



POORNIMA
UNIVERSITY

SCHOOL OF ENGINEERING & TECHNOLOGY

B.Tech
Batch 2013

First Year Syllabus



**Teaching Schemes
& Detailed Syllabus
for First Year**

SCHOOL OF ENGINEERING AND TECHNOLOGY

POORNIMA UNIVERSITY

B.Tech. First Year (Batch 2013-17)

**Teaching Scheme for First Semester (I Yr.)
COMMON TO ALL BRANCHES (CE/CIV/EE/EC/ME)**

Subject Code	Subject Name	Teaching Scheme (Hrs per week)			Credits
		Lec (L)	Tut (T)	Prac (P)	
A. Core Subjects(Theory)					
BTX01101	English -I	2	-	-	1
BTX01102	Engineering Physics-I	4	1	-	4.5
BTX01103	Chemistry & Environmental Engineering-I	3	1	-	3.5
BTX01104	Engineering Mathematics-I	3	1	-	3.5
BTX01105/ BTX01106	Engineering Mechanics (CIV/ME) Electrical & Electronics Engineering (CS/EE/EC)	4	1	-	4.5
BTX01107	Fundamentals of Computer	2	-	-	2
B. Departmental Elective(Theory):ANYONE					
	-	-	-	-	-
C. Open Elective (Theory):ANY ONE					
	-		-	-	
D. Practicals					
BTX01208	Engineering Physics Lab-1	-	-	2	1
BTX01209	Engineering Chemistry Lab-1	-	-	2	1
BTX01210/ BTX01211	Workshop Practice (CIV/ME) Electrical & Electronics Engineering Lab (CS/EE/EC)	-	-	2	1
BTX01212	Practical Geometry	-	1	2	1.5
BTX01213	Fundamentals of Computer	-	-	2	1
BTX01214	Soft Skills-I	-	-	2	1
E. Project/Seminar					
	-	-	-	-	-
F. Programmes / Activities					
BTX01615	Discipline and Talent Enrichment Programme (TEP) - I				2
BTX01615.1	Non Syllabus Project(NSP)	1	-	-	
BTX01615.2	Online Eligibility Exam (OLE)	1	-	-	
BTX01615.3/15.4	Library/Internet	1	-	-	
BTX01615.5	Extra Circular Activities	1	-	-	
Total		24	5	10	27.5
Total Teaching Hours		39			



POORNIMA UNIVERSITY

B.Tech. First Year (Batch 2013-17)

**Teaching Scheme for Second Semester (I Yr.)
COMMON TO ALL BRANCHES (CE/CIV/EE/EC/ME)**

Subject Code	Subject Name	Teaching Scheme (Hrs per week)			Credits
		Lec (L)	Tut (T)	Prac (P)	
A.	Core Subjects (Theory)				
BTX02101	English-II	2	-	-	2
BTX02102	Engineering Physics-II	4	1	-	4.5
BTX02103	Chemistry & Environmental Engineering-II	3	1	-	3.5
BTX02104	Engineering Mathematics-II	3	1	-	3.5
BTX02105/ BTX02106	Electrical & Electronics Engineering (CIV/ME) Engineering Mechanics (CS/EE/EC)	4	1	-	4.5
BTX02107	Programming in C	3	-	-	3
B.	Departmental Elective(Theory): ANY ONE				
	-	-	-	-	-
C.	Open Elective (Theory): ANY ONE				
	-	-	-	-	-
D.	Practicals				
BTX02208	Engineering Physics Lab-II	-	-	2	1
BTX02209	Engineering Chemistry Lab-II	-	-	2	1
BTX02210/ BTX02211	Electrical & Electronics Lab (CIV/ME) Workshop Practice Lab (CS/EE/EC)	-	-	2	1
BTX02212	Machine Drawing	-	-	2	1
BTX02213	Computer Programming Lab	-	-	2	1
BTX02214	Language Lab	-	-	2	1
BTX02215	Life and Career Skills	-	-	1	0.5
E.	Project/Seminar				
	-	-	-	-	-
F.	Programmes / Activities				
BTX02616	Discipline and Talent Enrichment Programme (TEP) - II				2
BTX02616.1	Online Eligibility Exam (OLE)	1	-	-	
BTX02616.2	Extra Circular Activities	1	-	-	
	Total	23	3	13	
	Total Teaching Hours	39			30



Poornima University, Jaipur

School of Engineering and Technology

First Year Department



DETAILED SYLLABUS

for

B.Tech. I Year

(FIRST and SECOND Semester)

Batch 2013-17

FIRST SEMESTER

CORE THEORY SUBJECTS

Code: BTX01101

ENGLISH-I

2 Credits [LTP: 2-0-0]

A. OUTLINE OF THE COURSE

Unit No.	Title of the Unit	Time Required for the Unit (Hours)
1.	Grammar and Usage	5
2.	Composition	3
3.	Poems	4
4.	Essays & Short Play	5
5.	Short Stories	5

B. DETAILED SYLLABUS

Unit	Contents
1.	Grammar and Usage <ul style="list-style-type: none"> • Introduction of Unit • Parts of speech • Tenses • Sentences • Word format • Conclusion of Unit
2.	Composition <ul style="list-style-type: none"> • Introduction of Unit • Letter writing • Application writing • Précis writing • Conclusion of Unit
3.	Poems <ul style="list-style-type: none"> • Introduction of Unit • The Solitary Reaper by William Wordsworth • God's Grandeur by Gerard Manley Hopkins • The Road Not Taken by Robert Frost • Conclusion of Unit
4.	Essays & Short Play <ul style="list-style-type: none"> • Introduction of Unit • Of Studies by Francis Bacon • On Doing Nothing by G.B. Priestley • The Monkey's Paw by W.W. Jacobs • Conclusion of Unit
5.	Short Stories <ul style="list-style-type: none"> • Introduction of Unit • The Three Dancing Goats by Anonymous • God and the Cobbler by R.K. Narayan • My lord, The baby by R.N.Tagore • Conclusion of Unit



C. RECOMMENDED STUDY MATERIAL

Sr.No	Reference Book	Author	Edition	Publication
1.	Technical Communication	Meenakshi Raman and Sangeetha Sharma	2008	Oxford University Press,
2.	Effective Technical Communication	M. Ashraf Rizvi	2005	Tata McGraw-Hill
3.	Learn Correct English: Grammar, Usage and Composition	Shiv K. Kumar & Hemalatha Nagarajan		Pearson, New Delhi, India
4.	Grammar of the Modern English Language	Sukhdev Singh & Balbir Singh		Foundation Books, New Delhi
5.	Communicative English for Engineers and Professionals	Nitin Bhatnagar and Mamta Bhatnagar		Pearson(New Delhi)
6.	Communicative grammar and composition	Rajesh.K.Lidiya	2008	Oxford Univ Press, New Delhi.

Important Web Links

1.	http://www.communicationsskills.co.in/index.html
2.	http://www.hodu.com/default.htm
3.	http://www.bbc.co.uk/worldservice/learningenglish
4.	http://www.englishlearner.com/tests/test.html
5.	http://www.englishclub.com/vocabulary/idioms-body.htm
6.	http://dictionary.cambridge.org 2.

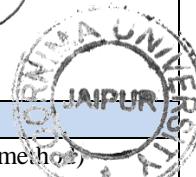


A. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time required for the Unit (Hours)
1.	Interference of light	8
2.	Diffraction of light	9
3.	Polarization of light	9
4.	Elements of Material Science	9
5.	Special Theory of Relativity	9

B. DETAILED SYLLABUS

Unit	Unit Details
1.	Interference of light <ul style="list-style-type: none"> Introduction of Unit Types of interference, Coherent sources, Principle of Superposition, characteristics of coherent sources, methods to produce coherent sources with examples. Interference in Thin Films: Interference in Reflected light, Interference in Transmitted light Michelson's Interferometers: Principle, Construction, Working and production of circular, straight line and hyperbolic fringes <ul style="list-style-type: none"> Application: Determination of <ul style="list-style-type: none"> The wavelength of a given monochromatic source of light. The difference between the two neighbouring wavelengths. The refractive index & thickness of a thin transparent film (sheet). Newton's Rings: Principle, Construction and working of Newton's ring in reflected light, .Newton's ring in transmitted light <ul style="list-style-type: none"> Application:- <ul style="list-style-type: none"> Determination of wavelength of a monochromatic light. Determination of refractive index of a liquid. Conclusion of Unit
2.	Diffraction of Light <ul style="list-style-type: none"> Introduction of Unit: Types of Diffraction and difference between them , Condition for diffraction, difference between interference and diffraction. Single slit diffraction: Quantitative description of maxima and minima with intensity variation, linear and angular width of central maxima. Diffraction Grating: Construction and theory, application and characteristics of plane transmission grating. Resolving Power: Geometrical & spectral, Rayleigh criterion, Resolving power of diffraction grating and telescope. X-Ray diffraction and Bragg's Law. Conclusion of Unit
3.	Polarization of Light <ul style="list-style-type: none"> Introduction of Unit: Experimental demonstration of polarization (Mechanical and optical method) Classification of plane, circular and elliptically polarized light on the basis of electric (light) vector, Malus and Brewster's Law. Double Refraction: Quantitative description of double refraction (Huygen Theory for explanation-mathematical derivation), Nicol Prism, Phase retardation plate (Quarter and half wave plates), working and use of phase retardation plates in production and detection of circularly and elliptically polarized light. Optical Activity: Optical activity and laws of optical rotation, specific rotation and its measurement using half shade and bi-quartz devices.



