devices, transformer core and superconductors.

Course Outcomes: Upon graduation:
1. The student would be able to learn the fundamental concepts on Quantum behaviour of matter in its micro state.
2. The knowledge of fundamentals of Semiconductor physics, Optoelectronics, Lasers and fibre optics enable the students to apply to various systems like communications, solar cell, photo cells and so on.
3. Design, characterization and study of properties of material help the students to prepare new materials for various engineering applications.
4. The course also helps the students to be exposed to the phenomena of superconductivity and also to have exposure on magnetic materials and dielectric materials.

UNIT-I

Principles of Quantum Mechanics: Introduction to quantum physics, Black body radiation, Planck's law, Photoelectric effect, Compton effect, de-Broglie's hypothesis, Wave-particle duality, Davisson and Germer experiment, G-P Thomson experiment, Born's interpretation of the wave function, Schrodinger's time independent wave equation, Particle in one dimensional box.

UNIT-II

Semiconductor Physics: Origin of Energy Band Formation in Solids, Intrinsic and Extrinsic semiconductors, Dependence of Fermi level on carrier-concentration and temperature, Carrier transport: diffusion and drift, Hall effect, Formation of PN junction, Open circuit PN junction, Energy diagram of PN diode, I-V Characteristics of PN junction diode, Zener diode –breakdown mechanism and characteristics

UNIT-III

Physics of Semiconductor Devices:, Generation & recombination mechanisms in semiconductors, LED and semiconductor lasers: Device structure, Materials, Characteristics and figures of merit, Photo diode(PIN diode) & Solar cell - their structure, Materials, working principle and Characteristics.

UNIT-IV
Lasers: Introduction to interaction of radiation with matter, Coherence, Principle and working of Laser, Population inversion, Pumping, Types of Lasers: Ruby laser, He-Ne laser, Applications of laser-Scientific & Medical applications.

Fibre Optics: Introduction, Optical fibre as a dielectric wave guide, Total internal reflection, Acceptance angle, Acceptance cone and Numerical aperture, Step and Graded index fibres, Absorption & Bending Losses associated with optical fibres, Applications of optical fibres-Sensor & Medical Field.

UNIT-V

Dielectric Properties: Polarisation, Permittivity and Dielectric constant, Types of Polarisation, Internal fields in a solid, Clausius-Mossotti equation, Ferroelectrics and Piezoelectrics.

Magnetic Properties: Magnetisation, permeability and susceptibility, Classification of magnetic materials, Ferromagnetism and ferromagnetic domains, Hysteresis, Hard & Soft Magnetic materials, Applications of magnetic materials.

TEXT BOOKS:

1. Engineering Physics, B.K. Pandey, S. Chaturvedi - Cengage Learing.
2. Halliday and Resnick, Physics - Wiley.
3. A textbook of Engineering Physics, Dr. M. N. Avadhanulu, Dr. P.G. Kshirsagar - S. Chand

REFERENCES:

1. Richard Robinett, Quantum Mechanics
2. J. Singh, Semiconductor Optoelectronics: Physics and Technology, Mc Graw-Hill inc. (1995).
3. Online Course: "Optoelectronic Materials and Devices" by Monica Katiyar and Deepak Guptha on NPTEL

CS1203ES: PROGRAMMING FOR PROBLEM SOLVING

Course Code	Category	Hours/ Week			Credits	Maximum Marks		
CS1203ES	Engineering Sciences	L	T	P	4	CIE	SEE	TOTAL
		3	1	0		30	70	100
Contact Classes: 48	Tutorial Classes: 16	Practical Classes: Nil				Total Classes:64		

Course Objectives:

1. To learn the fundamentals of computers.
2. To understand the various steps in program development.
3. To learn the syntax and semantics of C programming language.
4. To learn the usage of structured programming approach in solving problems.

Course Outcomes: The student will learn

1. To write algorithms and to draw flowcharts for solving problems.
2. To convert the algorithms/flowcharts to C programs.
3. To code and test a given logic in C programming language.
4. To decompose a problem into functions and to develop modular reusable code.
5. To use arrays, pointers, strings and structures to write C programs.
6. Searching and sorting problems.

UNIT - I: Introduction to Programming

Introduction to components of a computer system: disks, primary and secondary memory, processor, operating system, compilers, creating, compiling and executing a program etc., Number systems Introduction to Algorithms: steps to solve logical and numerical problems. Representation of Algorithm, Flowchart/Pseudo code with examples, Program design and structured programming Introduction to C Programming Language: variables (with data types and space requirements), Syntax and Logical Errors in compilation, object and executable code , Operators, expressions and precedence, Expression evaluation, Storage classes (auto, extern, static and register), type conversion, The main method and command line arguments
Bitwise operations: Bitwise AND, OR, XOR and NOT operators
Conditional Branching and Loops: Writing and evaluation of conditionals and consequent branching with if, if-else, switch-case, ternary operator, goto, Iteration with for, while, do-while loops
I/O: Simple input and output with scanf and printf, formatted I/O, Introduction to stdin, stdout and stderr. Command line arguments

UNIT - II: Arrays, Strings, Structures and Pointers:

Arrays: one- and two-dimensional arrays, creating, accessing and manipulating

elements of arrays Strings: Introduction to strings, handling strings as array of characters, basic string functions availablein C (strlen, strcat, strcpy, strstr etc.), arrays of strings

Structures: Defining structures, initializing structures, unions, Array of structures

Pointers: Idea of pointers, Defining pointers, Pointers to Arrays and Structures, Use of Pointers in self-referential structures, usage of self referential structures in linked list (no implementation) Enumeration data type

UNIT - III: Preprocessor and File handling in C:

Preprocessor: Commonly used Preprocessor commands like include, define, undef, if, ifdef, ifndef Files: Text and Binary files, Creating and Reading and writing text and binary files, Appending data toexisting files, Writing and reading structures using binary files, Random access using fseek, ftell andrewind functions.

UNIT - IV: Function and Dynamic Memory Allocation:

Functions: Designing structured programs, Declaring a function, Signature of a function, Parameters and return type of a function, passing parameters to functions, call by value, Passing arrays to functions, passing pointers to functions, idea of call by reference, Some C standard functions and libraries

Recursion: Simple programs, such as Finding Factorial, Fibonacci series etc., Limitations of Recursivefunctions

Dynamic memory allocation: Allocating and freeing memory, Allocating memory for arrays of differentdata types

UNIT - V: Introduction to Algorithms:

Algorithms for finding roots of a quadratic equations, finding minimum and maximum numbers of a givenset, finding if a number is prime number, etc.

Basic searching in an array of elements (linear and binary search techniques),

Basic algorithms to sort array of elements (Bubble, Insertion and Selection sort algorithms),Basic concept of order of complexity through the example programs

TEXT BOOKS:
1. Byron Gottfried, Schaum's Outline of Programming with C, McGraw-Hill
2. B.A. Forouzan and R.F. Gilberg C Programming and Data Structures, Cengage Learning, (3rdEdition)

REFERENCE BOOKS:
1. Brian W. Kernighan and Dennis M. Ritchie, The C Programming Language, Prentice
2. Hall of India
3. R.G. Dromey, How to solve it by Computer, Pearson (16th Impression)
4. Programming in C, Stephen G. Kochan, Fourth Edition, Pearson Education.
5. Herbert Schildt, C: The Complete Reference, Mc Graw Hill, 4th Edition

EN1204HS :ENGLISH

B.Tech. I Year II Semester.Course Code	Category	Hours/ Week			Credits	Maximum Marks		
EN1204HS	Humanities & Sciences	L	T	P	2	CIE	SEE	TOTAL
		2	0	0		30	70	100
Contact Classes: 32	Tutorial Classes: Nil	Practical Classes: Nil				Total Classes:32		

INTRODUCTION In view of the growing importance of English as a tool for global communication and the consequent emphasis on training students to acquire language skills, the syllabus of English has been designed to develop linguistic, communicative and critical thinking competencies of Engineering students. In English classes, the focus should be on the skills development in the areas of vocabulary, grammar, reading and writing. For this, the teachers should use the prescribed text for detailed study. The students should be encouraged to read the texts leading to reading comprehension and different passages may be given for practice in the class. The time should be utilized for working out the exercises given after each excerpt, and also for supplementing the exercises with authentic materials of a similar kind, for example, newspaper articles, advertisements, promotional material etc. *The focus in this syllabus is on skill development, fostering ideas and practice of language skills in various contexts and cultures.*

Learning Objectives: The course will help to a. Improve the language proficiency of students in English with an emphasis on Vocabulary, Grammar, Reading and Writing skills. b. Equip students to study academic subjects more effectively and critically using the theoretical and practical components of English syllabus. c. Develop study skills and communication skills in formal and informal situations.

Course Outcomes: Students should be able to

1. Use English Language effectively in spoken and written forms.

2. Comprehend the given texts and respond appropriately.

3. Communicate confidently in various contexts and different cultures.

4. Acquire basic proficiency in English including reading and listening comprehension, writing and speaking skills.

SYLLABUS
UNIT –I 'The Raman Effect' from the prescribed textbook 'English for Engineers' published by Cambridge University Press. Vocabulary Building: The Concept of Word Formation --The Use of Prefixes and Suffixes.
Grammar: Identifying Common Errors in Writing with Reference to Articles and Prepositions. **Reading:** Reading and Its Importance- Techniques for Effective Reading.

Basic Writing Skills: Sentence Structures -Use of Phrases and Clauses in Sentences- Importance of Proper Punctuation- Techniques for writing precisely –

Paragraph writing – Types, Structures and Features of a Paragraph - Creating Coherence-Organizing Principles of Paragraphs in Documents.

UNIT –II 'Ancient Architecture in India' from the prescribed textbook 'English for Engineers' published by Cambridge University Press.
Vocabulary: Synonyms and Antonyms.
Grammar: Identifying Common Errors in Writing with Reference to Noun-pronoun Agreement and Subject-verb Agreement.
Reading: Improving Comprehension Skills – Techniques for Good Comprehension
Writing: Format of a Formal Letter-

Writing Formal Letters E.g.., Letter of Complaint, Letter of Requisition, Job Application with Resume.

UNIT –III 'Blue Jeans' from the prescribed textbook 'English for Engineers' published by Cambridge University Press.

Vocabulary: Acquaintance with Prefixes and Suffixes from Foreign Languages in English to form Derivatives-Words from Foreign Languages and their Use in English.

Grammar: Identifying Common Errors in Writing with Reference to Misplaced Modifiers and Tenses. **Reading:** Sub-skills of Reading- Skimming and Scanning

Writing: Nature and Style of Sensible Writing- **Defining- Describing** Objects, Places and Events – **Classifying**- Providing Examples or Evidence

UNIT –IV ' KING LEAR ' a tragedy story by William Shakespeare, play synopsis of Act 1 & 2 published by Bloom, Harold. "King Lear." Shakespeare : The Invention of the Human. New York: Riverhead, 1998.

Vocabulary: Standard Abbreviations in English Grammar: Redundancies and Clichés in Oral and Written Communication.

Reading: Comprehension- Intensive Reading and Extensive Reading

Writing: Writing Practices--Writing Introduction and Conclusion - Essay Writing-Précis Writing.

UNIT –V 'How a Chinese Billionaire Built Her Fortune' from the prescribed textbook 'English for Engineers' published by Cambridge University Press.

Vocabulary: Technical Vocabulary and their usage

Grammar: Common Errors in English

Reading: Reading Comprehension-Exercises for Practice

Writing: Technical Reports- Introduction – Characteristics of a Report – Categories of Reports

Formats- Structure of Reports (Manuscript Format) -Types of Reports - Writing aReport.

Textbook:
1. Sudarshana, N.P. and Savitha, C. (2018). English for Engineers. Cambridge University Press.
2. Nahum Tate's 1681 Adaption of King Lear

References:
1. Swan, M. (2016). Practical English Usage. Oxford University Press.
2. Kumar, S and Lata, P.(2018). Communication Skills. Oxford University Press.
3. Wood, F.T. (2007).Remedial English Grammar. Macmillan.
4. Zinsser, William. (2001). On Writing Well. Harper Resource Book.
5. Hamp-Lyons, L. (2006).Study Writing. Cambridge University Press.
6. Exercises in Spoken English. Parts I –III. CIEFL, Hyderabad. Oxford University Press.