	<ul style="list-style-type: none"> Conclusion of Unit
4.	Elements of Material Science <ul style="list-style-type: none"> Introduction of Unit: Bonding in solids, Covalent bonding and Metallic bonding, Classification of Solids as Insulators, Semi-Conductor and Conductors Semiconductors: Conductivity in Semiconductors, Determination of Energy gap of Semiconductor. Basic concepts of Superconductivity and Meissner Effect Hall Effect: Theory, Hall Coefficients and application to determine the sign of charge carrier, to determine the Concentration of charge carrier, to determine the mobility of charge carriers. Conclusion of Unit
5.	Special Theory of Relativity <ul style="list-style-type: none"> Introduction of Unit: Relativity of size, position, velocity and time. Inertial and non-inertial frames of Reference. Postulates of special theory relativity Galilean and Lorentz Transformations, Length contraction, Mass Variation and Time Dilation. Relativistic Velocity addition and Mass-Energy relation Relativistic Energy and Momentum Twin Paradox. Conclusion of Unit

C. RECOMMENDED STUDY MATERIAL:

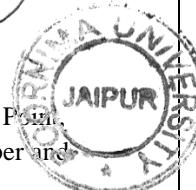
Sr.No	Reference Books	Author	Edition	Publication
1.	Fundamental of Optics	Jenkins and White	4 th	Tata McGraw-Hill
2.	Optics	Ajoy Ghatak	3 rd	Tata Mc Graw-Hill
3.	A Text Book of optics	Brijlal & Subramanium	Latest	S.Chand and co. Ltd
4.	Concept of Modern Physics	Beiser	Latest	Tata McGraw-Hill
5.	Introduction to special Relativity	R.Resnick	Latest	Johan Willy Singapore
6.	Atomic & Nuclear Physics	Brijlal, Subramanyam IV JivanSesham	Latest	S.Chand & Co
7.	Elements of Properties of Matter	D.S.Mathur	Latest	S.Chand & Co.
8.	Solid State Physics	S.O.Pillai	Latest	Wiley Eastern Ltd.



A. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time required for the Unit (Hours)
1.	Fuel: General Aspects	8
2.	Fuel Analyses	6
3.	New Engineering Materials and Lubricants	6
4.	Binding Materials and Industrial Inorganic Compounds	6
5.	Basics of Environment & Social Issues	7

B. DETAILED SYLLABUS

Unit	Unit Details
1.	<p>Fuel: General Aspects</p> <ul style="list-style-type: none"> • Introduction of Unit • Classification and general aspects of fuel. • Solid fuel: Coal, Types of coal, Carbonization of coal • Liquid fuel: Processing of crude petroleum, Cracking, Thermal Cracking and Catalytic Cracking, Synthetic petrol (Coal to Liquid (CTL) Technology): Bergius and Fischer Tropsch process. Knocking, Octane number and Cetane number, Anti-knocking and Anti-knocking agents • Gaseous fuel: Advantages of gaseous fuel, Biogas, LPG, CNG • Numericals based on combustion and requirement of oxygen/ air in combustion process • Conclusion of Unit
2	<p>Fuel Analyses</p> <ul style="list-style-type: none"> • Introduction of Unit • Analysis of Coal: Ultimate and Proximate analysis of coal • Calorific Value: Definition, Higher calorific value, Lower calorific value, Determination of higher & lower calorific value by Bomb Calorimeter, Determination of higher & lower calorific value by Junker's Calorimeter • Calculations of calorific value based on Dulong's formula • Fuel gas analysis by Orsat's apparatus and its significance • Numericals based on Bomb & Junker's calorimeter • Conclusion of Unit
3	<p>New Engineering Materials and Lubricants</p> <ul style="list-style-type: none"> • Introduction of Unit <p>New Engineering Materials</p> <ul style="list-style-type: none"> • Fullerenes: Introduction, Properties, Preparation and Applications • Nano-materials: Introduction, Properties, Preparation and Applications <p>Lubricants</p> <ul style="list-style-type: none"> • Introduction of lubricants, Classification, Properties and Uses of lubricants • Mechanism of lubrication, Selection of lubricants • Properties of lubricants: Viscosity & Viscosity Index, Flash and Fire Point, Cloud and Pour Point, Carbon Residue, Oiliness, Aniline Point, Steam Emulsification Number, Precipitation Number and Neutralization Number • Conclusion of Unit  

4	Binding Materials and Industrial Inorganic Compounds
	<ul style="list-style-type: none"> • Introduction of Unit <p>Binding Materials</p> <ul style="list-style-type: none"> • Cement: Composition and Significance of cement • Manufacturing of Portland cement by Rotary Kiln Technology • Chemistry of setting and hardening of cement and role of gypsum <p>Industrial Inorganic Compounds</p> <ul style="list-style-type: none"> • Refractories, Classification and its properties • Requisites of good refractory and manufacturing of refractory • Detailed study of Silica and Fire clay refractory and their uses • Conclusion of Unit
5	Basics of Environment & Social Issues
	<ul style="list-style-type: none"> • Introduction of Unit <p>Basics of Environment</p> <ul style="list-style-type: none"> • The multidisciplinary nature of Environmental studies – Definition, Scope and Importance for Public Awareness • Introduction to Environment: Biosphere, Atmosphere, Hydrosphere, Lithosphere • Ecosystem: Definition and components (Biotic & Abiotic). • Biodiversity: Definition, Importance & Threats to biodiversity • Energy Resources: Renewable and Non-renewable energy sources <p>Social Issues</p> <ul style="list-style-type: none"> • Current Environmental Issues: Climate change and Global warming, Acid rain, Ozone Layer Depletion, Eutrophication, Biomagnification, Urbanization, Sustainable Development, Rainwater Harvesting Environmental Impact Assessment • Conclusion of Unit

C. RECOMMENDED STUDY MATERIAL:

Sr.No	Reference Book	Author	Edition	Publication
1.	Engineering Chemistry	O.P. Palnna	Latest	Tata Mcgraw Hill
2.	Engineering Chemistry	Sivakumar	Latest	Tata Mcgraw Hill
3.	Engineering Chemistry	P.C. Jain		Dhanpat Rai & Sons
4.	Engineering Chemistry.	S. S. Dara		S. Chand & Co.
5.	Chemistry in Engineering & Tech.	Rajaram Kuriacose		Tata Mcgraw Hill
6.	Environmental Studies	R. Rajagopalan		Oxford University Press
7.	Principles of Environmental Science and Engineering	P. Venugopalan Rao		Prentice Hall of India.
8.	Environmental Science and Engineering	Meenakshi		Prentice Hall India.

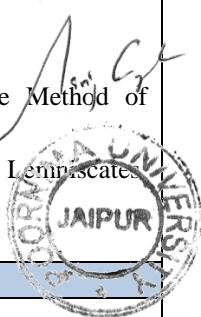


A. OUTLINE OF THE COURSE

Unit No.	Title of the Unit	Time required for the Unit (Hours)
1.	Matrices	6
2.	Infinite Series	7
3.	Differential Calculus I	5
4.	Differential Calculus II	8
5.	Integral Calculus	7

B. DETAILED SYLLABUS

Unit	Unit Details
1.	Matrices <ul style="list-style-type: none"> • Introduction of Unit • Rank of a Matrix, Normal form of a Matrix • Consistency of systems of linear equations • Eigen Values and Eigen Vectors • Cayley-Hamilton Theorem (without proof) • Diagonalization of Matrix • Conclusion of Unit
2.	Infinite Series <ul style="list-style-type: none"> • Introduction of Unit • Infinite Series – General properties and Convergence • Series of positive terms • Tests of Convergence (Comparison test, D' Alembert's ratio test, Raabe's test, Root test) Alternating Series- Leibnitz's rule • Absolute and Conditional Convergence, Convergence of Binomial, Exponential and Logarithmic Series • Conclusion of Unit
3.	Differential Calculus I <ul style="list-style-type: none"> • Introduction of Unit • Asymptotes (Cartesian coordinates) • Curvature(in Cartesian form)- Radius, Centre and Circle of Curvature, Length of Chord of Curvature parallel to the axes • Concavity, Convexity and Points of Inflexion • Conclusion of Unit
4.	Differential Calculus II <ul style="list-style-type: none"> • Introduction of Unit • Partial Derivative, Euler's Theorem on Homogeneous Functions • Total Derivative • Maxima and Minima of functions of two and more independent variables- Lagrange Method of Multipliers • Curve Tracing for Cartesian curves, Tracing of standard Polar curves- Cardioids, Limaçon, Lemniscates Cycloid • Conclusion of Unit
5.	Integral Calculus <ul style="list-style-type: none"> • Introduction of Unit • Surfaces and Volumes of Solids of Revolutions • Double integrals, Double integral by changing into polar form, Areas & Volumes by Double Integration



	<ul style="list-style-type: none"> • Change of order of integration • Beta and Gamma functions- Elementary properties • Conclusion of Unit
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C. RECOMMENDED STUDY MATERIAL:

Sr.No	Reference Book	Author	Edition	Publication
1.	Higher Engineering Mathematics	B S Grewal	Latest	Khanna Publications, Delhi,
2.	Higher Engineering Mathematics	Ramana, B.V	Latest	Tata McGraw-Hill.
3.	Engineering Mathematics: A Tutorial Approach	Ravish R Singh and M Bhatt	Latest	Tata McGraw-Hill
4.	Calculus and Analytical Geometry	Thomas and Finney,	Latest	Narosa Publishing, New Delhi
5.	Advanced Engineering Mathematics	Erwin Kreyszig	Latest	John Wiley and Sons

Important Web Links:

1.	http://mathworld.wolfram.com/
2.	http://en.wikipedia.org/wiki/Math



A. OUTLINE OF THE COURSE

Unit No.	Title of the Unit	Time required for the Unit (Hours)
1.	Fundamentals of Mechanics	9
2.	Machine & Moment of Inertia	9
3.	Friction & Belt Drive	8
4.	Dynamics of Particles	9
5.	Work, Power & Impact	9

B. DETAILED SYLLABUS

Unit	Unit Details
1.	Fundamentals of Mechanics <ul style="list-style-type: none"> Introduction of Unit Fundamental laws of mechanics, Principle of transmissibility System of forces, Resultant force, Resolution of force Moment and Couples, Varignon's Theorem, Resolution of a force into a force and a couple, Free body diagram Equilibrium, Conditions for equilibrium, Lami's theorem. Virtual work: Principle of Virtual Work, Active forces and active force diagram Conclusion of Unit
2.	Machine & Moment of Inertia <ul style="list-style-type: none"> Introduction of Unit Lifting Machines: Mechanical advantage, Velocity Ratio, Efficiency of machine, Ideal machine, Ideal effort and ideal load, Reversibility of machine, Law of machine, Lifting machines Pulleys: System of Pulleys, Simple wheel and axle, Wheel and differential axle, Weston's differential pulley block Centroid & Moment of Inertia: Location of centroid and center of gravity, Moment of inertia, Parallel axis and perpendicular axis theorem, Radius of gyration, M.I of composite section, Polar moment of inertia, M.I of solid bodies. Conclusion of Unit
3.	Friction & Belt Drive <ul style="list-style-type: none"> Introduction of Unit Friction: Types of Friction, Laws of friction, Angle of friction, Angle of repose, Ladder, Wedge, Belt Friction Belt Drive: Types of belts, Types of belt drives, Velocity ratio, Effect of slip on Velocity ratio, Length of belt, Ratio of tensions and power transmission by flat belt drives. Conclusion of Unit
4.	Dynamics of Particles <ul style="list-style-type: none"> Introduction of Unit Kinematics of Particles and Rigid Bodies: Velocity, Acceleration, Types of Motion, Equations of Motion, Rectangular components of velocity and acceleration, Angular velocity and Angular acceleration, Radial and transverse velocities and accelerations, Projectiles motion on plane and inclined Plane, Relative Motion. Kinetics of Particles and Rigid Bodies: Newton's laws, Linear Momentum, Linear Impulse, Equation of motion in rectangular coordinate, radial and transverse components, Equation of motion in plane for a rigid body, D'Alembert principle.

	<ul style="list-style-type: none"> Conclusion of Unit
5.	Work, Power & Impact
	<ul style="list-style-type: none"> Introduction of Unit Work, Energy and Power: Work of a force, weight, spring force and couple, Power, Efficiency, Energy, Kinetic energy of rigid body, Principle of work and energy, Conservative and Non-conservative Force, Conservation of energy. Impact: Collision of elastic bodies, types of impact, conservation of momentum, Newton's law of collision, coefficient of restitution, loss of kinetic energy during impact. Conclusion of Unit

C. RECOMMENDED STUDY MATERIAL

Sr.No	Reference Book	Author	Edition	Publication
1.	Vector Mechanics for Engineers	Beer and Johnston	Latest	Tata McGraw Hill
2.	Engineering Mechanics	D S Kumar	Latest	S K Kataria & Sons
3.	Engineering Mechanics Statics	Meriam, J. L. & Kraige, L. G	Latest	John Wiley & Son
4.	Engineering Mechanics	S. Ramamruthan	Latest	Dhanpat Rai Pub.
5.	Engineering Mechanics	Shames	Latest	Pearson Education

Important Web Links	
1.	http://nptel.iitm.ac.in/courses/Webcourse-contents/IITDelhi/Mechanics%20Of%20Solids/index.htm
2.	http://nptel.iitm.ac.in/video.php?subjectId=105106116



A. OUTLINE OF THE COURSE

Unit No.	Title of the Unit	Time required for the Unit (Hours)
1.	Basic Concepts of Electrical Engineering	9
2.	Alternating Quantities	9
3.	Energy Conversion and Electrical Machines	9
4.	Basic Electronics	8
5.	Communication Systems	9

B. DETAILED SYLLABUS

Unit	Unit Details
1.	Basic Concepts of Electrical Engineering <ul style="list-style-type: none"> Introduction of Unit Basic Concepts: Electric Current, Electromotive Force, Electric Power, Ohm's Law, Basic Circuit Components, Faraday's Law of Electromagnetic Induction. DC Network Analysis & Theorems: Kirchhoff's Laws, Network Sources, Resistive Networks, Series-Parallel Circuits, Star-Delta Transformation, Node Voltage Method, Mesh Current Method, Superposition, Thevenin's, Norton's and Maximum Power Transfer Theorems. Conclusion of Unit
2.	Alternating Quantities <ul style="list-style-type: none"> Introduction of Unit Single Phase AC system: Introduction, Generation of AC Voltages, Root Mean Square and Average Value of Alternating Currents and Voltages, Form Factor, Peak Factor, Power Factor and Quality Factor, Phasor Representation of Alternating Quantities, Single Phase RLC Circuits. Three Phase AC system: Introduction, Merits of Three Phase System, Generation and Waveform. Conclusion of Unit
3.	Energy Conversion and Electrical Machines <ul style="list-style-type: none"> Introduction of Unit Introduction of Energy: Types of Energy, Introduction to Energy Conversion, Sources of Energy (Conventional & Non Conventional), Energy Scenario in India & Rajasthan. Rotating Machines : <ul style="list-style-type: none"> DC Machines: Principle of Operation of DC Machine as Motor and Generator, EMF Equation, Applications of DC Machines AC Machines: Principle of Operation of 3-Phase Induction Motor, 3-Phase Synchronous Motor, 3-Phase Synchronous Generator (Alternator), Applications of AC Machines Stationary Machines : Introduction, Construction and Principle of Working of Transformer, EMF Equation, Voltage Transformation Ratio Conclusion of Unit
4.	Basic Electronics <ul style="list-style-type: none"> Introduction of Unit Semiconductor Devices: Conduction in Semiconductors, Conduction Properties of Semiconductor Diodes, Behavior of the PN Junction, PN Junction Diode, Zener Diode, LED, Photovoltaic Cell, Rectifiers, L, C, & L-C filters, BJT, UJT, Transistor as an Amplifier. Digital Electronics: Boolean algebra, Binary System, Logic Gates and Their Truth Tables. Conclusion of Unit



5.	Communication Systems
	<ul style="list-style-type: none"> • Introduction of Unit • Basics of Communication: Introduction, IEEE Spectrum for Communication Systems, Types of Communication, Amplitude and Frequency Modulation. • Basics of Instrumentation: Introduction to Transducers, Thermocouple, RTD, Strain Gauges, Load Cell and Bimetallic Strip, Introduction and Classification of ICs. • Conclusion of Unit

C. RECOMMENDED STUDY MATERIAL

Sr.No	Reference Book	Author	Edition	Publication
1.	Electrical and Electronic Technology	Edward Hughes et al,	Latest	Pearson Publication
2.	Basic Electrical & Electronics Engineering	V. Jagathesan, K. Vinod Kumar & R. Saravan Kumar	Latest	Wiley India
3.	Basic Electrical & Electronics Engineering	Van Valkenburge	Latest	Cengage learning
4.	Basic Electrical and Electronics Engineering by,	Muthusubrmaniam	Latest	TMH
5.	Basic Electrical & Electronics Engineering	Ravish Singh	Latest	TMH

Important Web Links

1.	http://www.facstaff.bucknell.edu
2.	engineersphere.com/basic-electrical-concepts



A. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time required for the Unit (Hours)
1.	Introduction to Computers	8
2.	Computer Networks Concepts	4
3.	Operating System Concepts	4
4.	Data Representation	8
5.	Computer Software	4

B. DETAILED SYLLABUS

Unit	Unit Details
1.	Introduction to Computers <ul style="list-style-type: none"> • Introduction of Unit • Defining a computer, Utility and Need of Computer, Characteristics of Computer • Purpose of Computer, Computer Generations, Computer Hardware • Classification of Computers – Personal Computer, Workstation, Servers and Super Computers (On the basis of Speed and Storage Devices) • Introduction to Computer Components–CPU, Input Output Devices • Storage Devices-Primary Memory (RAM, ROM, PROM, EPROM, EEPROM) and Secondary Storage, Random, Direct, Sequential Access Methods • Conclusion of Unit
2.	Computer Networks Concepts <ul style="list-style-type: none"> • Introduction of Unit • Need, Scope & Benefits • Classification Overview: LAN, MAN, WAN, VPN, Peer-to-Peer, Client Server • Introduction of Components – NIC, Router, Switch, Hub, Repeater, Bridge, Gateway, Modem • Types of Servers – Database, Print, Internet, Mail, Chat • Comparison of Internet, Intranets, Extranets. • Conclusion of Unit
3.	Operating System Concepts <ul style="list-style-type: none"> • Introduction of Unit • Introduction of Operating System • Architecture of Operating System • Introduction to Basic types of Operating System-Multiprogramming, Multiprocessing, Multitasking • Time Sharing, Distributed Systems, Real Time Systems • Conclusion of Unit
4.	Data Representation <ul style="list-style-type: none"> • Introduction of Unit • Data Organization-Nibbles, bits, bytes, KB, MB, GB, TB • Number System: Concept of Radix and representation of numbers in radix r with special cases of r=2, 8, 10 and 16 with conversion from radix r1 to radix r2. R's and (r-1)'s complement. • Representation of Integer in Sign-magnitude, Signed 1's and 2's complement. • Floating Point Representation, Concept of Bias and Normalization, Representation of Alphabets • Binary Codes- Binary Arithmetic, Addition and Subtraction of Integers and Floating Point Numbers. Multiplication of Integers, Gray Code, BCD 8421 and 2421, Excess-3 and Excess-3 Gray Codes