CS1206ES: PROGRAMMING FOR PROBLEM SOLVING LAB

Course Code	Category	Hours/ Week			Credits	Maximum Marks		
CS1206ES	**Engineering Sciences**	**L**	**T**	**P**	**1.5**	**CIE**	**SEE**	**TOTAL**
		0	**0**	**3**		**25**	**75**	**100**
Contact Classes: Nil	**Tutorial Classes: Nil**	**Practical Classes: 48**				**Total Classes:48**		

Course Objectives: The students will learn the following:

- To work with an IDE to create, edit, compile, run and debug programs
- To analyze the various steps in program development.
- To develop programs to solve basic problems by understanding basic concepts in Clike operators, control statements etc.
- To develop modular, reusable and readable C Programs using the concepts likefunctions, arrays etc.
- To write programs using the Dynamic Memory Allocation concept.
- To create, read from and write to text and binary files

Course Outcomes: The candidate is expected to be able to:

- formulate the algorithms for simple problems
- translate given algorithms to a working and correct program
- correct syntax errors as reported by the compilers
- identify and correct logical errors encountered during execution
- represent and manipulate data with arrays, strings and structures
- use pointers of different types
- create, read and write to and from simple text and binary files
- modularize the code with functions so that they can be reused

Practice sessions:

a. Write a simple program that prints the results of all the operators available in C (including pre/ post increment , bitwise and/or/not , etc.). Read required operand values from standard input.

b. Write a simple program that converts one given data type to another using auto conversion and casting. Take the values form standard input.

Simple numeric problems:

a. Write a program for fiend the max and min from the three numbers.

b. Write the program for the simple, compound interest.

c. Write program that declares Class awarded for a given percentage of marks, where mark <40% = Failed, 40% to <60% = Second class, 60% to <70%=First class, >= 70% = Distinction. Read percentage from standard input.

d. Write a program that prints a multiplication table for a given number and the number of rows in the table. For example, for a number 5 and rows = 3, the output should be:

e. 5 x 1 = 5

f. 5 x 2 = 10

g. 5 x 3 = 15

h. Write a program that shows the binary equivalent of a given positive number between0 to 255.

Expression Evaluation:

a. A building has 10 floors with a floor height of 3 meters each. A ball is dropped from the top of the building. Find the time taken by the ball to reach each floor. (Use the formula $s = ut+(1/2)at^2$ where u and a are the initial velocity in m/sec (= 0) and acceleration in m/sec^2 (= 9.8 m/s^2)).

b. Write a C program, which takes two integer operands and one operator from the user, performs the operation and then prints the result. (Consider the operators +,-,*, /, % and use Switch Statement)

c. Write a program that finds if a given number is a prime number

d. Write a C program to find the sum of individual digits of a positive integer and test given number is palindrome.

e. A Fibonacci sequence is defined as follows: the first and second terms in the sequence are 0 and 1. Subsequent terms are found by adding the preceding two terms in the sequence. Write a C program to generate the first n terms of the sequence.

f. Write a C program to generate all the prime numbers between 1 and n, where n is a value supplied by the user.

g. Write a C program to find the roots of a Quadratic equation.

h. Write a C program to calculate the following, where x is a fractional value.i. $1-x/2 +x^2/4-x^3/6$

j. Write a C program to read in two numbers, x and n, and then compute the sum of this geometric progression: $1+x+x^2+x^3+ +x^n$.
For example: if n is 3 and x is
5, then the program computes 1+5+25+125.

Arrays and Pointers and Functions:

a. Write a C program to find the minimum, maximum and average in an array ofintegers.

b. Write a functions to compute mean, variance, Standard Deviation, sorting of nelements in single dimension array.

c. Write a C program that uses functions to perform the following:

d. Addition of Two Matrices

e. ii. Multiplication of Two Matrices

f. iii. Transpose of a matrix with memory dynamically allocated for the new matrix asrow and column counts may not be same.

g. Write C programs that use both recursive and non-recursive functions

h. To find the factorial of a given integer.

i. ii. To find the GCD (greatest common divisor) of two given integers.

j. iii. To find x^n

k. Write a program for reading elements using pointer into array and display the valuesusing array.

l. Write a program for display values reverse order from array using pointer.

m. Write a program through pointer variable to sum of n elements from array.

Files:

a. Write a C program to display the contents of a file to standard output device.

b. Write a C program which copies one file to another, replacing all lowercase characterswith their uppercase equivalents.

c. Write a C program to count the number of times a character occurs in a text file. Thefile name and the character are supplied as command line arguments.

d. Write a C program that does the following:

It should first create a binary file and store 10 integers, where the file name and 10values are given in the command line. (hint: convert the strings using atoi function) Now the program asks for an index and a value from the user and the value at thatindex should be changed to the new value in the file. (hint: use fseek function)
The program should then read all 10 values and print them back.

e. Write a C program to merge two files into a third file (i.e., the contents of the firs t filefollowed by those of the second are put in the third file).

Strings:

a. Write a C program to convert a Roman numeral ranging from I to L to its decimalequivalent.

b. Write a C program that converts a number ranging from 1 to 50 to Roman equivalent

c. Write a C program that uses functions to perform the following operations:

d. To insert a sub-string in to a given main string from a given position.

e. ii. To delete n Characters from a given position in a given string.

f. Write a C program to determine if the given string is a palindrome or not (Spelled same in both directions with or without a meaning like madam,

civic, noon, abcba, etc.)

g. Write a C program that displays the position of a character ch in the string S or – 1 ifS doesn't contain ch.

h. Write a C program to count the lines, words and characters in a given text.

Miscellaneous:

a. Write a menu driven C program that allows a user to enter n numbers and then choosebetween finding the smallest, largest, sum, or average. The menu and all the choices are to be functions. Use a switch statement to determine what action to take. Displayan error message if an invalid choice is entered.

b. Write a C program to construct a pyramid of numbers as follows:

```
    1              *           1           1         *
   1 2            * *         2 3         2 2       * *
  1 2 3          * * *       4 5 6       3 3 3     * * *
                                        4 4 4 4     * *
                                                     *
```

Sorting and Searching:

a. Write a C program that uses non recursive function to search for a Key value in agiven

b. List of integers using linear search method.

c. Write a C program that uses non recursive function to search for a Key value in agiven

d. Sorted list of integers using binary search method.

e. Write a C program that implements the Bubble sort method to sort a given list of

f. Integers in ascending order.

g. Write a C program that sorts the given array of integers using selection sort indescending order

h. Write a C program that sorts the given array of integers using insertion sort inascending order

i. Write a C program that sorts a given array of names

Suggested Reference Books for solving the problems:

i. Byron Gottfried, Schaum's Outline of Programming with C, McGraw-Hill

ii. B.A. Forouzan and R.F. Gilberg C Programming and Data Structures, CengageLearning, (3rd Edition)

iii. Brian W. Kernighan and Dennis M. Ritchie, The C Programming Language, Prentice

iv. Hall of India

v. R.G. Dromey, How to solve it by Computer, Pearson (16th Impression)

vi. Programming in C, Stephen G. Kochan, Fourth Edition, Pearson

Education.

vii.   Herbert Schildt, C: The Complete Reference, Mc Graw Hill, 4th Edition

EN1207HS: ENGLISH LANGUAGE AND COMMUNICATION SKILLS LAB

Course Code	Category	Hours/ Week			Credits	Maximum Marks		
EN1207HS	**Humanities & Sciences**	**L**	**T**	**P**	**1**	**CIE**	**SEE**	**TOTAL**
		0	**0**	**2**		**30**	**70**	**100**
Contact Classes: Nil	**Tutorial Classes: Nil**	**Practical Classes: 32**				**Total Classes:32**		

The **Language Lab** focuses on the production and practice of sounds of language and familiarizes the students with the use of English in everyday situations both in formal and informal contexts.

Course Objectives:
1. To facilitate computer-assisted multi-media instruction enabling individualized and independent language learning
2. To sensitize students to the nuances of English speech sounds, word accent, intonation and rhythm
3. To bring about a consistent accent and intelligibility in students' pronunciation of English by providing an opportunity for practice in speaking
4. To improve the fluency of students in spoken English and neutralize their mother tongue influence
5. To train students to use language appropriately for public speaking and interviews

Learning Outcomes: Students will be able to attain
1. Better understanding of nuances of English language through audio- visual experience and group activities
2. Neutralization of accent for intelligibility
3. Speaking skills with clarity and confidence which in turn enhances their employability skills

Syllabus
English Language and Communication Skills Lab (ELCS) shall have two parts:
a. Computer Assisted Language Learning (CALL) Lab
b. Interactive Communication Skills (ICS) Lab

Listening Skills
Objectives
1. To enable students develop their listening skills so that they may appreciate its role in the LSRW skills approach to language and improve their pronunciation
2. To equip students with necessary training in listening so that they can comprehend the speech of people of different backgrounds and regions

Students should be given practice in listening to the sounds of the language, to be able to recognize them and find the distinction between different sounds, to be able to mark stress and recognize and use the right intonation in sentences.

• Listening for general content
• Listening to fill up information
• Intensive listening
• Listening for specific information

Speaking Skills
Objectives
1. To involve students in speaking activities in various contexts
2. To enable students express themselves fluently and appropriately in social and professional contexts
    • Oral practice: **J**ust A Minute (**JAM**) Sessions
    • Describing objects/situations/people
    • Role play – Individual/Group activities

The following course content is prescribed for the English Language and Communication Skills Lab based on Unit-6 of AICTE Model Curriculum 2018 for B.Tech First English. As the syllabus is very limited, it is required to prepare teaching/learning materials by the teachers collectively in the form of handouts based on the needs of the students in their respective colleges for effective teaching/learning and timesaving in the Lab)

Exercise – I

CALL Lab: *Understand:* Listening Skill- Its importance – Purpose- Process- Types- Barriers of Listening. *Practice*: Introduction to Phonetics – Speech Sounds – Vowels and Consonants.

ICS Lab: *Understand:* Communication at Work Place- Spoken vs. Written language. *Practice:* Ice-Breaking Activity and JAM Session- Situational Dialogues – Greetings – Taking Leave – Introducing Oneself and Others.

 Exercise – II

CALL Lab: *Understand:* Structure of Syllables – Word Stress and Rhythm– Weak Forms and Strong Forms in Context. *Practice:* Basic Rules of Word Accent - Stress Shift - Weak Forms and Strong Forms in Context.

 ICS Lab: *Understand:* Features of Good Conversation – Non-verbal Communication. *Practice:* Situational Dialogues – Role-Play- Expressions in Various Situations –Making Requests and Seeking Permissions - Telephone Etiquette.

Exercise - III

CALL Lab: *Understand:* Intonation-Errors in Pronunciation-the Influence of Mother Tongue (MTI).

Practice: Common Indian Variants in Pronunciation – Differences in British and American Pronunciation.

ICS Lab: *Understand:* How to make Formal Presentations. *Practice:* Formal Presentations.

 Exercise – IV

CALL Lab: *Understand:* Listening for General Details. *Practice:* Listening Comprehension Tests.

 ICS Lab: *Understand:* Public Speaking – Exposure to Structured Talks. *Practice:* Making a Short Speech – Extempore.

Exercise – V

CALL Lab: *Understand:* Listening for Specific Details. *Practice:* Listening Comprehension Tests.

ICS Lab: *Understand:* Interview Skills*. Practice:* Mock Interviews.

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 Minimum Requirement of infrastructural facilities for ELCS Lab:
1. Computer Assisted Language Learning (CALL) Lab:
The Computer Assisted Language Learning Lab has to accommodate 40 students with 40 systems, with one Master Console, LAN facility and English language learning software for self- study by students.
 System Requirement (Hardware component): *Computer network with LAN facility (minimum 40 systems with multimedia) with the following specifications:*
i) Computers with Suitable Configuration
ii) High Fidelity Headphones

2. Interactive Communication Skills (ICS) Lab:
The Interactive Communication Skills Lab: A Spacious room with movable chairs and audio-visual aids with a Public-Address System, a LCD and a projector etc.

MC1001ES*: ENVIRONMENTAL SCIENCE
(MANDITORY NON CREDIT COURSE)

Course Code	Category	Hours/ Week			Credits	Maximum Marks		
MC1001ES*	**Humanities & Sciences**	**L**	**T**	**P**	**1**	**CIE**	**SEE**	**TOTAL**
		0	**0**	**2**		**30**	**70**	**100**
Contact Classes: Nil	**Tutorial Classes: Nil**	**Practical Classes: 32**				**Total Classes:32**		

Course Objectives:
1. Understanding the importance of ecological balance for sustainable development.
2. Understanding the impacts of developmental activities and mitigation measures.
3. Understanding the environmental policies and regulations

Course Outcomes:

Based on this course, the Engineering graduate will understand /evaluate / develop technologies on the basis of ecological principles and environmental regulations which in turn helps in sustainable development

UNIT-I

Ecosystems: Definition, Scope, and Importance of ecosystem. Classification, structure, and function of an ecosystem, Food chains, food webs, and ecological pyramids. Flow of energy, Biogeochemical cycles, Bioaccumulation, Biomagnifications, ecosystem value, services and carrying capacity, Field visits.

UNIT-II

Natural Resources: Classification of Resources: Living and Non-Living resources, **water resources:** use and over utilization of surface and ground water, floods and droughts, Dams: benefits and problems. **Mineral resources:** use and exploitation, environmental effects of extracting and using mineral resources, **Land resources:** Forest resources, **Energy resources:** growing energy needs, renewable and non renewable energy sources, use of alternate energy source, case studies.

UNIT-III

Biodiversity And Biotic Resources: Introduction, Definition, genetic, species and ecosystem diversity. Value of biodiversity; consumptive use, productive use, social, ethical, aesthetic and optional values. India as a mega diversity nation, Hot spots of biodiversity. Field visit. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts; conservation of biodiversity: In-Situ and Ex-situ conservation. National Biodiversity act.

UNIT-IV

Environmental Pollution and Control Technologies: Environmental Pollution: Classification of pollution, **Air Pollution:** Primary and secondary pollutants, Automobile and Industrial pollution, Ambient air quality standards. **Water pollution:** Sources and types of pollution, drinking water quality standards. **Soil Pollution:** Sources and types, Impacts of modern agriculture, degradation of soil. **Noise Pollution:** Sources and Health hazards, standards, **Solid waste:** Municipal Solid Waste management, composition and characteristics of e-Waste and its management. **Pollution control technologies:** Wastewater Treatment methods: Primary, secondary and Tertiary.

Overview of air pollution control technologies, Concepts of bioremediation. **Global Environmental Issues and Global Efforts: C**limate change and impacts on human environment. Ozone depletion and Ozone depleting substances (ODS). Deforestation and desertification. International conventions / Protocols: Earth summit, Kyoto protocol, and Montréal Protocol. NAPCC-GoI Initiatives.

UNIT-V

Environmental Policy, Legislation & EIA: Environmental Protection act, Legal aspects Air Act- 1981, Water Act, Forest Act, Wild life Act, Municipal solid waste management and handling rules, biomedical waste management and handling rules, hazardous waste management and handling rules. EIA: EIA structure, methods of baseline data acquisition. Overview on Impacts of air, water, biological and Socio-economical aspects. Strategies for risk assessment, Concepts of Environmental Management Plan (EMP). **Towards Sustainable Future:** Concept of Sustainable Development Goals, Population and its explosion, Crazy Consumerism, Environmental Education, Urban Sprawl, Human health, Environmental Ethics, Concept of Green Building, Ecological Foot Print, Life Cycle assessment (LCA), Low carbon life style.

TEXT BOOKS:

1. Textbook of Environmental Studies for Undergraduate Courses by Erach Bharucha for University Grants Commission.
2. Environmental Studies by R. Rajagopalan, Oxford University Press.

REFERENCE BOOKS:

1. Environmental Science: towards a sustainable future by Richard T. Wright. 2008 PHL Learning Private Ltd. New Delhi.
2. Environmental Engineering and science by Gilbert M. Masters and Wendell P. Ela. 2008 PHI Learning Pvt. Ltd.
3. Environmental Science by Daniel B. Botkin & Edward A. Keller, Wiley INDIA edition.
4. Environmental Studies by Anubha Kaushik, 4th Edition, New age international publishers.
5. Text book of Environmental Science and Technology - Dr. M. Anji Reddy 2007, BS Publications.
6. Introduction to Environmental Science by Y. Anjaneyulu, BS.Publications.

EC2101ES: ANALOG AND DIGITAL ELECTRONICS

II-I:CSE(CS)								
Course Code	Category	Hours/Weak			Credits	Max Marks		
EC2101ES	Core	L	T	P	C	CIE	SEE	Total
		3	0	0	3	30	70	100
Contact Classes:45	Tutorial classes:15	Practical classes: Nill				Total Classes:60		
Prerequisites:								

Course Objectives:
- To introduce components such as diodes, BJTs and FETs.
- To know the applications of components.
- To give understanding of various types of amplifier circuits.
- To learn basic techniques for the design of digital circuits and fundamental concepts used in the design of digital systems.
- To understand the concepts of combinational logiccircuitsand sequential circuits.

Course Outcomes: Upon completion of theCourse the students will be able to:

- Know the characteristics of various components.
- Understand the utilization of components.
- Design and analyze smallsignal amplifier circuits.
- Learn Postulates of Booleanalgebraand to minimize combinational functions.
- Design and analyze combinational and sequentialcircuits.
- Know about the logicfamiliesand realization of logic gates.

UNIT-I

Diodes and Applications: Junction diode characteristics: Open circuited p-n junction, p-n junction asa rectifier, V-I characteristics, effect of temperature, diode resistance, diffusion capacitance, diodeswitchingtimes, breakdowndiodes, Tunneldiodes, photodiode, LED.
Diode Applications - clipping circuits, comparators, Halfwave rectifier, Full wave rectifier, rectifier withcapacitorfilter.

UNIT-II

BJTs: Transistorcharacteristics:Thejunctiontransistor,transistorasandamplifier,CB,CE,CCconfigurations,comparisonoftransistorconfigurations, theoperatingpoint,selfbiasorEmitterbias,

biascompensation,thermalrunawayandstability,transistoratlowfrequencies, CEamplifierresponse,gainbandwidthproduct, Emitter follower, RC coupled amplifier, two cascaded CE and multistageCEamplifiers.

UNIT-III

FETs and Digital Circuits: FETs: JFET, V-I characteristics, MOSFET, low frequency CS and CDamplifiers, CSand CD amplifiers.
Digital Circuits: Digital (binary) operations of a system, OR gate, AND gate, NOT, EXCLUSIVE ORgate, De Morgan Laws, NAND and NOR DTL gates, modified DTL gates, HTL and TTL gates, outputstages,RTL and DCTL,CMOS,Comparison oflogicfamilies.

UNIT-IV

Combinational Logic Circuits: Basic Theorems and Properties of Boolean Algebra, Canonical andStandard Forms, Digital Logic Gates, The Map Method, Product-of-Sums Simplification,Don't-CareConditions,NANDandNORImplementation,Exclusive-ORFunction,BinaryAdder-Subtractor,DecimalAdder,BinaryMultiplier,MagnitudeComparator,Decoders, Encoders,Multiplexers.

UNIT-V

Sequential Logic Circuits: Sequential Circuits, Storage Elements: Latches and flip flops, Analysis of Clocked SequentialCircuits,StateReduction and Assignment,ShiftRegisters,RippleCounters,SynchronousCounters,Random-AccessMemory,Read-OnlyMemory.

TEXTBOOKS:

1. IntegratedElectronics: Analog andDigitalCircuitsandSystems, 2/e, JaccobMillman, ChristosHalkiasandChethanD.Parikh, *TataMcGraw-HillEducation*, India, 2010.

   2. DigitalDesign, 5/e, MorrisManoandMichaelD. Cilette, *Pearson,* 2011.

REFERENCEBOOKS:

1. ElectronicDevicesandCircuits, JimmyJCathey, *Schaum'soutlineseries*, 1988.
2. DigitalPrinciples, 3/e, RogerL.Tokheim, *Schaum'soutlineseries*, 1994.

<div align="center">

CY2102PC: DATA STRUCTURES

</div>

II-I:CSE(CS)								
Course Code	**Category**	**Hours/Weak**			**Credits**	**Max Marks**		
CY2102PC	**Core**	**L**	**T**	**P**	**C**	**CIE**	**SEE**	**Total**
		3	**1**	**0**	**4**	**30**	**70**	**100**
Contact Classes:45	**Tutorial classes:15**	**Practical classes: Nill**				**Total Classes:60**		
Prerequisites: A course on"Programmingfor Problem Solving".								

Prerequisites: A course on"Programmingfor Problem Solving".

Course Objectives:
- Exploring basic datastructures such as stacks and queues.
- Introduces avariety of datastructures such as hashtables, searchtrees,trees, heaps,graphs.
- Introduces sorting and pattern matchingalgorithms.

CourseOutcomes:
- Abilityto select the datastructures that efficiently model the informationin aproblem.
- Ability to assess efficiencytrade-offsamong differen datastructure implementations or combinations.
- Implement and know the application of algorithms for sorting and pattern matching.
- Design programs using avarietyofdatastructures includinghashtables, binaryandgeneraltreestructures, search trees, trees, heaps, graphs, and AVL-trees.

UNIT-I
Introduction to Data Structures, abstract data types, linear list – singly linkedlistimplementation,insertion,deletionandsearchingoperations onlinearlist,StackOperations,array and linked representations of stacks, stackapplications,Queues-perations, arrayandlinkedrepresentations.

UNIT-II
Dictionaries: linear list representation, skip list representation, operations - insertion, deletion andsearching.
HashTableRepresentation:hashfunctions,collisionresolution-separatechaining,openaddressing-
linearprobing,quadraticprobing,doublehashing,rehashing,extendiblehashing.

UNIT-III
Search Trees: Binary Search Trees, Definition, Implementation, Operations-   Searching,InsertionandDeletion,AVLTrees,Definition,Heightof anAVLTree,Operations–Insertion,DeletionandSearching,Red Black,SplayTrees.

UNIT-IV

Graphs: GraphImplementationMethods. GraphTraversalMethods.
Sorting: HeapSort, ExternalSorting- Modelforexternalsorting,MergeSort.

UNIT-V

Pattern Matching and Tries: Pattern matching algorithms-Brute force, the Boyer –Moore algorithm the Knuth-Morris-Prattalgorithm, StandardTries, Compressed Tries, Suffix tries.

TEXTBOOKS:
1. Fundamentals of Data Structures in C, 2nd Edition, E. Horowitz, S. Sahni and Susan AndersonFreed,UniversitiesPress.
2. DataStructures usingC– A.S.Tanenbaum,Y.Langsam,andM.J.Augenstein,PHI/PearsonEducation.

REFERENCEBOOK:
1. DataStructures: APseudo codeApproachwithC, 2ndEdition, R.F.GilbergandB.A.Forouzan, Cengage Learning.

Computer Oriented Statistical Methods

B.Tech. II Year I Semester

Course Code	Category	Hours/ Week			Credits	Maximum Marks		
MA2103BS	**Basic Sciences**	**L**	**T**	**P**	**4**	**CI A**	**SEE**	**TOTAL**
		3	**1**	**0**		**30**	**70**	**100**
Contact Classes: 48	**Tutorial Classes: 16**	**Practical Classes: Nil**				**Total Classes:64**		

Course Objectives: To learn
1. The theory of Probability, and probability distributions of single and multiple random variables
2. The sampling theory and testing of hypothesis and making inferences

Course Outcomes: After learning the contents of this paper the student must be able to
1. Apply the concepts of probability and distributions to some case studies
2. Correlate the material of one unit to the material in other units
3. Resolve the potential misconceptions and hazards in each topic of study.

UNIT I: Probability

Sample space, Events, Counting Sample points, probability of an event, additive rules, conditional probability, independent events, product rule and Bayes theorem. Random variables: Discrete and continuous random variables, Expectation of random variables, Moments, variance of random variables.

UNIT II: Mathematical Expectation

Mean of a Random variable, variance and covariance of Random variables, Means and variances of linear combinations of random variables, Chebyshevs theorem.

Discrete Probability Distributions: Introduction and motivation, Binomial distribution, Geometric distribution and Poisson distribution.