	<ul style="list-style-type: none"> Conclusion of Unit
5.	Computer Software
	<ul style="list-style-type: none"> Introduction to Types of Software – <ul style="list-style-type: none"> System Software-Operating System, Classification of Computer language – Basic knowledge of High-Level, Assembly and Low Level programming languages, Difference between Assembler, Interpreter and Compiler General Purpose Software/ Utilities –Word Processor, Spread Sheet, Internet browser Application Software-Enterprise Resource Planning (ERP), Decision Support System Fundamentals of Computer Programming- Representing Algorithms through Flow Chart, Pseudo Code, Step by Step, Decision Tables Conclusion of Unit

C. RECOMMENDED STUDY MATERIAL

Sr.No	Reference Book	Author	Edition	Publication
1.	Computer Fundamentals	P. K. Sinha.	2004	Bpb Publications
2.	Computer Fundamentals and Programming in C	Reema Thareja	Latest	Oxford
3.	Fundamentals of Computers	V. Rajaraman	5 th	Phi
4.	Data Communication and Networking	Behrouz A. Forouzan	Latest	Tata McGraw Hill
5.	Operating System	Andrew S. Tanenbaum, Albert S.Woodhull	Latest	Pe-Pearson Education, Asia
Important Web Links				
1.	http://www.tutorials4u.com/c/			
2.	www.howstuffworks.com/c.htm			



PRACTICALS

Code: BTX01208

ENGINEERING PHYSICS LAB-I

2 Credits [LTP : 0-0-2]

LIST OF EXPERIMENTS:

1.	To determine the wave length of monochromatic light with the help of Fresnel's Biprism /Michelson's Interferometer.
2.	To determine the wave length of Sodium light by Newton's Ring
3.	To determine the specific rotation of Glucose (Sugar) solution using a Polarimeter
4.	To determine the wave length of prominent lines of mercury by plane diffraction grating with the help of spectrometer
5.	To convert a Galvanometer in to an Ammeter of range 1.5 amp and calibrate it
6.	To convert a Galvanometer in to a Voltmeter of range 1.5 volt and calibrate it
7.	To study the variation of a semiconductor resistance with temperature and hence determine the Band Gap of the semiconductor in the form of reverse biased P-N junction diode.
8.	The production and verification of EPL
9.	To verify the expression for the resolving power of Telescope
10.	To study the variation of thermo EMF of iron copper thermo couple with temperature. OR to calibrate an ammeter/voltmeter with the help of a potentiometer.

Code: BTX01209

ENGINEERING CHEMISTRY LAB-I

1 Credit[LTP : 0-0-2]

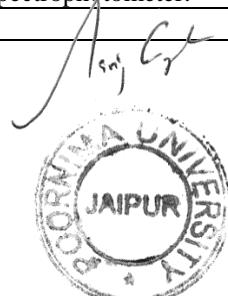
LIST OF EXPERIMENTS:

ROUTER 1

1.	Proximate analysis of solid fuel.
2.	To determine the strength of CuSO ₄ solution with the help of hypo solution.
3.	To determine the strength of Ferrous Ammonium sulphate solution with the help of K ₂ Cr ₂ O ₇ solution using potassium ferricyanide as external indicator.
4.	To determine the strength of Ferrous Ammonium sulphate solution with the help of K ₂ Cr ₂ O ₇ solution using diphenyl amine as internal indicator.
5.	To determine the strength of NaOH and Na ₂ CO ₃ in a given alkali mixture.
6.	To determine the acid value of a given oil.

ROUTER 2

7.	To determine the viscosity of a given lubricating oil by Redwood viscometer.
8.	To determine the flash and fire point of a given lubricating oil.
9.	To determine the cloud and pour point of a given oil.
10.	To determine the calorific value of a fuel by Bomb Calorimeter.
11.	To determine the amount of nitrate/ fluoride in given water sample by Spectrophotometer.
12.	To determine the Saponification No. of a given oil.



LIST OF EXPERIMENTS:

1.	Carpentry Shop <ul style="list-style-type: none"> • Timber, definition, engineering applications, seasoning and preservation • Plywood and ply boards
2.	Foundry Shop <ul style="list-style-type: none"> • Moulding Sands, constituents and characteristics • Pattern, definition, materials types, core prints • Role of gate, runner, riser, core and chaplets • Causes and remedies of some common casting defects like blow holes, cavities, inclusions
3.	Welding Shop <ul style="list-style-type: none"> • Definition of welding, brazing and soldering processes and their applications • Oxyacetylene gas welding process, equipment and techniques, types of flames and their applications • Manual metal arc welding technique and equipment, AC and DC welding • Electrodes: Constituents and functions of electrode coating, welding positions • Types of welded joints, common welding defects such as cracks, undercutting, slag inclusion and boring
4.	Fitting Shop <ul style="list-style-type: none"> • Files, materials and classification.
5.	Smithy Shop <ul style="list-style-type: none"> • Forging, forging principle, materials • Operations like drawing, upsetting, bending and forge welding • Use of forged parts

List of Jobs to be made in the Workshop Practice

1.	Carpentry Shop <ol style="list-style-type: none"> 1. T – Lap joint 2. Bridle joint
2.	Foundry Shop <ol style="list-style-type: none"> 3. Mould of any pattern 4. Casting of any simple pattern
3.	Welding Shop <ol style="list-style-type: none"> 5. MMA welding practice by students 6. Square butt joint by MMA welding 7. Lap joint by MMA welding
4.	Machine Shop Practice <ol style="list-style-type: none"> 8. Job on lathe with one step turning and chamfering operations 9. Job on shaper for finishing two sides of a job 10. Drilling two holes of size 5 and 12 mm diameter on job used / to be used for shaping
5.	Fitting and Smithy Shop <ol style="list-style-type: none"> 11. Finishing of two sides of a square piece by filing 12. Tin smithy for making mechanical joint and soldering of joint



Code: BTX01211**ELEC & ELECTRONICS ENGINEERING LAB 1 Credit[LTP: 0-1-2]****Electrical Lab**

1. Assemble house wiring including earthing for 1-phase energy meter, MCB, ceiling fan, tubelight, three pin socket and a lamp operated from two different positions. Basic functional study of components used in house wiring.
2. Prepare the connection of ceiling fan along with the regulator and vary the speed.
3. Prepare the connection of single phase induction motor through 1-Phase Auto-transformer and vary the speed.
4. Prepare the connection of three phase squirrel cage induction motor through 3-Phase Autotransformer and vary the speed
5. Prepare the connection of Fluorescent Lamp, Sodium Vapour and Halogen Lamp and measure voltage, current and power in the circuit.

Electronics Lab

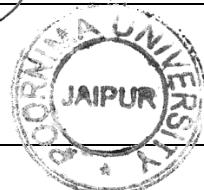
6. Identification, testing and application of Resistors, Inductors, Capacitors, PN-Diode. Zener Diode, LED, LCD, BJT, Photo Diode, Photo Transistor, Analog/Digital Multi- Metres and Function/Signal Generator.
7. Measure the frequency, voltage, current with the help of CRO.
8. Assemble the single phase half wave and full wave bridge rectifier & the analyse effect of L,C and L-C filters in rectifiers.
9. Study the BJT amplifier in common emitter configuration. Measure voltage gain plot gain frequency response and calculate its bandwidth.
10. Verify the truth table of AND, OR, NOT, NOR and NAND gates.

Code: BTX01212**PRACTICAL GEOMETRY****1.5 Credit [LTP: 0-1-2]****(Theory Concepts)**

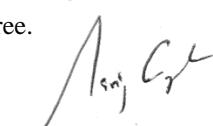
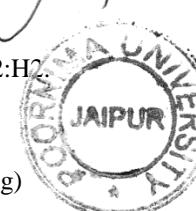
1.
 - Lines, Lettering and Dimension (Sketch Book)
 - Scales: Representative Factor, plain scales, diagonal scales, (In sheet)
2.
 - Conic Sections: Construction of ellipse, parabola and hyperbola by different methods(in sheet) Engineering Curves: Construction of Cycloid, Epicycloids, Hypo-cycloid (in sheet)
3.
 - Type of Projection , Orthographic projection: first angle and third angle projection(in sheet)
 - Projection of Points
 - Projection of Straight lines
 - Projection of planes : Different positions of plane lamina like: regular polygon, circle of three planes(four problems in drawing sheet)
 - Projection of Solids: Projection of right and regular polyhedron , cone (four problem in drawing sheet)
4.
 - Sections of Solids: Projection of Frustum of a cone and pyramid(in sheet)
5.
 - Development of Surfaces: Parallel line and radial line method for right solids, Regular Solids (in sheet)
 - Isometric Projections: Isometric Scale, Isometric axes, Isometric View of geometrical shapes (in sheet)

(Practical Concepts)

6.
 - Introduction
 - Line(coordinate Methods)
 - Dimension
 - Scale
7.
 - Rectangle
 - Conic Section
 - Construction of ellipse, Parabola & Hyperbola ,Polygon
 - Circle
8.
 - AutoCAD commands (copy, Mirror, Move, Array, Block, Group, Join, Hatch etc.)
9.
 - Type of Projection , Orthographic projection: First Angle and Third Angle projection
 - Projection of Points
 - Projection of Straight lines, different positions of straight lines
 - Projection of planes
 - Projection of Solids: projection of right and regular polyhedron and cone
10.
 - Section of solids: projection of frustum of a cone and pyramid
 - Isometric projections



LIST OF EXPERIMENTS:

Hardware Concepts	
1.	<ul style="list-style-type: none"> • Demonstration of CPU Configuration, Formatting Computer System • Installing Operating Systems and Basic Software
MS – Word	
2.	Prepare a document about any tourist destination of your choice with appropriate pictures and editing features.
3.	Prepare a News Paper Layout. Insert appropriate pictures wherever necessary. Use the following Features: <ul style="list-style-type: none"> • Three Column and Four Column setting • Set One or Two Advertisements • Use Bullets and Numbering.
4.	Create a Document consisting of Bio-data. It includes <ul style="list-style-type: none"> • A table giving your qualification and/or experience of work. Table should be Bordered and Shaded. • A Multilevel list giving your areas of interest and further areas of interest. The sub areas should be numbered as ‘a’, ‘b’, etc while the areas should be numbered as ‘1’, ‘2’, etc. • The information should be divided in “General” and “Academic” sections. • The header should contain “BIO-DATA” while the footer should have page numbers in the format Page 1 of 10. • Assign a password for the document to protect it from unauthorized access.
5.	Assume that you are coordinating a seminar in your organization. Write a letter to 10 different IT companies asking them to participate in the seminar using mail merge facility.
6.	Prepare a document which contains template of marks card of students. Assume that there are 10 students. The footer for the document should be ‘Poornima University Jaipur’.
7.	Prepare a document about any topic In mathematics which uses mathematical symbols. (At least 5 mathematical symbols should be used). Assign a password for the document to protect it from unauthorized access. Demonstrate the use of Hyperlink Option. Sets margins to your document, a font of size and double spaced document.
MS-EXCEL	
8.	Open a new workbook, save it as JavaCoffeeBar.xls. In sheet1 write following sales data for Java Coffee bar to show their First 6 months sales. <ul style="list-style-type: none"> • Select cell B4:D4 and change the horizontal alignment to center and text to 90 degree. • All titles should be in bold • Format all cells numbers to currency style and adjust width as necessary. • Add border to data. • Select the cell range A1:H1, merge and center these cells. Apply same format to A2:H2 • Give border, shading and pattern to data in sheet • Apply different font settings for all titles in sheet • Apply green color and bold setting to sales above 10000 (use conditional formatting) • Rename current worksheet as FirstHalfSales  
9.	Prepare a worksheet to maintain student information. The work sheet should Contain Roll Number, Name and marks in 5 subjects. (Max Marks is 100).Validate the marks. Calculate the total marks. Assign the grade according to the following. Assign grade ‘A’ if the total marks is above 450. From 401 to 449 assign the grade as “B”. From 351 to 400 assign the Grade as C. From 300 to 350 the grade to be assigned is ‘D’. For the total marks less than 300 No grade is assigned. A student is eligible to get a grade only when he gets 40 and above in all the subjects. In such cases the grade is “FAIL”. (Assume that there are 10 students).
10.	Prepare a pay-bill using a worksheet. The work sheet should contain Employee Id, Name, Designation, Experience and Basic Salary and Job ID. If Job Id is 1 then DA is 40% of the basic salary. HRA is Rs. 4500. If Job Id is 2 then DA is 35% of the basic salary. HRA is Rs. 3500. If Job Id is 3 then DA is 30% of the basic

	<p>salary. HRA is Rs. 2500. If Job Id is 4 then DA is 25% of the basic salary and HRA is RS.2500. For all the other Job ids DA is 20% of the basic salary and HRA is Rs. 1500. For all the above Job ids PF to be deducted is 4%. For the job ids between 1-4 Rs. 100 to be deducted as Professional Tax. Find the net pay.</p>
11.	<p>For the above employee worksheet perform the following operations</p> <ol style="list-style-type: none"> 1. Use filter to display the details of employees whose salary is greater than 10,000. 2. Sort the employees on the basis of their net pay 3. Use advance filter to display the details of employees whose designation is “Programmer” and Net Pay is greater than 20,000 with experience greater than 2 yrs.
12.	<p>Using Excel project the Product sales for any five products for five years.</p> <ul style="list-style-type: none"> • Compute the total sales of each product in the five years. • Compute the total sales of all the products in five year. • Compute the total sales of all products for each year. • Represent annual sale of all the products using Pie-Chart. • Represent annual sales of all products using Bar Chart. • Represent sale of a product for five years using Pie-Chart. • Label and format the graphs
	MS-POWERPOINT
13.	<p>Assume that you are going to give a presentation about Information Technology. (Choose some latest technologies). The presentation should have minimum 10 slides. Insert appropriate images wherever necessary. Use proper formatting, Diagrams and tables. Show the usage of action buttons, hyperlinks, and animations.</p>



LIST OF ACTIVITIES

1.	Self Introduction & knowing your environment
2.	GOAL Setting &Planning
3.	Time Management & Team Work
4.	Personal Grooming and Body language
5.	Etiquettes (Personal, Social, Professional & Corporate) etiquettes
6.	Reading skills: General & Technical Articles
7.	Listening Skills: Analysis of videos by famous Personalities
8.	Writing Skills: Picture perception & Story Making by jumbled words
9.	Speaking Skills: Extempore, JAM & Me against myself
10.	Role Plays
11.	Resume Writing

CODE: BTX01615 Discipline and Talent Enrichment Programme (TEP)-I**2 Credits**

OVERVIEW AND OBJECTIVES The objective of Discipline and TEP is to provide students with the opportunities to enhance job fetching skills and at the same time to cultivate the student's personal interests and hobbies while maintaining the good disciplinary environment in the University. TEP is integrated into the curriculum for holistic development of students through active participation in various activities falling in Technical and non technical categories.

Discipline and Talent Enrichment Programme (TEP) -I shall be evaluated irrespective of period/time allocation (as in the case of Extra Curricular activity) in the teaching scheme as a **TWO credit** course. The record related to discipline and related activities are maintained for each student and they shall be evaluated for the same also. It shall be counted in calculation of SGPA but it is not a backlog subject. However, the attendance of these classes shall be recorded and accounted in the total attendance.

Activities included in this category in the First Semester are as follows:

Code	Activity	Hours	Credits
BTX01615.1	Non Syllabus Project (NSP)	1	2
BTX01615.2	Online Eligibility Exam(OLE)	1	
BTX01615.3/15.4	Library / Internet	1	
BTX01615.5	Extra Curricular Activities	1	



SECOND SEMESTER

CORE THEORY SUBJECTS

Code: BTX02101

ENGLISH- II

2 Credits [LTP: 2-0-0]

A. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time Required for the Unit (Hours)
1.	Advanced Grammar	4
2.	Applied Grammar	6
3.	Composition	4
4.	Reading fiction	6
5.	Communication	4

B. DETAILED SYLLABUS

Unit	Contents
1.	Advanced Grammar <ul style="list-style-type: none"> • Introduction of Unit • Question Tag • Modal verbs • Active and passive voice • Punctuations • Conclusion of Unit
2.	Applied Grammar <ul style="list-style-type: none"> • Introduction of Unit • Idioms and phrases • Confusing words • Synonyms and Antonyms • Direct and indirect speech • One word substitution • Conclusion of Unit
3.	Composition- II <ul style="list-style-type: none"> • Introduction of Unit • Report writing • Review writing • Conclusion of Unit
4.	Reading Skills <ul style="list-style-type: none"> • Introduction of Unit • Second Opinion- R.K. Narayan • Kabuliwala – Rabindranath Tagore • Conclusion of Unit
5.	Communication <ul style="list-style-type: none"> • Introduction of Unit • Definition, meaning, significance and objectives • Types of communication • Characteristics and principles • Process of Communication • Common barriers to Communication and overcoming them • Communication structure in an organization • Conclusion of Unit



A. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time required for the Unit (Hours)
1.	Quantum Mechanics and applications of Schrodinger's Equation	11
2.	Coherence & Optical Fibre	9
3.	Laser & Holography	9
4.	Nuclear Radiation Detectors	9
5.	Electrodynamics	10

B. DETAILED SYLLABUS

Unit	Unit Details
1.	Quantum Mechanics and Applications Of Schrodinger's Equation <ul style="list-style-type: none"> • Introduction of Unit • Inadequacy of classical mechanics, wave and particle duality of radiation • De Broglie concept of matter waves • Heisenberg's uncertainty principle • Compton Effect and quantum nature of light • Derivation of time dependent and time independent Schrodinger's wave Equation, physical interpretation of wave function, boundary conditions, normalization of Wave functions, orthogonal of wave functions, properties of wave functions, Expectations value, particle confined in one dimensional infinite potential well, Energy Eigen values and Eigen functions • Application of Schrodinger's Equation • Particle in three-dimensional box and degeneracy • Conclusion of Unit
2.	Coherence & Optical Fibre <ul style="list-style-type: none"> • Introduction of Unit • Coherence: Spatial and temporal coherence <ul style="list-style-type: none"> ◦ Coherence length, coherence time and 'Q' factor for light ◦ Visibility as a measure of coherence ◦ Temporal coherence and spectral purity • Optical Fibre: Optical Fibre (construction) and optical wave guide (principle and propagation of light in optical fibre) <ul style="list-style-type: none"> ◦ Numerical Aperture and maximum angle of acceptance ◦ Types of optical fibre (on the basis of modes and the refractive index of the medium) ◦ Applications of optical fibre ◦ V-Number (smf & mmf) Conclusion of Unit
3.	Laser & Holography <ul style="list-style-type: none"> • Introduction of Unit • Theory of laser action: Einstein's Coefficients, Components of laser, Threshold conditions for laser action • Theory, Design and Applications of He-Ne Laser and Semiconductor lasers • Holography: Holography versus photography, Basic theory of holography, Basic requirement of holographic laboratory • Applications of holography in microscopy and Interferometry Conclusion of Unit
4.	Nuclear Radiation Detectors <ul style="list-style-type: none"> • Introduction of Unit • Characteristics of Gas filled detector: General considerations, Principle, Construction • Working and Properties of: Ionisation chamber, Proportional counter, • G.M. counter and Scintillation counter • Comparison between Ionisation chamber & G. M. counter • Comparison between Proportional counter & G.M. counter • Conclusion of Unit