UNIT III: Continuous Probability Distributions:

Continuous uniform distribution, Normal distribution, areas under the normal curve, applications of the normal distribution, normal approximation to the Binomial, Gamma and exponential distributions.

Fundamental sampling distributions: Random sampling, some important statistics, sampling distributions, sampling distribution of Means and the central limit theorem, sampling distribution of S2, t- distribution, F- distribution.

UNIT IV: Testing of Hypothesis - Large sample

Tests of hypothesis - null hypothesis, alternate hypothesis, type I, type II errors, critical region. Inferences concerning means and proportions- Large samples- test of hypothesis for single mean and difference between the means. Test of hypothesis for the proportions- single and difference between the proportions, confidence interval for the mean and proportions.

UNIT V: Correlation and Regression

Coefficient of correlation, regression coefficient, the lines of regression, rank correlation

TEXT BOOKS:

1. Ronald E. Walpole, Raymond H. Myers, Sharon L. Myers, Keying Ye, Probability & Statistics for Engineers & Scientists, 9th Ed. Pearson Publishers.
2. S C Gupta and V K Kapoor, Fundamentals of Mathematical statistics, Khanna publications.
3. S. D. Sharma, Operations Research, Kedarnath and Ramnath Publishers, Meerut, Delhi

REFERENCE BOOKS:

1. T.T. Soong, Fundamentals of Probability And Statistics For Engineers, John Wiley & Sons Ltd, 2004.
2. Sheldon M Ross, Probability and statistics for Engineers and scientists, Academic Press.

CY2104PC: COMPUTER ORGANIZATION AND ARCHITECTURE

II-I:CSE(CS)							
Course Code	**Category**	**Hours/Weak**			**Credits**	**Max Marks**	
CY2104PC	**Core**	L	T	P	C	CIE	SEE	Total
		3	0	0	3	30	70	100
Contact Classes:45	**Tutorial classes:15**	**Practical classes: Nill**				**Total Classes:60**	
Prerequisites: A Course on"DigitalLogicDesignandMicroprocessors".							

Co-requisite: A Course on"DigitalLogicDesignandMicroprocessors".

Course Objectives:
- The purpose of the course is to introduce principles of computerorganization and the basic architectural concepts.
- It begins with basicorganization, design, and programming of a simple digital computer and introduces simple register transfer language to specify various computer operations.
- Topics include computer arithmetic, instruction set design,microprogrammed controlunit,pipelining and vector processing,memoryorganization and I/Osystems,and multiprocessors

Course Outcomes:
- Understand the basics ofinstructions sets and the ir impact on processordesign.
- Demonstrate an understanding of the design of the functionalunits of a digital computersystem.
- Evaluate cost performance and designtrade-offsindesigning and constructingacomputer processor includingmemory.
- Design a pipeline for consistent execution of instructions with minimum hazards.
- Recognize and manipulate representations of numbers stored in digitalcomputers

UNIT-I

DigitalComputers: IntroductionBlockdiagramofdigitalComputer, DefinitionofComputerOrganization, ComputerDesignand ComputerArchitecture.

Register Transfer Language and Micro operations: Register Transfer language, Register Transfer, Bus and memory transfers, Arithmetic Micro operations, logicmicrooperations, shiftmicrooperations.Arithmeticlogicshiftunit.

BasicComputerOrganizationandDesign: Instructioncodes, computerRegistersComputerinstructions, Timing and Control, Instruction cycle, Memory Reference Instructions, Input – Output andInterrupt.

UNIT-II

Microprogrammed Control: Control memory, Address sequencing, micro program example, designofcontrolunit.

Central Processing Unit: General Register Organization, Instruction Formats, Addressing modes, DataTransfer and Manipulation, ProgramControl.

UNIT-III

DataRepresentation: Datatypes,Complements,FixedPointRepresentation, FloatingPointRepresentation.

ComputerArithmetic: AdditionandsubtractionmultiplicationAlgorithms, DivisionAlgorithms,Floating–pointArithmeticoperations.DecimalArithmeticunit,Decimal Arithmeticoperations.

UNIT-IV

Input-Output Organization: Input-Output Interface, Asynchronous data transfer, Modes of Transfer, PriorityInterruptDirectmemoryAccess.
Memory Organization: Memory Hierarchy, Main Memory, Auxiliary memory, Associate Memory, Cache Memory.

UNIT-V

ReducedInstructionSetComputer: CISCCharacteristics, RISCCharacteristics.

PipelineandVectorProcessing: ParallelProcessingPipelining,

ArithmeticPipeline, InstructionPipeline, RISCPipeline, VectorProcessing, ArrayProcessor.

MultiProcessors: CharacteristicsofMultiprocessors, Interconnection Structures,Interprocess orarbitration, Interprocessor communication andsynchronization, Cache Coherence.

TEXTBOOK:
1. ComputerSystemArchitecture–M.MorisMano, ThirdEdition, Pearson/PHI.

REFERENCEBOOKS:
1. ComputerOrganization–CarHamacher,ZvonksVranesic,SafeaZaky,VthEdition,McGrawHill.

2. ComputerOrganizationandArchitecture–WilliamStallingsSixthEdition, Pearson/PHI.
3. StructuredComputerOrganization–AndrewS.Tanenbaum,4thEdition, PHI/Pearson.

CY2105PC: PYTHON PROGRAMMING

II-I:CSE(CS)								
Course Code	Category	Hours/Weak			Credits	Max Marks		
CY2105PC	Core	L	T	P	C	CIE	SEE	Total
		2	0	0	2	30	70	100
Contact Classes:45	Tutorial classes:15	Practical classes: Nill				Total Classes:60		
Prerequisites: A course on"ProgrammingforProblemSolvingusingC".								

Prerequisites: A course on"ProgrammingforProblemSolvingusingC".

Course Objectives:
- Learn Syntax and Semantics and create Functions in Python.
- Handle StringsandFilesinPython.
- UnderstandLists, Dictionaries and Regularexpressions in Python.
- Implement ObjectOrientedProgrammingconcepts in Python.
- Build WebServices and introduction to Networkand DatabaseProgramminginPython.

Course Outcomes:
- Examine Python syntax andsemantics and be fluent in the use of Python flowcontrol and functions.
- Demonstrate proficiency in handling Strings and FileSystems.
- Create and manipulate PythonProgramsusing core datastructureslinkedLists, Dictionariesand use RegularExpressions.
- InterprettheconceptsofObject-OrientedProgramming asused inPython.
- Implement exemplaryapplications related to NetworkProgramming, WebServices andDatabasesin Python.

UNIT-I
Python Basics, Objects- Python Objects, Standard Types, Other Built-in Types, InternalTypes, Standard Type Operators, StandardType Built-in Functions, Categorizing the Standard Types, UnsupportedTypes
Numbers - Introduction to Numbers, Integers, Floating Point Real Numbers, Complex Numbers,Operators,Built-inFunctions,Related Modules
Sequences- Strings, Lists, andTuples, MappingandSetTypes

UNIT-II

FILES: File Objects, File Built-in Function [open ()], File Built-in Methods, File Built-in Attributes, StandardFiles, Command-lineArguments, FileSystem, FileExecution, PersistentStorageModules, Related Modules Exceptions: Exceptions in Python, DetectingandHandlingExceptions, ContextManagement,

*Exceptions as Strings, Raising Exceptions, Assertions, Standard Exceptions, *Creating Exceptions, Why Exceptions (Now)? Why Exceptions at All?, Exceptions and the sys Module, Related ModulesModules: Modules and Files, Namespaces, Importing Modules, Importing Module Attributes, ModuleBuilt-inFunctions,Packages,OtherFeaturesofModules

UNIT-III

RegularExpressions: IntroductionSpecialSymbolsandCharacters, ResandPython MultithreadedProgramming: IntroductionThreads and Processes,Python, Threads, andtheGlobalInterpreterLock,ThreadModule,ThreadingModule,Related Modules

UNIT-IV

GUI Programming: Introduction, Tkinter and Python Programming, Brief Tour of Other GUIs, RelatedModulesand OtherGUIs WEB Programming: Introduction, Wed Surfing with Python, Creating Simple Web Clients, AdvancedWebClientsCGI-HelpingServersProcessClientData, BuildingCGIApplication AdvancedCGI, Web (HTTP) Servers

UNIT-V

DatabaseProgramming: Introduction, Python Database Application Programmer'Interface (DB-API), ObjectRelationalManagers (ORMs), RelatedModules

TEXTBOOK:
1. Core Python Programming, WesleyJ.Chun,SecondEdition,Pearson.

REFERENCEBOOKS:
1. ThinkPython,AllenDowney,GreenTeaPress
2. Introduction toPython,KennethA.Lambert,Cengage
3. PythonProgramming:AModernApproach, VamsiKurama,Pearson
4. LearningPython,Mark Lutz,O'Really

EC2106ES:

ANALOG AND DIGITAL ELECTRONICS LAB

II-I:CSE(CS)								
Course Code	**Category**	**Hours/Weak**			**Credits**	**Max Marks**		
EC2106ES	**Core**	**L**	**T**	**P**	**C**	**CIE**	**SEE**	**Total**
		0	**0**	**2**	**1**	**30**	**70**	**100**
Contact Classes:NIL	**Tutorial classes:NIL**	**Practical classes: 36**				**Total Classes:36**		
Prerequisites:								

Course Objectives

- To introduce componentssuch asdiodes, BJTs and FETs.
- To know the applications of components.
- To give understanding ofvarious types of amplifiercircuits
- T o Learn Basic techniques for the design of digitalcircuit sand fundamental concepts used in the design of digitalsystems.
- To understand the concepts of combinational logiccircuits and sequentialcircuits.

Course Outcomes: Upon completion of the Course the students will be able to:

- Know the characteristics of various components.
- Understand the utilization of components.
- Design and analyze smallsignalamplifiercircuits.
- Postulates ofBooleanalgebra and to minimize combinationalfunctions
- Design and analyze combinational and sequentialcircuits
- Known about the logicfamilies and realization of logic gates.

ListofExperiments

1. FullWave Rectifierwith &withoutfilters
2. CommonEmitterAmplifierCharacteristics
3. CommonBaseAmplifier Characteristics
4. CommonSource amplifierCharacteristics
5. Measurementofh-parametersoftransistorinCB,CE,CCconfigurations
6. InputandOutputcharacteristicsofFETinCSconfiguration
7. RealizationofBooleanExpressionsusingGates
8. Designandrealizationlogicgatesusinguniversalgates
9. Generation of clock using NAND/NORgates

10. Design a 4–bit Adder/Subtractor
11. Design and realization a Synchronous and Asynchronous counter using flip-flops
12. Realization of logic gates using DTL, TTL, ECL, etc.

CY2107PC: DATASTRUCTURES LAB

II-I:CSE(CS)								
Course Code	Category	Hours/Weak			Credits	Max Marks		
CY2107PC	Core	L	T	P	C	CIE	SEE	Total
		0	0	3	1.5	30	70	100
Contact Classes:NIL	Tutorial classes:NIL	Practical classes: 36				Total Classes:36		
Prerequisites: ACourse on"Programmingforproblemsolving".								

Prerequisites: A Course on"Programmingforproblemsolving".

Course Objectives:

- It covers various concepts of Cprogramminglanguage
- It introduces searching and sorting algorithms
- It provides an understanding of datastructures such as stacks and queues.

Course Outcomes:

- AbilitytodevelopCprogramsforcomputingandreal-lifeapplicationsusingbasicelementslike control statements, arrays, functions, pointers and strings, and data structures like stacks,queues and linkedlists.
- AbilitytoImplementsearchingandsortingalgorithms

List of Experiments

1. Write a program that uses functions to perform the following operations on singlylinked list:
    i) Creation   ii)Insertion   iii)Deletion   iv)Traversal
2. Write a program that uses functions to perform the following operations on doubly linked list:
    i) Creation   ii)Insertion   iii)Deletion   iv)Traversal
3. Write a program that uses functions to perform the following operations on
Circularlinked list:

    i) Creation   ii)Insertion   iii)Deletion   iv)Traversal
4. Write a program that implement stack(itsoperations)using
    i) Arrays   ii)Pointers
5. Write a program that implement Queue(itsoperations)using
    i) Arrays   ii)Pointers
6. Write a program that implements the following sortingmethods to sort a given list of integers in ascending order
    i) Bubblesort   ii)Selectionsort   iii)Insertionsort

7. Write a program that use both recursive and non-recursivefunctions to perform the following searching operations for aKey value in a given list of integers:

        ii)Linearsearchii)Binarysearch

8. Write a program to implement the treetraversalmethods.

9. Write a program to implement the graphtraversalmethods.

TEXTBOOKS:

1. Fundamentals of Data Structures in C, 2nd Edition, E. Horowitz, S. Sahni and Susan AndersonFreed,*UniversitiesPress*.
2. DataStructuresusingC–A.S.Tanenbaum,Y.Langsam,andM.J.Augenstein, *PHI/PearsonEducation*.