5.	Electrodynamics
	<ul style="list-style-type: none"> • Introduction of unit • Scalar and vector fields • Definitions of gradient, divergence and curl • Maxwell's equations • Boundary conditions • Wave equation and its solution for free space • Nature of E.M. waves, Poynting vector • Conclusion of unit

C. RECOMMENDED STUDY MATERIAL:

Sr.No	Reference Book	Author	Edition	Publication
1.	Quantum Mechanics	Schiff	3rd	Tata Mc Graw-Hill
2.	Nuclear Physics: Principles & Applications	Johan Lilley Wiley India		
3.	Modern Engineering Physics	A.S.Vasudeva	6th	S.Chand& co.
4.	Laser and Applications	Thiagarajan	8th	TMH
5.	Laser	K.R.Nambiar	2008	New Age International
6.	Nuclear Physics	D.C. Tayal	3rd	Himalaya Publishing House
7.	Modern Engg. Physics	S.L.Gupta&SanjeevGupta		DhanpatRai Publication
8.	Engineering Physics	R.K.Gaur&S.L.Gupta		DhanpatRai Publication
9.	An introduction to Laser Theory & Applications	M.N. Avadhanulu		S.Chand & Co.
10.	Atomic & Nuclear Physics	Brijlal, Subrahmanyam		S.Chand & Co.



A. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time required for the Unit (Hours)
1.	Water and Water Analysis	6
2.	Water Technology	7
3.	Corrosion , its control and Phase rule	7
4.	Polymer and Glass	6
5.	Environmental pollution and Disaster Management	7

B. DETAILED SYLLABUS

Unit	Unit Details
1.	<p>Water and Water Analysis</p> <ul style="list-style-type: none"> • Introduction of Unit <p>Water</p> <ul style="list-style-type: none"> • Sources of water, Impurities in water and effect of impurities • Municipal water supply: Requisites of drinking water, Steps involved in purification of water, Sedimentation, Coagulation, Filtration and Disinfection, Break Point Chlorination <p>Water Analysis</p> <ul style="list-style-type: none"> • Hardness of water; Type of hardness , Degree of hardness, Units of hardness ,Disadvantages of hard water, Determination of hardness by Clark's test and Complexometric (EDTA) method , Numericals based on hardness by EDTA method and Clark's method • Conclusion of Unit
2.	<p>Water Technology</p> <ul style="list-style-type: none"> • Introduction of Unit • Boiler Troubles : Formation of solids (scale and sludge), Carry over (Priming and Foaming), Corrosion and Caustic Embrittlement, Disadvantages and Prevention • Treatment of hard water: Lime-soda method, Permutit (zeolite) method and Deionization or Demineralization method, Numerical problems based on Lime-soda and Zeolite softening methods • Desalination: Reverse osmosis, Electrodialysis • Conclusion of Unit
3.	<p>Corrosion , its control and Phase rule</p> <p>Introduction of Unit</p> <p>Corrosion and its control</p> <ul style="list-style-type: none"> • Definition of corrosion and its Significance • Mechanisms of Corrosion: Chemical (Dry) corrosion and Electrochemical (Wet) corrosion • Types of corrosion: Galvanic corrosion, Concentration cell corrosion, Stress corrosion, Pitting corrosion • Factors affecting the rate of corrosion • Protection from corrosion : Material selection and design, Improvement of Environment , Coating of metallic surface, Cathodic protection, Anodic protection, Electroplating, Tinning, Galvanization and Modification in designs . Some practical examples of corrosion. <p>Phase Rule</p> <ul style="list-style-type: none"> • Statement, Definition of the terms involved • Application to one component system: Water and Sulphur systems • Reduced Phase Rule, Study of two components Ag-Pb system and its industrial application • Conclusion of Unit



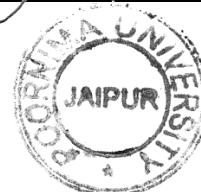
4.	Polymer and Glass
	<ul style="list-style-type: none"> • Introduction of Unit <p>Polymers</p> <ul style="list-style-type: none"> • Introduction to Polymer chemistry:, Classification of Polymers and Types of polymerization • Plastics: Constituents of plastics , Thermosets and Thermoplastics, Preparation, Properties and Uses of Polyethylene, Bakelite, Teflon, Terylene and Nylon • Elastomers: Natural rubber, Vulcanization, Synthetic rubber- Preparation, Properties and Applications of SBR, Buna-N, Butyl and Neoprene rubber. <p>Glass</p> <ul style="list-style-type: none"> • Introduction • Definition of glass, its Properties, Manufacturing of glass, Importance of annealing in glass making, Types of silicate glasses and their commercial uses. • Conclusion of Unit
5.	Environmental Pollution and Disaster Management
	<ul style="list-style-type: none"> • Introduction of Unit <p>Environmental Pollution</p> <ul style="list-style-type: none"> • Definition and adverse effects of Air pollution, Water pollution, Soil pollution, Noise pollution, Thermal pollution, Radioactive pollution (in brief) and Environmental acts. • Waste water treatment : Need and the methods used for Disposal of treated water • Solid waste management: Classification of solid waste, Treatment and Disposal of solid waste <p>Disaster Management</p> <ul style="list-style-type: none"> • Type of Disasters: Natural and Manmade (Earthquake, Cyclone, Flood, Tsunami, Landslide, Nuclear &Fire disaster), one or two case studies related to each disaster (India & World) • Disaster Management Cycle and its components • Conclusion of Unit

C. RECOMMENDED STUDY MATERIAL:

Sr.No	Reference Book	Author	Edition	Publication
1.	Engineering Chemistry	P.C. Jain	Latest	Dhanpat Rai & Sons
2.	Engineering Chemistry.	S. S. Dara	Latest	S. Chand & Co.
3.	Chemistry in Engineering & Tech.	Rajaram, Kuriacose	Latest	Tata McGrawHill
4.	Physical Chemistry	P.W. Atkins	Latest	Oxford University Press.
5.	Environmental Studies	R. Rajagopalan	Latest	Oxford University Press
6.	Principles of Environmental Science and Engineering	P. Venugopalan Rao	Latest	Prentice Hall of India.
7.	Environmental Science and Engineering	P. Meenakshi	Latest	Prentice Hall India.
8.	Environmental Studies	Benny Joseph	Latest	Tata McGrawHill

Important Web Links:

1.	en.wikipedia.org/wiki/Chemist
2.	http://www.chemweb.com/
3.	http://www.epa.gov



A. OUTLINE OF THE COURSE

Unit No.	Title of the Unit	Time required for the Unit (Hours)
1.	Ordinary Differential Equations	7
2.	Second Order Linear Differential Equations	7
3.	Fourier Series and Partial Differential Equations	7
4.	Vector Calculus	7
5.	Application of Vector Calculus and 3-D Geometry	8

B. DETAILED SYLLABUS

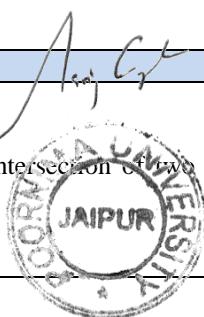
Unit	Unit Details
1.	Ordinary Differential Equations <ul style="list-style-type: none"> Introduction of Unit First order and first degree differential equations-Linear Equation and reducible to linear form, Exact Equation and reducible to exact form Linear differential equations with constant coefficients Conclusion of Unit
2.	Second Order Linear Differential Equations <ul style="list-style-type: none"> Introduction of Unit Homogeneous and Exact forms Change of dependent and independent variable Normal form, Variation of parameters Application of second order differential equation - Electric circuits, Deflection of beam, etc. Conclusion of Unit
3.	Fourier Series and Partial Differential Equations <ul style="list-style-type: none"> Introduction of Unit Fourier Series - Expansion of simple functions in Fourier Series Half range Fourier Sine and Cosine Series Change of interval, Harmonic Analysis Partial differential equations of first order- Lagrange's form, Standard forms, Charpit's method Conclusion of Unit
4.	Vector Calculus <ul style="list-style-type: none"> Introduction of Unit Scalar and Vector field Differentiation and Integration of Vector functions Gradient, Divergence and Curl, Directional derivatives Line, Surface and Volume integral Conclusion of Unit
5.	Application of Vector Calculus and 3-D Geometry <ul style="list-style-type: none"> Introduction of Unit Gauss, Stokes and Green theorem (without proof)- verification and applications Equation of a Sphere, Intersection of a Sphere and a Plane, Tangent Plane, Orthogonal intersection of two Spheres Right circular cone and Right circular cylinder Conclusion of Unit

C. RECOMMENDED STUDY MATERIAL:

Sr.No	Reference Book	Author	Edition	Publication
1.	Higher Engineering Mathematics	B S Grewal	41 st	Khanna Publications, Delhi,
2.	Higher Engineering Mathematics	Ramana, B.V	2006	Tata McGraw-Hill,
3.	Engineering Mathematics: A Tutorial Approach	Ravish R Singh and M Bhatt	2009	Tata McGraw-Hill
4.	Calculus and Analytical Geometry	Thomas and Finney,		Narosa Publishing, Delhi
5.	Advanced Engineering Mathematics	Erwin Kreyszig	9 th	John Wiley and Sons

Important Web Links:

1.	http://mathworld.wolfram.com/
2.	http://en.wikipedia.org/wiki/Math



A. OUTLINE OF THE COURSE

Unit No.	Title of the Unit	Time required for the Unit (Hours)
1.	Basic Concepts of Electrical Engineering	9
2.	Alternating Quantities	9
3.	Energy Conversion and Electrical Machines	9
4.	Basic Electronics	8
5.	Communication Systems	9