REFERENCEBOOK:

1. DataStructures: APseudocodeApproachwithC, 2nd Edition, R.F.GilbergandB.A.Forouzan, Cengage *Learning*.

CY2108PC: IT WORKSHOPLAB

II-I:CSE(CS)								
Course Code	Category	Hours/Weak			Credits	Max Marks		
CY2108PC	Core	L	T	P	C	CIE	SEE	Total
		0	0	3	1.5	30	70	100
Contact Classes:NIL	Tutorial classes:NIL	Practical classes: 36				Total Classes:36		
Prerequisites: ACourse on"Programmingforproblemsolving".								

Course Objectives:

The IT Workshop for engineers is a training lab course spread over 60 hours. The modules includetraining on PC Hardware, Internet & World Wide Web and Productivity tools including Word, Excel,Power Pointand Publisher.

PC Hardware introduces the students to a personalcomputer and its basic peripherals, the processof assembling a personal computer, installation of system software like MS Windows, Linux and therequired device drivers. In addition hardware and software level troubleshooting process, tips andtricks would be covered. The students should work on working PC to disassemble and assembleto working condition and install Windows and Linux on the same PC. Students are suggestedto work similar tasks in the Laptop scenario wherever possible. Internet & World Wide Webmodule introduces the different ways of hooking the PC on to the internet from home and workplaceand effectively usage of the internet. Usage of web browsers, email, newsgroups and discussionforums would be covered. In addition, awareness ofcyber hygiene, i.e., protecting the personalcomputer from getting infected with the viruses, worms and other cyber attacks would be introduced.Productivity tools module would enable the students in crafting professional word documents, excelspread sheets, power point presentations and personal web sites using the Microsoft suite of officetoolsand LaTeX.

PC Hardware

Task 1: Identify the peripherals ofacomputer, components in a CPUand its functions.Draw theblockdiagramoftheCPUalongwiththeconfigurationofeachperipheralandsubmittoyourinstructor.

Task 2: Every student should disassemble and assemble the PC back to working condition. Labinstructors should verify the work and follow it up with a Viva. Also students need to go through thevideo which shows the process of assembling a PC. A video would be given as part of the

coursecontent.

Task3: EverystudentshouldindividuallyinstallMSwindowsonthepersonalcom
puter.Labinstructorshouldverifytheinstallation andfollowitupwith a Viva.

Task 4: Every student should install Linux on the computer. This computer
should have windowsinstalled. The system should be configured as dual
boot with both windows and Linux. Lab
instructorsshouldverifytheinstallation andfollowitup withaViva

Task 5: Hardware Troubleshooting: Students have to be given a PC which
does not boot due to improper assembly or defective peripherals. They
should identify the problem and fix it to get thecomputer back to working
condition. The work done should be verified by the instructor and
followedup witha Viva.

Task 6: Software Troubleshooting: Students have to be given a
malfunctioning CPU due to systemsoftware problems. They should identify
the problem and fix it to get the computer back to workingcondition.The
workdone shouldbeverified bytheinstructor andfollowed up with aViva.

Internet&WorldWideWeb
Task1: **Orientation & Connectivity Boot Camp:** Students should get
connected to their Local
AreaNetworkandaccesstheInternet.IntheprocesstheyconfiguretheTCP/IPsetti
ng.Finallystudentsshould demonstrate, to the instructor, how to access the
websites and email. If there is no internetconnectivitypreparationsneed to
bemade bytheinstructorsto simulate theWWWon theLAN.

Task 2: Web Browsers, Surfing the Web: Students customize their web
browsers with the LANproxysettings, bookmarks, search toolbars and
popup blockers.Also,plug-inslikeMacromediaFlashand JREforappletsshould
be configured.

Task 3: **Search Engines & Netiquette:** Students should know what search
engines are and how touse the search engines. A few topics would be given
to the students for which they need to search onGoogle.Thisshould be
demonstrated totheinstructorsbythe student.

Task 4: Cyber Hygiene: Students would be exposed to the various threats
on the internet and wouldbe asked to configure their computer to be safe
on the internet. They need to first install an antivirussoftware, configure
their personal firewall and windows update on their computer. Then they
needtocustomizetheirbrowserstoblockpopups,block
activexdownloadstoavoidvirusesand/orworms.

LaTeX andWORD
Task 1 – Word Orientation: The mentor needs to give an overview of LaTeX

and Microsoft (MS)office 2007/ equivalent (FOSS) tool word: Importance ofLaTeX and MS office 2007/ equivalent(FOSS) tool Word as word Processors, Details of the four tasks and features that would be covered ineach,UsingLaTeXandword–Accessing,overviewoftoolbars,savingfiles,Usinghelpandresources,rulers,form atpainterin word.

Task 2: Using LaTeX and Word to create project certificate. Features to be covered: FormattingFontsinword,DropCapinword,ApplyingTexteffects, UsingCharacterSpacing,BordersandColors,Inserting HeaderandFooter,Using Dateand Timeoptionin both LaTeXandWord.

Task3: Creating project abstract Features to be covered:-Formatting Styles, Inserting table, Bulletsand Numbering, Changing Text Direction, Cell alignment, Footnote, Hyperlink, Symbols, Spell Check, Track Changes.

Task4: Creating a Newsletter: Features to be covered:- Table of Content, Newspaper columns,Imagesfromfilesandclipart,DrawingtoolbarandWordArt,FormattingI mages,Textboxes,Paragraphsand MailMergein word.

Excel

ExcelOrientation: The mentor needs to tellthe importance ofMS office 2007/equivalent(FOSS)tool Excel as a Spreadsheet tool, give the details of the four tasks and features that would be coveredineach.UsingExcel–Accessing,overviewoftoolbars, savingexcelfiles,Usinghelpandresources.

Task1: Creating a Scheduler-Featurestobecovered: Gridlines, FormatCells, Summation, auto fill,Formatting Text

Task2: CalculatingGPA-Features to be covered: - Cell Referencing, Formulaeinexcel–average,std.deviation,Charts, RenamingandInsertingworksheets, Hyperlinking,Countfunction,LOOKUP/VLOOKUP

Task3: PerformanceAnalysis-Featurestobecovered:-Splitcells,freezepanes, groupand outline,Sorting,Boolean andlogical operators,Conditional formatting

LaTeXandMS/equivalent (FOSS) toolPowerPoint

Task 1: Students will be working on basic power point utilities and tools which help them create basicpower point presentation. Topic covered during this week includes: - PPT Orientation, Slide Layouts,Inserting Text, Word Art, Formatting Text, Bullets and Numbering, Auto Shapes, Lines and Arrows inboth LaTeX and PowerPoint. Students will be given modelpower point presentation which needs tobereplicated (exactlyhowit'sasked).

Task 2: Second week helps students in making their presentations interactive. Topic covered duringthisweekincludes,Hyperlinks,Inserting–Images,ClipArt,Audio,Video,Objects, TablesandCharts.

Task 3: Concentrating on the in and out of Microsoft power point and presentations in LaTeX. Helpsthem learn best practices in designing and preparing power point presentation. Topic covered duringthis week includes: - Master Layouts (slide, template, and notes), Types of views (basic, presentation, slideslotter, notesetc) and Inserting–Background, textures, DesignTemplates,Hidden slides.

REFERENCEBOOKS:

1. ComdexInformationTechnologycoursetoolkitVikasGupta,*WILEY Dreamtech*
2. TheCompleteComputerupgradeandrepairbook,3rdeditionCherylASch midt,*WILEYDreamtech*
3. IntroductiontoInformationTechnology, ITLEducationSolutionslimited, Pearson *Education.*
4. PCHardware- AHandbook–Kate**J.**Chase*PHI*(Microsoft)
5. LaTeXCompanion–LeslieLamport, *PHI/Pearson*.
6. ITEssentialsPCHardwareandSoftwareCompanionGuideThirdEditionb yDavidAnfinsonandKen Quamme. *CISCOPress,Pearson Education*.
7. ITEssentialsPCHardwareandSoftwareLabsandStudyGuideThirdEditio nbyPatrickRegan– CISCOPress, *Pearson Education.*

CY2109PC: PYTHON PROGRAMMING LAB

II-I:CSE(CS)							
Course Code	Category	Hours/Weak			Credits	Max Marks	
CY2109PC	Core	L	T	P	C	CIE	SEE	Total
		0	0	2	1	30	70	100
Contact Classes:NIL	Tutorial classes:NIL	Practical classes: 36				Total Classes:36	
Prerequisites: A Course on"Programming for problem solving".							

Prerequisites: A courseon"ProgrammingforProblem Solving".

Course Objectives

- To be able to introduce core programming basics and program design with functions using Pythonprogramming language.
- To understand a range of Object-Oriented Programming, as well as in-depth data and information processing techniques.
- To understand the high-performance programsdesignedtostrengthenthepracticalexpertise.

Course Outcome

- Student should be able to understand the basic concepts scripting and the contributions ofscriptinglanguage
- Abilitytoexplorepythonespeciallytheobject-orientedconcepts,and thebuiltinobjectsofPython.
- Abilityto createpracticaland contemporaryapplicationssuch asTCP/IPnetworkprogramming,Web applications,discrete eventsimulations

List of Experiments:

1. Write a program todemonstrate different number datatypes in Python.
2. Write a program to perform different ArithmeticOperationson numbers in Python.
3. Write a program to create, concatenate and print a string and accessing sub-string from agiven string.
4. Write a python script to print the current date in the following format "Sun May 29 02:26:23IST2017"
5. Write a programtocreate, append,and removelistsinpython.
6. Write a program to demonstrateworking withtuplesinpython.
7. Write a program todemonstrate working with dictionaries in python.
8. Write a python program tofind largest of three numbers.
9. Write a Python program to convert temperatures to and from Celsius, Fahrenheit. [Formula :c/5=f-32/9]
10. Write a Python program to construct the following pattern,using a

nested forloop
```
*
**
***
****
*****
****
***
**
*
```

11. Write a Python script that prints primenumberslessthan 20.
12. Write a python program to find factorial of a number using Recursion.
13. Write aprogram that accepts the lengths of three sides of a triangle as inputs. The program output should indicate whether or not the triangle is a right triangle (Recall from thePythagorean Theorem that in a right triangle, the square of one side equals the sum of thesquaresofthe othertwo sides).
14. Write a python program to define a module to find Fibonacci Numbers and import the moduletoanotherprogram.
15. Write a python program to define a module and import a specific function in that module toanother program.
16. Writeascriptnamedcopyfile.py.Thisscriptshouldprompttheuserforth enamesoftwotextfiles.Thecontentsofthefirstfile should beinputand written tothe secondfile.
17. Write a program that inputs a text file. The program should print all of the unique words in thefilein alphabeticalorder.
18. Write aPython classto convertanintegerto aromannumeral.
19. Write a Python class to implementpow(x,n)
20. Write a Python class to reverse astringwordbyword.

MC2002: GENDER SENSITIZATION LAB
(AnActivity-basedCourse)

II-I:CSE(CS)								
Course Code	**Category**	**Hours/Weak**			**Credits**	**Max Marks**		
MC2002	**Core**	**L**	**T**	**P**	**C**	**CIE**	**SEE**	**Total**
		0	**0**	**2**	**0**	**30**	**70**	**100**
Contact Classes:NIL	**Tutorial classes:NIL**	**Practical classes: 36**				**Total Classes:36**		
Prerequisites:								

COURSEDESCRIPTION

This course offers an introduction to Gender Studies, an interdisciplinary field that asks criticalquestions about the meanings of sex and gender in society. The primary goal of this course is tofamiliarize students with key issues, questions and debates in Gender Studies, both historical andcontemporary.Itdrawsonmultipledisciplines–such as literature, history, economics,psychology,sociology,philosophy,politicalscience, anthropologyandmediastudies– toexamineculturalassumptionsaboutsex,gender,and sexuality.