B. DETAILED SYLLABUS

Unit	Unit Details
1.	Basic Concepts of Electrical Engineering <ul style="list-style-type: none"> Introduction of Unit Basic Concepts Electric Current, Electromotive Force, Electric Power, Ohm's Law, Basic Circuit Components, Faraday's Law of Electromagnetic Induction. DC Network Analysis & Theorems Kirchhoff's Laws, Network Sources, Resistive Networks, Series-Parallel Circuits, Star-Delta Transformation, Node Voltage Method, Mesh Current Method, Super-Position, Thevenin's, Norton's and Maximum Power Transfer Theorems. Conclusion of unit
2.	Alternating Quantities <ul style="list-style-type: none"> Introduction of Unit <ul style="list-style-type: none"> Single Phase AC system Introduction, Generation of AC Voltages, Root Mean Square and Average Value of Alternating Currents and Voltages, Form Factor, Peak Factor, Power Factor and Quality Factor, Phasor Representation of Alternating Quantities, Single Phase RLC Circuits. Three Phase AC system Introduction, Merits of Three Phase System, Generation and Waveform. Conclusion of Unit
3.	Energy Conversion and Electrical Machines <ul style="list-style-type: none"> Introduction of Unit <ul style="list-style-type: none"> Introduction to Energy Types of Energy, Introduction to Energy Conversion, Sources of Energy (Conventional & Non Conventional), Energy Scenario in India & Rajasthan. Rotating Machines <ol style="list-style-type: none"> DC Machines: Principle of Operation of DC Machine as Motor and Generator, EMF Equation, Applications of DC Machines. AC Machines: Principle of Operation of 3-Phase Induction Motor, 3-Phase Synchronous Motor and 3-Phase Synchronous Generator (Alternator), Applications of AC Machines. Stationary Machines Introduction, Construction and Principle of Working of Transformer, EMF Equation, Voltage Transformation Ratio. Conclusion of Unit
4.	Basic Electronics <ul style="list-style-type: none"> Introduction of Unit Semiconductor Devices: Conduction in Semiconductors, Conduction Properties of Semiconductor Diodes, Behavior of the PN Junction, PN Junction Diode, Zener Diode, LED, Photovoltaic Cell, Rectifiers, L, C, & L-C filters, BJT, UJT, Transistor as an Amplifier.

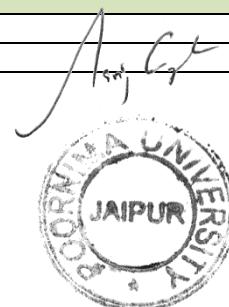
	<ul style="list-style-type: none"> • Digital Electronics: Boolean algebra, Binary System, Logic Gates and Their Truth Tables. • Conclusion of Unit
5.	Communication Systems <ul style="list-style-type: none"> Introduction of Unit Basics of Communication: Introduction, IEEE Spectrum for Communication Systems, Types of Communication, Amplitude and Frequency Modulation. Basics of Instrumentation: Introduction to Transducers, Thermocouple, RTD, Strain Gauges, Load Cell and Bimetallic Strip, Introduction and Classification of ICs. Conclusion of Unit

C. RECOMMENDED STUDY MATERIAL

Sr.No	Reference Book	Author	Edition	Publication
1.	Electrical and Electronic Technology	Edward Hughes et al,		Pearson Publication
2.	Basic Electrical & Electronics Engineering	V. Jagathesan, K. Vinod Kumar & R. Saravan Kumar		Wiley India
3.	Basic Electrical & Electronics Engineering	Van Valkenburg	Indian	Cengage learning
4.	Basic Electrical and Electronics Engineering by,	Muthusubramaniam		TMH
5.	Basic Electrical & Electronics Engineering	Ravish Singh		TMH

Important Web Links

3.	http://www.facstaff.bucknell.edu
4.	engineersphere.com/basic-electrical-concepts

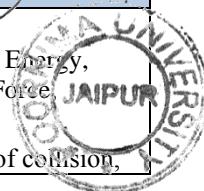


A. OUTLINE OF THE COURSE

Unit No.	Title of the Unit	Time required for the Unit (Hours)
1.	Fundamentals of Mechanics	9
2.	Machine & Moment of Inertia	9
3.	Friction & Belt Drive	8
4.	Dynamics of Particles	9
5.	Work, Power & Impact	9

B. DETAILED SYLLABUS

Unit	Unit Details
1.	Fundamentals of Mechanics <ul style="list-style-type: none"> Introduction of Unit Fundamental laws of mechanics, Principle of transmissibility System of forces, Resultant force, Resolution of force Moment and Couples, Varignon's Theorem, Resolution of a force into a force and a couple, Free body diagram Equilibrium, Conditions for equilibrium, Lami's theorem. Virtual work: Principle of Virtual Work, Active forces and active force diagram Conclusion of Unit
2.	Machine & Moment of Inertia <ul style="list-style-type: none"> Introduction of Unit Lifting Machines: Mechanical advantage, Velocity Ratio, Efficiency of machine, Ideal machine, Ideal effort and ideal load, Reversibility of machine, Law of machine, Lifting machines Pulleys: System of Pulleys, Simple wheel and axle, Wheel and differential axle, Weston's differential pulley block Centroid & Moment of Inertia: Location of centroid and center of gravity, Moment of inertia, Parallel axis and perpendicular axis theorem, Radius of gyration, M.I of composite section, Polar moment of inertia, M.I of solid bodies. Conclusion of Unit
3.	Friction & Belt Drive <ul style="list-style-type: none"> Introduction of Unit Friction: Types of Friction, Laws of friction, Angle of friction, Angle of repose, Ladder, Wedge, Belt Friction Belt Drive: Types of belts, Types of belt drives, Velocity ratio, Effect of slip on Velocity ratio, Length of belt, Ratio of tensions and power transmission by flat belt drives. Conclusion of Unit
4.	Dynamics of Particles <ul style="list-style-type: none"> Introduction of Unit Kinematics of Particles and Rigid Bodies: Velocity, Acceleration, Types of Motion, Equations of Motion, Rectangular components of velocity and acceleration, Angular velocity and Angular acceleration, Radial and transverse velocities and accelerations, Projectiles motion on plane and Inclined Plane, Relative Motion. Kinetics of Particles and Rigid Bodies: Newton's laws, Linear Momentum, Linear Impulse, Equation of motion in rectangular coordinate, radial and transverse components, Equation of motion in plane for a rigid body, D'Alembert principle. Conclusion of Unit
5.	Work, Power & Impact <ul style="list-style-type: none"> Introduction of Unit Work, Energy and Power: Work of a force, weight, spring force and couple, Power, Efficiency, Energy, Kinetic energy of rigid body, Principle of work and energy, Conservative and Non-conservative Force, Conservation of energy. Impact: Collision of elastic bodies, types of impact, conservation of momentum, Newton's law of collision,



	<p>coefficient of restitution, loss of kinetic energy during impact.</p> <ul style="list-style-type: none"> ● Conclusion of Unit
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C. RECOMMENDED STUDY MATERIAL

Sr.No	Reference Book	Author	Edition	Publication
1.	Vector Mechanics for Engineers	Beer and Johnston	Latest	Tata McGraw Hill
2.	Engineering Mechanics	D S Kumar	Latest	S K Kataria & Sons
3.	Engineering Mechanics Statics	Meriam, J. L. & Kraige, L. G	Latest	John Wiley & Son
4.	Engineering Mechanics	S. Ramamruthan	Latest	Dhanpat Rai Pub.
5.	Engineering Mechanics	Shames	Latest	Pearson Education

Important Web Links	
3.	http://nptel.iitm.ac.in/courses/Webcourse-contents/IITDelhi/Mechanics%20Of%20Solids/index.htm
4.	http://nptel.iitm.ac.in/video.php?subjectId=105106116

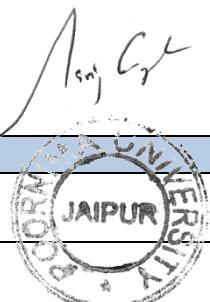


A. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time Required for the Unit (Hours)
1.	Introduction to C Language	7
2.	Control statements	7
3.	Array & Strings	7
4.	Functions and Pointers	7
5.	Structures , Union and File Handling	8

B. DETAILED SYLLABUS

Unit	Unit Details
1.	Introduction to C Language <ul style="list-style-type: none"> • Introduction to Unit • Introduction of ‘C’ • C Standard Library (stdio.h, stdlib.h, conio.h, ctype.h, math.h, string.h, process.h) • Compilation Process (Intermediate Code, Object Code, Executable Code) • Language Fundamentals (Character set, Tokens, Keywords, Identifiers, variables, constant, data types, typedef , command line arguments) • Operators (Arithmetic operators, unary operators, relational operator, logical operator, assignment operator, conditional operator, bit operator) and Expressions, Type Casting • Introduction to C Preprocessor (# include, # define), Macro Substitutions Directives • Console based and built in I/O Functions (Printf (), scanf (), getch (), getchar (), putchar()) • Conclusion of unit
2.	Control Statements <ul style="list-style-type: none"> • Introduction of Unit • If Statement, If....Else Statement, Nested If....Else Statement • While Statement, Do-while Statement, For Statement • Switch Statement, Nested Statement, Other Statements (Break, Continue, Goto, Exit) • Storage classes (Automatic, External, Static and Registers) • Conclusion of Unit
3.	Array & String <ul style="list-style-type: none"> • Introduction of Unit • Introduction of Array: Definition, Declaration and Initialization of array • Accessing and Displaying Array • Memory Representation of Array –One Dimensional and Multidimensional Array • Introduction of String: Definition, Declaration and Initialization of String • Standard Functions (Strlen (), Strcat (), Strcmp (),Strrev(),Strupr(),Strlwr()) • Conclusion of Unit
4.	Functions and Pointers <ul style="list-style-type: none"> • Introduction to unit • Introduction of Functions: Definition, Declaration and Scope • Function Call, Parameter Passing (Call by Value, Call by Reference) • Recursion • Passing Array, String into Function • Introduction to Pointers: Definition and Declaration • Pointer Arithmetic, Dynamic Memory Allocation • String and Pointers, Structure and Pointers, Array of Pointer • Conclusion of Unit
5.	Structure & Union and File Handling <ul style="list-style-type: none"> • Introduction of Unit • Introduction to Structure: Definition, Declaration, Accessing Fields