This course integrates analysis of current events through student presentations, aiming to increase awareness of contemporary and historical experiences of women and of the multiple waysthat sex and gender interact with race, class, caste, nationality and other social identities. This coursealso seeks to build an understanding and initiate and strengthen programmes combating gender-based violence and discrimination. The course also features several exercises and reflective activities designed to examine the concepts of gender, gender-based violence, sexuality, and rights. It will further explore the impact of gender-basedviolence on education, health and development.

Objectives of the Course:

- To developstudents'sensibility with regard to issues of gender in contemporaryIndia.
- To provide acritical perspective on the socialization of men and women.
- To introduce students to information about somekeybiological aspects of genders.
- To expose the students to debates on the politics and economics of work.
- To help students reflect critically on genderviolence.
- To expose students to more egalitarianinteractions between men and women.

Learning Outcomes:

- Students will have developed a better understanding of important issues related to gender incontemporaryIndia.
- Students will be sensitized to basic dimensions of the biological, sociological, psychological and legal aspects of gender. This will be achieved through discussion of materials derivedfromresearch, facts, everydaylife, literature and film.
- Students will attain a finer grasp of how gender discrimination works in our society and how tocounter it.
- Students will acquire insight into the gendered division of labour and its relation to politics andeconomics.
- Men and women students and professionals will be better equipped to work and live togetherasequals.
- Studentswilldevelopasenseofappreciationofwomeninallwalksof life.
- Through providing accounts of studies and movements as well as the new laws that provide protection and relief to women, the textbook will empower students to understandand respond to genderviolence.

UNIT-I: UNDERSTANDINGGENDER

Introduction: Definition of Gender-BasicGenderConceptsandTerminology-ExploringAttitudestowardsGender-ConstructionofGender-Socialization: MakingWomen, MakingMen-PreparingforWomanhood.Growing upMale.First lessons in Caste.

UNIT–II: GENDERROLES ANDRELATIONS

Two or Many?-Struggles with Discrimination-Gender Roles and Relations-TypesofGender Roles-GenderRolesandRelationshipsMatrix-MissingWomen-SexSelectionandItsConsequences-DecliningSexRatio.Demographic Consequences-Gender Spectrum: BeyondtheBinary

UNIT–III: GENDERANDLABOUR

Division and Valuation of Labour-Housework: The Invisible Labor- "My Motherdoesn'tWork"."SharetheLoad".-Work: Its Politics andEconomics-FactandFiction.UnrecognizedandUnaccountedwork.
-GenderDevelopmentIssues-Gender,Governanceand
SustainableDevelopment-GenderandHumanRights-Genderand
Mainstreaming

UNIT–IV: GENDER-BASEDVIOLENCE

The Concept of Violence- Types of Gender-based Violence-Gender-based Violence from a HumanRights Perspective-Sexual Harassment: Say No! - Sexual Harassment, not Eve-teasing- Coping with Everyday Harassment-FurtherReading:"*Chupulu".*
Domestic Violence: Speaking OutIs Home a Safe Place? -When Women Unite [Film]. RebuildingLives.ThinkingaboutSexual ViolenceBlamingthe Victim-"IFoughtformyLife...."

UNIT–V: GENDERANDCULTURE

GenderandFilm-GenderandElectronicMedia-GenderandAdvertisement-
GenderandPopularLiterature-GenderDevelopmentIssues-GenderIssues-
GenderSensitiveLanguage-genderandPopularLiteratureJustRelationships:
BeingTogetherasEquals

Mary Kom and Onler. Love and Acid just do not Mix. Love Letters. Mothers and Fathers. Rosa Parks-TheBrave Heart.

Note: Since it is Interdisciplinary Course, Resource Persons can be drawn from the field's ofEnglish Literature or Sociology or Political Science or anyotherqualifiedfacultywhohasexpertiseinthis fieldfromengineeringdepartments.

➢ *Classeswillconsistofacombinationofactivities: dialogue-basedlectures,discussions,collaborative learning activities, group workandin-class assignments.Apartfromtheaboveprescribedbook,Teacherscanmakeuse ofanyauthenticmaterialsrelatedtothe topicsgiveninthe syllabuson"Gender".*

 ESSENTIAL READING: The Textbook, "*Towards a World of Equals: A Bilingual Textbook onGender"written*byA.Suneetha,UmaBhrugubanda,DuggiralaVasanta,Rama Melkote,Vasudha Nagaraj,Asma Rasheed,GoguShyamala, Deepa Sreenivas and Susie TharupublishedbyTeluguAkademi,TelanganaGovernmentin2015**.**

ASSESSMENTANDGRADING:
- Discussion&ClassroomParticipation:20%
- Project/Assignment: 30%
- EndTerm Exam:50%

CY2201PC: DISCRETE MATHEMATICS

II-II:CSE(CS)								
Course Code	Category	Hours/Weak			Credits	Max Marks		
CY2201PC	Core	L	T	P	C	CIE	SEE	Total
		3	0	0	3	30	70	100
Contact Classes:45	Tutorial classes:15	Practical classes: Nill				Total Classes:60		
Prerequisites: An understanding of Mathematics in generalissufficient.								

Prerequisites: An understanding of Mathematics in generalis sufficient.

Course Objectives
- Introduces the elementary discretemathematics for computerscience and engineering.
- Topics include formal logic notation, methods of proof, induction, sets,relations,graphtheory,permutationsandcombinations, countingprinciples; recurrencerelationsandgeneratingfunctions.

Course Outcomes:
- Ability to understand and construct precise mathematicalproofs
- Ability to use logic and set theory to formula teprecisestatements
- Ability to analyze and solve counting problems on finiteand discrete structures
- Ability todescribe and manipulate sequences
- Ability to apply graphtheory in solving computing problems

UNIT-I
TheFoundations:LogicandProofs: PropositionalLogic,ApplicationsofPropositionalLogic,PropositionalEquivalence,PredicatesandQuantifiers,NestedQuantifiers,RulesofInference,IntroductiontoProofs,ProofMethodsand Strategy.

UNIT-II
BasicStructures,Sets,Functions,Sequences,Sums,MatricesandRelationsSets,Functions,Sequences&Summations,CardinalityofSetsandMatricesRelations,RelationsandTheirProperties, n-arrayRelationsandTheirApplications,RepresentingRelations,ClosuresofRelations,EquivalenceRelations,Partial Orderings.

UNIT-III
Algorithms,Induction and Recursion: Algorithms, TheGrowth of Functions, Complexity of Algorithms

Induction and Recursion: Mathematical Induction, Strong Induction and Well-Ordering,RecursiveDefinitionsandStructuralInduction,

RecursiveAlgorithms, ProgramCorrectness

UNIT-IV

Discrete Probability and Advanced Counting Techniques: An IntroductiontoDiscreteProbability,ProbabilityTheory,Bayes'Theorem, ExpectedValue and Variance

AdvancedCountingTechniques: RecurrenceRelations,SolvingLinearRecurrenceRelations,Divide-and-ConquerAlgorithmsandRecurrenceRelations,GeneratingFunctions,Inclusion-Exclusion,ApplicationsofInclusion-Exclusion

UNIT-V

Graphs: Graphs and Graph Models, Graph Terminology and Special Types of Graphs, RepresentingGraphs and Graph Isomorphism, Connectivity, Euler and Hamilton Paths, Shortest-Path Problems, PlanarGraphs, Graph Coloring.
Trees: IntroductiontoTrees,ApplicationsofTrees,TreeTraversal, SpanningTrees,MinimumSpanning Trees

TEXTBOOK:

1. Discrete Mathematics and its Applications with Combinatorics and Graph Theory- Kenneth HRosen,7thEdition,TMH.

REFERENCESBOOKS:

1. Discrete Mathematical Structures with Applications to ComputerScience-J.P.Tremblayand
   R.Manohar, TMH
2. DiscreteMathematics for ComputerScientists&Mathematicians: JoeLMott, AbrahamKandel, Teodore P.Baker, 2nded,PearsonEducation.
3. DiscreteMathematics-RichardJohnsonbaugh, 7ThEdn.PearsonEducation.
4. DiscreteMathematicswithGraphTheory-EdgarG.Goodaire, MichaelM.Parmenter.
5. DiscreteandCombinatorialMathematics-anappliedintroduction: Ralph.P.Grimald, 5thedition, Pearson Education.

SM2202MS: BUSINESS ECONOMICS AND FINANCIAL ANALYSIS

II-II:CSE(CS)								
Course Code	Category	Hours/Weak			Credits	Max Marks		
SM2202MS	Core	L	T	P	C	CIE	SEE	Total
		3	0	0	3	30	70	100
Contact Classes:45	Tutorial classes:15	Practical classes: Nill				Total Classes:60		
Prerequisites: None								

Prerequisites: None

Course Objective: To learn the basic Business types, impact of the Economy on Business and Firmsspecifically.To analyze theBusinessfromtheFinancialPerspective.

Course Outcome: The students will understand the various Forms of Business and the impactofeconomicvariablesontheBusiness.TheDemandSupply,Production, Cost,MarketStructure,Pricingaspects are learnt. The Students can study the firm's financial position by analysing theFinancialStatementsofa Company.

UNIT–I
IntroductiontoBusinessandEconomics:

Business: Structure of Business Firm, Theory of Firm, Types of Business Entities, Limited LiabilityCompanies, Sources ofCapitalfor aCompany, Non-ConventionalSourcesofFinance.
Economics: SignificanceofEconomics,MicroandMacroEconomicConcepts,ConceptsandImportance of National Income, Inflation, Money Supply in Inflation, Business Cycle, Features andPhases of Business Cycle. Nature andScopeofBusinessEconomics,RoleofBusinessEconomist, Multidisciplinary natureofBusinessEconomics.

UNIT-II
Demand andSupplyAnalysis:

Elasticity of Demand: Elasticity, Types of Elasticity, Law of Demand, Measurement and Significanceof Elasticity of Demand, Factors affecting ElasticityofDemand,ElasticityofDemandindecisionmaking, DemandForecasting:CharacteristicsofGoodDemandForecasting, StepsinDemandForecasting,Methods ofDemand Forecasting.
SupplyAnalysis: DeterminantsofSupply, SupplyFunction& LawofSupply.

UNIT-III

Production, Cost, MarketStructures&Pricing:

ProductionAnalysis: Factors of Production, ProductionFunction, ProductionFunction with one variable input, two variable inputs, ReturnstoScale, DifferentTypes of Production Functions.

Costanalysis: Typesof Costs, Short runandLongrunCostFunctions.

MarketStructures: Nature of Competition, Features of Perfect competition, Monopoly, Oligopoly, Monopolistic Competition.

Pricing: Types of Pricing, ProductLifeCyclebased Pricing, BreakEvenAnalysis, and CostVolumeProfitAnalysis.

UNIT-IV

Financial Accounting: Accounting concepts and Conventions, Accounting Equation,Double-EntrysystemofAccounting,Rulesforma intainingBooksofAccounts,Journal,PostingtoLedger, PreparationofTrialBalance,Elementsoffinancial Statements, PreparationofFinalAccounts.

UNIT-V

FinancialAnalysisthroughRatios: Concept of RatioAnalysis, LiquidityRatios, TurnoverRatios, ProfitabilityRatios, Proprietary Ratios, Solvency, LeverageRatios (simpleproblems).

IntroductiontoFund Flowand CashFlowAnalysis (simple problems).

TEXTBOOKS:

1. D.D.Chaturvedi, S.L.Gupta, BusinessEconomics-Theory and Applications,InternationalBook House Pvt.Ltd.2013.
2. DhaneshKKhatri, FinancialAccounting, TataMcGrawHill,2011.
3. GeethikaGhosh, PiyaliGosh, PurbaRoyChoudhury, ManagerialEconomics, 2e, TataMcGrawHillEducation Pvt.Ltd.2012.

REFERENCEBOOKS:

1. PareshShah, FinancialAccountingforManagement 2e, OxfordPress2015.
2. S.N.Maheshwari, SunilKMaheshwari, SharadKMaheshwari, FinancialAccounting, 5e, VikasPublications, 2013.

CY2203PC: OPERATING SYSTEMS

II-II:CSE(CS)								
Course Code	Category	Hours/Weak			Credits	Max Marks		
CY2203PC	Core	L	T	P	C	CIE	SEE	Total
		3	0	0	3	30	70	100
Contact Classes:45	Tutorial classes:15	Practical classes: Nill				Total Classes:60		
Prerequisites: A course on"ComputerProgrammingandDataStructures". Acourse on"ComputerOrganizationandArchitecture".								

Prerequisites:

- A course on"ComputerProgrammingandDataStructures".
- A course on"ComputerOrganizationandArchitecture".

Course Objectives:

- Introduce operatingsystemconcepts
(i.e.processes, threads, scheduling, synchronization, deadlocks, memorymanagementfile and I/Osubsystemsand protection)

- Introduce the issues to be considered in the design and development of operatingsystem
- Introduce basicUnixcommands,system call interface for processmanagement,interprocesscommunication andI/O in Unix

Course Outcomes:

- Will be able to control access to a computer and the files that maybe shared
- Demonstrate the knowledge of the components of computer and their respective roles in computing.
- Abilitytorecognizeandresolveuser problemswithstandardoperatingenvironments.
- Gainpracticalknowledgeofhowprogramminglanguages,
- Operatingsystems and architectures interact and how to use each effectively.

UNIT-I

OperatingSystem-Introduction,Structures-SimpleBatch,Multiprogrammed,Time-shared,PersonalComputer,Parallel,DistributedSystems,Real-TimeSystems,Systemcomponents,OperatingSystemservices,SystemCalls

UNIT-II

ProcessandCPUScheduling-Processconceptsandscheduling, Operations Onprocesses, CooperatingProcesses, Threads, andInterposes Communication, SchedulingCriteria, SchedulingAlgorithms,and Multiple-ProcessorScheduling.

Systemcallinterfaceforprocessmanagement-fork, exit, wait, waitpid, exec

UNIT-III

Deadlocks-SystemModel, DeadlocksCharacterization, Methods forHandlingDeadlocks, DeadlockPrevention, DeadlockAvoidance, DeadlockDetection and RecoveryfromDeadlock
ProcessManagementandSynchronization-TheCriticalSectionProblem, Synchronization Hardware, Semaphores and ClassicalProblemsofSynchronization, Critical Regions, Monitors

InterprocessCommunicationMechanisms:
IPCbetweenprocessesonasinglecomputersystem IPC between processes on differentsystems using pipes, FIFOs, message mqueues, shared memory.

UNIT-IV

Memory Management and Virtual Memory - Logical versus Physical Address Space, Swapping, Contiguous Allocation, Paging, Segmentation, Segmentation with Paging, Demand Paging, PageReplacement,Page ReplacementAlgorithms.

UNIT-V

FileSystemInterfaceandOperations-
Accessmethods,DirectoryStructure,Protection,FileSystemStructure, Allocationmethods,Free-spaceManagement.Usageofopen,create,read, write,close,lseek,stat,ioctlsystemcalls.

TEXTBOOKS:
1. OperatingSystemPrinciples-AbrahamSilberchatz,PeterB.Galvin,GregGagne7thEdition,JohnWiley
2. AdvancedprogrammingintheUNIXenvironment, W.R.Stevens, Pearson education.

REFERENCEBOOKS:
1. OperatingSystems–InternalsandDesignPrinciplesStallings,FifthEdition–2005,PearsonEducation/PHI
2. OperatingSystemADesignApproach-Crowley,TMH.
3. ModernOperatingSystems,AndrewS.Tanenbaum2ndedition,Pearson/PHI
4. UNIXprogrammingenvironment,KernighanandPike,PHI/PearsonEducation
5. UNIXInternals-The NewFrontiers, U.Vahalia, Pearson Education.

CY2204PC: COMPUTER NETWORKS

II-II:CSE(CS)								
Course Code	**Category**	**Hours/Weak**			**Credits**	**Max Marks**		
CY2204PC	Core	L	T	P	C	CIE	SEE	Total
		3	1	0	4	30	70	100
Contact Classes:45	**Tutorial classes:15**	**Practical classes: Nill**				**Total Classes:60**		
Prerequisites								

Prerequisites

1. Acourse on"Programmingfor problemsolving".
2. Acourse on"DataStructures".

Course Objectives:

- The objective of the course is to equip the students with a general overview of the concepts and fundamentals of computer networks.
- Familiarize the students with the standardmodels for the layered approach to communication between machines in a network and the protocols of the various layers.

Course Outcomes:

- Gain the knowledge of the basic computer network technology.
- Gain the knowledge of the functions of each layer in the OSIandTCP/IPreferencemodel.
- Obtain the skills of subnetting and routingmechanisms.
- Familiarity with the essential protocols of computernetworks, and how they can be applied in network design and implementation.

UNIT-I

Networkhardware, Networksoftware, OSI, TCP/IPReferencemodels, ExampleNetworks: ARPANET, Internet.
PhysicalLayer:GuidedTransmissionmedia:twistedpairs,coaxialcable, fiberoptics, Wirelesstransmission.

UNIT-II

Datalinklayer: Designissues, framing,Error detectionandcorrection.
Elementary data link protocols: simplex protocol, A simplex stop and wait protocolforanerror-freechannel,Asimplexstop andwaitprotocolfornoisychannel.
SlidingWindow protocols: A one-bit sliding window protocol, A protocol usingGo-Back-N,AprotocolusingSelectiveRepeat,Example datalinkprotocols.
MediumAccesssublayer:Thechannelallocationproblem, Multipleaccessprotocols:ALOHA,Carriersensemultipleaccess protocols,collision freeprotocols.Wireless LANs,Datalinklayerswitching.

UNIT-III

NetworkLayer:Designissues,Routingalgorithms:shortestpathrouting,Flooding,Hierarchicalrouting,Broadcast,Multicast,distance vectorrouting,CongestionControlAlgorithms,QualityofService,Internetworking,The Networklayerintheinternet.

UNIT-IV

Transport Layer: Transport Services, Elements of Transport protocols, Connection management, TCPandUDPprotocols.

UNIT-V

Application Layer –Domain name system, SNMP, Electronic Mail; the World WEB, HTTP, Streamingaudio andvideo.

TEXTBOOK:

1. ComputerNetworks-- AndrewSTanenbaum,David.j.Wetherall,5thEdition.PearsonEducation/PHI

REFERENCEBOOKS:

1. AnEngineeringApproachtoComputerNetworks-S.Keshav,2nd Edition,PearsonEducation
2. DataCommunicationsandNetworking–Behrouz A.Forouzan.ThirdEditionTMH.

CS2205PC: OBJECT ORIENTED PROGRAMMING USING JAVA

II-II:CSE(CS)								
Course Code	Category	Hours/Weak			Credits	Max Marks		
CS2205PC	Core	L	T	P	C	CIE	SEE	Total
		3	1	0	4	30	70	100
Contact Classes:45	Tutorial classes:15	Practical classes: Nill				Total Classes:60		
Prerequisites								

Course Objectives:

- To introduce the object-orientedprogrammingconcepts.
- To understand object-orientedprogrammingconcepts and apply the min solving problems.
- To introduce the principles of inheritance and polymorphism; and demonstrate how they relate to the design of abstractclasses
- To introduce the implementation of packages and interfaces
- To introduce theconcepts of exceptionhandling and multithreading.
- To introduce the design of GraphicalUser Interface using applets and swingcontrols.

Course Outcomes:

- Able to solve realworld problems using OOPtechniques.
- Able to understand the use of abstractclasses.
- Able to solve problems using javacollection framework andI/oclasses.
- Able to develop multithreaded applications with synchronization.
- Able to develop applets for webapplications.
- Able to design GUIbased applications

UNIT-I

Object-Oriented Thinking- Awayof viewing world – Agents and Communities, messages andmethods, Responsibilities, Classes and Instances, Class Hierarchies- Inheritance, Method binding,Overriding and Exceptions, Summary of Object-Oriented concepts. Java buzzwords, An OverviewofJava, Datatypes,VariablesandArrays,operators,expressions, controlstatements,Introducingclasses,Methodsand Classes,String handling.

Inheritance–
Inheritanceconcept,Inheritancebasics,Memberaccess,Constructors,Creating Multilevel hierarchy,super uses, using final with inheritance, Polymorphism-adhoc polymorphism, purepolymorphism, methodoverriding, abstractclasses,Objectclass,formsofinheritance-specialization, specification, construction, extension, limitation, combination, benefits of

inheritance,costsofinheritance.

UNIT-II
Packages-DefiningaPackage,CLASSPATH,Accessprotection, importingpackages.
Interfaces-defininganinterface,implementinginterfaces,Nestedinterfaces,
applyinginterfaces,variablesininterfacesand extendinginterfaces.

Stream based I/O (java.io)– The Stream classes-Byte streams and
Character streams, Readingconsole Input and Writing Console Output, File
class, Reading and writing Files, Random access
fileoperations,TheConsoleclass,Serialization,Enumerations,autoboxing,gene
rics.

UNIT-III
Exceptionhandling-
Fundamentalsofexceptionhandling,Exceptiontypes,Terminationorresumptiv
e models, Uncaught exceptions, using try and catch, multiple catch
clauses,nestedtrystatements,throw,throwsandfinally,built-
inexceptions,creatingownexceptionsubclasses.
Multithreading-Differencesbetweenthread-basedmultitaskingandprocess-
basedmultitasking,Javathreadmodel,creatingthreads,threadpriorities,synch
ronizingthreads,interthread communication.

UNIT-IV
The Collections Framework (java.util)- Collections overview, Collection
Interfaces,TheCollectionclasses-
ArrayList,LinkedList,HashSet,TreeSet,PriorityQueue,ArrayDeque.Accessinga

Collection via an Iterator, Using an Iterator, The For-Each alternative, Map
InterfacesandClasses,Comparators,Collectionalgorithms,Arrays
TheLegacyClassesandInterfaces-
Dictionary,Hashtable,Properties,Stack,Vector
MoreUtilityclasses,StringTokenizer,BitSet,Date,Calendar,Random
Formatter,Scanner

UNIT-V
GUI Programming with Swing – Introduction, limitations of AWT, MVC
architecture, components, containers. Understanding Layout Managers,
Flow Layout, Border Layout, Grid Layout, Card Layout, GridBag Layout.
EventHandling-TheDelegationeventmodel-Events,Eventsources,
EventListeners,Eventclasses, Handling mouse and keyboard events,
Adapter classes, Inner classes, Anonymous Innerclasses.
ASimpleSwingApplication,Applets–
AppletsandHTML,SecurityIssues,AppletsandApplications,passing
parameters to applets. Creating a Swing Applet, Painting in Swing, A
Paintexample,ExploringSwingControls-JLabelandImageIcon, JTextField,The
SwingButtons-JButton, JToggle Button, JCheck Box, JRadio Button,
JTabbed Pane, JScroll Pane, JList, JComboBox,Swing Menus,Dialogs.

TEXTBOOKS:
1. JavaThecompletereference, 9thedition, HerbertSchildt, McGrawHillEducation (India) Pvt.Ltd.
2. UnderstandingObject-OrientedProgrammingwithJava, update dedition,T.Budd, PearsonEducation.

REFERENCEBOOKS:
1. AnIntroductiontoprogrammingandOOdesignusingJava,J.NinoandF.A.Hosch,JohnWiley& sons
2. IntroductiontoJavaprogramming, Y.DanielLiang, PearsonEducation.
3. ObjectOrientedProgrammingthroughJava, P. RadhaKrishna, UniversityPress.
4. ProgramminginJava, S.Malhotra, S.Chudhary, 2ndedition, OxfordUniv.Press.
5. JavaProgrammingandObject-orientedApplicationDevelopment, R.A.Johnson,CengageLearning.

CY2206PC: OPERATING SYSTEMS LAB (UsingUNIX/LINUX)

II-II:CSE(CS)								
Course Code	**Category**	**Hours/Weak**			**Credits**	**Max Marks**		
CY2206PC	**Core**	**L**	**T**	**P**	**C**	**CIE**	**SEE**	**Total**
		0	**0**	**3**	**1.5**	**30**	**70**	**100**
Contact Classes:NIL	**Tutorial classes:NIL**	**Practical classes: 36**				**Total Classes:36**		
Prerequisites: A course on "ProgrammingforProblemSolving". **Acourse on"ComputerOrganizationandArchitecture".**								

Prerequisites:

- A course on "ProgrammingforProblemSolving".
- A courseon"ComputerOrganizationandArchitecture".

Co-requisite:
- A courseon"OperatingSystems".

Course Objectives:
- To provide an understanding of the design aspects of operatingsystem concepts through simulation
- Introduce basic Unixcommands, system call interface for processmanagement, interprocesscommunication andI/Oin Unix

Course Outcomes:
- Simulate and implement operatingsystem concepts such as scheduling,deadlock management,filemanagement and memorymanagement.
- Able to implement Cprograms using Unixsystemcalls

List of Experiments:
1. Write a Cprograms to simulate the following CPUSchedulingalgorithms
     a) FCFS   b)SJF   c)Round Robin   d)priority
2. Write programs using the I/Osystemcalls of UNIX/LINUXoperatingsystem(open,read,write,close,fcntl,seek,stat,opendir,readdir)
3. Write a Cprogram to simulate BankersAlgorithm for DeadlockAvoidance and Prevention.
4. Write a Cprogram to implement the Producer–Consumerproblem using semaphores using UNIX/LINUXsystemcalls.

5. Write Cprograms to illustrate the following IPCmechanisms
   a) Pipes   b)FIFOs   c)MessageQueues   d)SharedMemory
6. Write Cprograms to simulate the following memorymanagement techniques
   a) Paging   b)Segmentation

TEXTBOOKS:
1. OperatingSystemPrinciples-AbrahamSilberchatz, PeterB.Galvin, GregGagne7thEdition, John Wiley.
2. AdvancedprogrammingintheUnix environment, W.R.Stevens, Pearson education.

REFERENCEBOOKS:
1. OperatingSystems–InternalsandDesignPrinciples, WilliamStallings, FifthEdition–2005, Pearson Education/PHI.
2. OperatingSystem-A DesignApproach-Crowley, TMH.
3. ModernOperatingSystems, AndrewSTanenbaum, 2ndedition, Pearson/PHI.
4. UNIXProgrammingEnvironment, KernighanandPike, PHI/PearsonEducation.
5. UNIXInternals: TheNewFrontiers, U.Vahalia, PearsonEducation.

CY2207PC: COMPUTER NETWORKS LAB

II-II:CSE(CS)								
Course Code	Category	Hours/Weak			Credits	Max Marks		
CY2207PC	Core	L	T	P	C	CIE	SEE	Total
		0	0	3	1.5	30	70	100
Contact Classes:NIL	Tutorial classes:NIL	Practical classes: 36				Total Classes:36		
Prerequisites								

Course Objectives:

- To understand the working principle of various communication protocols.
- To understand the network simulator environment and visualize a network topology and observe its performance.
- To analyze the traffic flow and the contents of protocol frames.

Course Outcomes:

- Implement datalinklayer farming methods.
- Analyze error detection and error correctioncodes.
- Implement andanalyzer outing and congestion issues in networkdesign.
- Implement EncodingandDecoding techniques used in presentationlayer.
- To be able to work with differentnet work tools.

List of Experiments

1. Implement the datalinklayer framing methods such as character, character-stuffingandbitstuffing.
2. Write a program to computeCRCcode for the polynomialsCRC-12,CRC-16and CRCCCIP
3. Develop a simple datalinklayer that performs the flow control using the slidingwindowprotocol and loss recovery using theGo-Back-Nmechanism.
4. Implement Dijsktra'salgorithm tocompute the shortestpath through a network
5. Take an example subnet of hosts and obtain a broadcasttree for the subnet.
6. Implement distancevectorroutingalgorithm for obtaining outing ables at eachnode.
7. Implementdataencryptionanddatadecryption
8. Write a program for congestioncontrolusingLeakybucketalgorithm.
9. Write a program for framesorting technique used in buffers.

10. Wireshark
    i. PacketCapture UsingWire shark
    ii. StartingWireshark
    iii. Viewing CapturedTraffic
    iv. Analysisand Statistics&Filters.
11. How to runNmap scan
12. OperatingSystemDetectionusingNmap

13. Dothefollowing using NS2 Simulator
    i. NS2Simulator-Introduction
    ii. Simulate toFindthe NumberofPacketsDropped
    iii. Simulate toFindthe Number ofPacketsDropped byTCP/UDP
    iv. Simulate toFindtheNumberofPacketsDroppedduetoCongestion
    v. Simulate to Compare DataRate&Throughput.
    vi. Simulate toPlotCongestionfor DifferentSource/Destination
    vii. Simulate to Determinethe Performancewith respecttoTransmission ofPackets

CY2208PC: JAVA PROGRAMMING LAB

II-II:CSE(CS)								
Course Code	**Category**	**Hours/Weak**			**Credits**	**Max Marks**		
CY2208PC	**Core**	L	T	P	C	CIE	SEE	Total
		0	0	2	1	30	70	100
Contact Classes:NIL	**Tutorial classes:NIL**	**Practical classes: 36**				**Total Classes:36**		
Prerequisites								

CourseObjectives:

- To write programs using abstract classes.
- To write programs for solving realworld problems usingj a vacollection frame work.
- To write multithreaded programs.
- To writeGUIprogramsusingswing controlsinJava.
- To introducejavacompiler and eclipseplatform.
- To imparthands on experience with java programming.

Course Outcomes:
- Able to write programs for solving realworld problems usingjavacollectionframework.
- Able to write programs using abstractclasses.
- Able to write multithreadedprograms.
- Able towriteGUIprogramsusingswing controlsinJava.

Note:
1. Use LINUX and MySQL fo r the LabExperiments. Thoughnotmandatory, encourage the use of Eclipse platform.
2. Thelistsuggeststheminimumprogramset.Hence, the concerned staff is requested to add more problems to the list as needed.

List of Experiments:

1. Use Eclipse or Net bean platform and acquaint with the various menus. Create a test project, adda test class, and run it. See how you can use auto suggestions, auto fill. Try code formatter andcode refactoring like renaming variables, methods, and classes. Try debugstepbystepwithasmallprogram of about 10to15lines which contains atleast one ifelsecondition and afor loop.

2. Write a Java program that works as a simple calculator. Use a grid layout to arrange buttons for the digits and for the +, -,*,% operations. Add a text field to display the result. Handle any possible exceptions like divided by zero.

3. a) Develop an applet in Java that displays a simple message.
   b) Develop an applet in Java that receives an integer in one text field and computes its factorial Value and returns it in another textfield when the button named "Compute" is clicked.
   c)

4. Write a Java program that creates a user interface to perform integer divisions. The user enters two numbers in the text fields, Num1 and Num2. The division of Num1 and Num 2 is displayed in the Result field when the Divide button is clicked. If Num1 or Num2 were not an integer, the program would throw a Number Format Exception. If Num2 were Zero, the program would throw an ArithmeticException. Display the exception in a message dialog box.

5. Write a Java program that implements a multi-thread application that has three threads. First thread generates random integer every 1 second and if the value is even second thread computes the square of the number and prints. If the value is odd, the third thread will print the value of cube of the number.

6. Write a Java program for the following: Create a doubly linked list of elements. Delete a given element from the above list. Display the contents of the list after deletion.

7. Write a Java program that simulates a traffic light. The program lets the user select one of three lights: red, yellow, or green with radio buttons. On selecting a button, an appropriate message with "Stop" or "Ready" or "Go" should appear above the buttons in selected color. Initially, there is no message shown.

8. Write a Java program to create an abstract class named Shape that contains two integers and an empty method named print Area (). Provide three classes named Rectangle, Triangle, and Circle such that each one of the classes extends the class Shape. Each one of the classes contains only the method printArea () that prints the area of the given shape.

9. Suppose that a table named Table.txt is stored in a text file. The first line in the file is the header and the remaining lines correspond to rows in the table. The elements are separated by commas. Write a java program to display the table using Labels in Grid Layout.

10. Write a Java program that handles all mouse events and shows the event name at the center of the window when a mouse event is fired (Use

Adapterclasses).

11. Write a Java program that loads names and phone numbers from a text file where the data isorganized asone line per record and each field in a record are separated by a tab (\t). It takes aname or phone number as input and prints the corresponding other value from the hash table (hint:use hash tables).

12. Write a Java program that correctly implements the producer – consumer problem using theconceptofinterthread communication.

13. WriteaJavaprogramtolistallthefilesinadirectoryincludingthefilesp resentinallitssubdirectories.

14. Write a Javaprogram tha implements Quicksortalgorithm for sorting a lis tof names in a acendingorder

15. Write a Java program that implements Bubble sort algorithm for sorting in descending order andalsoshowsthe number ofinterchangesoccurredforthegivensetofintegers.

REFERENCEBOOKS

1. JavaforProgrammers, P.J.Deitel andH.M.Deitel, 10thEdition *Pearson* education.
2. Thinkingin Java, BruceEckel, PearsonEducation.
3. JavaProgramming,D. S. MalikandP.S. Nair*Cengage* Learning.
4. CoreJava, Volume1, 9thedition, CayS.HorstmannandGCornellPearson.

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MC2001: CONSTITUTIONOFINDIA

II-II:CSE(CS)								
Course Code	Category	Hours/Weak			Credits	Max Marks		
CY2204PC	Core	L	T	P	C	CIE	SEE	Total
		3	0	0	0	30	70	100
Contact Classes:45	Tutorial classes:15	Practical classes: Nill				Total Classes:60		
Prerequisites								

The Constitution of India is the supreme law ofIndia. Parliament ofIndia cannot make anylaw which violates the Fundamental Rights enumerated under the Part III of the Constitution. TheParliament of India has been empowered to amend the Constitution under Article 368, however, itcannot use this power to change the "basic structure" of the constitution, which has been ruled andexplained by the Supreme Court of India in its historical judgments. The Constitution of India reflectsthe idea of "Constitutionalism" – a modern and progressive concept historically developed by thethinkers of "liberalism" – an ideology which has been recognized as one of the most popular politicalideology and result of historical struggles against arbitrary use of sovereign power by state. ThehistoricrevolutionsinFrance, England, America and particularly European Renaiss ance and Reformation movement have resulted into progressive legal reforms in the form of "constitutionalism"in many countries. The Constitution of India was made by borrowing models and principles from manycountriesincluding UnitedKingdomandAmerica.

The Constitution of India is not only a legal document but it also reflects social, political andeconomic perspectives of the Indian Society. It reflects India's legacy of "diversity". It has been saidthat Indian constitution reflects ideals of its freedom movement; however, few critics have argued thatit does not truly incorporate our own ancient legal heritage and cultural values. No law can be "static"and therefore the Constitution of India has also been amended more than one hundred times. Theseamendments reflect political, social and economic developments since the year 1950. The Indianjudiciary and particularly the Supreme Court of India has played an historic role as the guardian ofpeople. It has been protecting not only basic ideals of the Constitution but also strengthened the samethrough progressive interpretations of the text of the Constitution. The judicial activism of the SupremeCourt of India and its historic contributions has been recognized throughout the world and it graduallymadeit"asone ofthe strongestcourtinthe world".

Course content
1. Meaning of the constitution law and constitutionalism
2. Historical perspective of the Constitution of India
3. Salient features and characteristics of the Constitution of India
4. Scheme of the fundamental rights
5. The scheme of theFundamental Duties and its legalstatus
6. The DirectivePrinciples of StatePolicy–Its importance and implementation
7. Federalstructure and distribution of legislative and financial powers between theUnionandthe States
8. ParliamentaryFormofGovernmentinIndia–TheconstitutionpowersandstatusofthePresidentofIndia
9. Amendmentof theConstitutionalPowersandProcedure
10. The historical perspectives of the constitutional amendmentsinIndia
11. EmergencyProvisions: NationalEmergency, PresidentRule,FinancialEmergency
12. LocalSelfGovernment–ConstitutionalSchemeinIndia
13. Scheme of the FundamentalRighttoEquality
14. Scheme of the FundamentalRight to certain Freedomunder Article19
15. Scope of the Right to Life and PersonalLibertyunderArticle21