	<ul style="list-style-type: none"> • Nested Structures • Introduction to Union: Definition and Declaration • Differentiate between Structure and Union • Introduction of File Handling: Definition, Opening Modes of Files • Standard Function (fopen(), fclose(), feof(), fseek(), rewind(), fprintf(), fscanf()) • Conclusion of Unit
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C. RECOMMENDED STUDY MATERIAL

Sr.No	Reference Book	Author	Edition	Publication
1.	Let us 'C'	Yashwant Kanitkar	-	-
2.	Programming in ANSI 'C'	Balagurusamy, E	-	-
Important Web Links				
1. www.cprogramming.com				
2. www.howstuffworks.com				
3. www.programmingsimplified.com				



PRACTICALS

Code: BTX02208

ENGINEERING PHYSICS LAB-II

1 Credit [LTP: 0-0-2]

LIST OF EXPERIMENTS

1	To Determine the height of a given line drawn on the wall by sextant
2	To determine the dispersive power of material of a prism for violet, red and yellow colour of mercury light with the help of spectrometer.
3	To measure the numerical Aperture of an optical fibre by He-Ne laser
4	To study the characteristics of semiconductor diode and determine forward and reverse bias resistance
5	To study the charging and discharging of a condenser and hence determine time constant (both current and voltage graphs are to be plotted)
6	To determine the high resistance by method of leakage, using a ballistic galvanometer.
7	To determine the dielectric constant by ballistic galvanometer.
8	To specify the specific resistance of a material of a wire by Carey Foster's bridge.
9	To verify the laws of series/ parallel combination of resistances by Carey Foster's bridge.
10	To determine the coherent length and coherent time of laser using He-Ne

Code: BTX02209

ENGINEERING CHEMISTRY LAB-II

1 Credit [LTP: 0-0-2]

LIST OF EXPERIMENTS

Rotor-I	
1.	To determine the hardness of water by HCl method.
2.	To determine the hardness of water by EDTA method.
3.	To determine CO ₂ in a given water sample.
4.	To determine free chlorine in a given water sample.
5.	To determine residual chlorine in a given water sample.
6.	To determine dissolved O ₂ in a given water sample.
Router-II	
7.	Determination of Turbidity by using Turbidity Meter.
8.	Measurement of pH of a given sample by pH-Meter.
9.	Measurement of Conductivity/TDS of a given sample by Conductivity Meter
10.	Determination of barium as barium sulphate gravimetrically.
11.	Synthesis of Bakelite
12.	To determine the amount of sodium and Potassium in a given water sample by Flame Photometer



Code: BTX02210**ELECTRICAL AND ELECTRONICS ENGINEERING LAB****1 Credit [LTP: 0-0-2]****LIST OF EXPERIMENTS:**

Electrical Lab	
1.	Assemble house wiring including earthing for 1-phase energy meter, MCB, ceiling fan, tube light, three pin socket and a lamp operated from two different positions. Basic functional study of components used in house wiring.
2.	Prepare the connection of ceiling fan along with the regulator and vary the speed.
3.	Prepare the connection of single phase induction motor through 1-Phase Auto-transformer and vary the speed.
4.	Prepare the connection of three phase squirrel cage induction motor through 3-Phase Autotransformer and vary the speed.
5.	Prepare the connection of Fluorescent Lamp, Sodium Vapour and Halogen Lamp and measure voltage, current and power in the circuit.
Electronics Lab	
6.	Identification, testing and application of Resistors, Inductors, Capacitors, PN-Diode, Zener Diode, LED, LCD, BJT, Photo Diode, Photo Transistor, Analog/Digital Multi- Metres and Function/Signal Generator.
7.	Measure the frequency, voltage, current with the help of CRO.
8.	Assemble the single phase half wave and full wave bridge rectifier & the analyse effect of L, C and L-C filters in rectifiers.
9.	Study the BJT amplifier in common emitter configuration. Measure voltage gain plot gain frequency response and calculate its bandwidth.
10.	Verify the truth table of AND, OR, NOT, NOR and NAND gates

Code: BTX02211**WORKSHOP PRACTICE****1 Credit [LTP: 0-0-2]****LIST OF EXPERIMENTS:**

1.	Carpentry Shop <ul style="list-style-type: none"> Timber, definition, engineering applications, seasoning and preservation Plywood and ply boards
2.	Foundry Shop <ul style="list-style-type: none"> Moulding Sands, constituents and characteristics Pattern, definition, materials types, core prints Role of gate, runner, riser, core and chaplets Causes and remedies of some common casting defects like blow holes, cavities, Inclusions
3.	Welding Shop <ul style="list-style-type: none"> Definition of welding, brazing and soldering processes and their applications Oxyacetylene gas welding process, equipment and techniques, types of flames and their applications Manual metal arc welding technique and equipment, AC and DC welding Electrodes: Constituents and functions of electrode coating, welding positions Types of welded joints, common welding defects such as cracks, undercutting, slag inclusion and boring.
4.	Fitting and Machine shop Files, materials and classification. Study and classification of lathe.
5.	Smithy Shop <ul style="list-style-type: none"> Forging, forging principle, materials Operations like drawing, upsetting, bending and forge welding Use of forged parts

List of Jobs to be made in the Workshop Practice

1.	CARPENTRY SHOP 1. Making of T-Lap joint 2. Making of Bridle joint
2.	FOUNDRY SHOP 3. Mould of any pattern 4. Casting of any simple pattern
3.	WELDING SHOP 5. MMA welding practice by students 6. Square butt joint by MMA welding 7. Lap joint by MMA welding
4.	MACHINE SHOP PRACTICE 8. Job on lathe with one step turning and chamfering operations 9. Job on shaper for finishing two sides of a job 10 Drilling two holes of size 5 and 12 mm diameter on job used / to be used for shaping
5.	FITTING AND SMITHY SHOP 11 Finishing of two sides of a square piece by filing 12 Tin smithy for making mechanical joint and soldering of joint

Code: BTX02212

MACHINE DRAWING

1 Credit [LTP: 0-0-2]

A. LIST OF EXPERIMENTS

1.	Introduction to machine drawing
2.	Dimensioning, locations and placing
3.	Orthographic projections: First & third angle methods Sheet 1: Orthographic Projections (3 Problems) Sheet 2: Sectional Views (3 Problems) Sheet 3: Riveted joints, lap joints, butt joints, chain riveting, zig-zag riveting Sheet 4: Screw fasteners, different threads, Nuts & bolts locking devices, set screws, foundation Sheet 5: Bearing, Plumber block
4.	Instructions on free hand sketches List of free hand sketches <ul style="list-style-type: none">• Different type of lines• Conventional representation of materials• Screw fasteners• Bearing: Ball, roller, needle, foot step bearing• Coupling: Protected type, flange, and pin type flexible coupling• Welded joints• Belts and pulleys• Pipes and pipe joints• Valves



B. RECOMMENDED STUDY MATERIAL

Sr.No	Reference Book	Author	Edition	Publication
1.	Machine Drawing	Lakshminarayan		Jain Brothers
2.	Machine Drawing	N.D.Bhatt		Charotar Publishing House Pvt. Ltd

LIST OF EXPERIMENTS

Rotor-I	
1	Introduction to Turbo 'C' and Study of C Header files
2	Programs based on operators (arithmetic, relational, increment, decrement, conditional, logical) <ul style="list-style-type: none"> a) WAP to add two numbers. b) WAP to calculate simple interest. c) WAP to find area of circle using Macro Substitution. d) WAP to find whether a given number is Armstrong number or not. e) WAP to calculate a factorial of a given number. f) WAP to check whether a given number is palindrome or not. g) WAP to print the multiples of n number.
3	Branching statement programs using 'C' <ul style="list-style-type: none"> a) WAP to find maximum of two numbers using if-else statement. b) WAP to find maximum of three numbers using if-else statement. c) WAP to find maximum of three numbers using AND operator. d) WAP to check whether year is leap year or not. e) WAP to check number is even or odd.
4	Programs based on looping (while, do while, for), nested loops based programs <ul style="list-style-type: none"> a) WAP to print N natural numbers using while loop. b) WAP to calculate sum of N natural numbers using while loop. c) WAP to calculate sum of N natural numbers using do-while loop. d) WAP to calculate factorial using while loop. e) WAP to print days using switch case. f) WAP to perform calculator using switch case. g) Program to design patterns using for loop.
5	Program based on Array: <ul style="list-style-type: none"> a) WAP to read/write using array. b) WAP to calculate sum of entered numbers using array. c) WAP for matrix addition.
Rotor-2	
6	String/Character based exercises manipulation on strings <ul style="list-style-type: none"> a) WAP to perform different operation using String.
7	Programs on user defined functions(arithmetic operation, arrays with pointers ,call by value , call by reference) <ul style="list-style-type: none"> a) WAP to add two numbers using pointers. b) WAP to swap two numbers using pointers. c) WAP to add two numbers using call by reference method.
8	Program based on Recursion: <ul style="list-style-type: none"> a) WAP to calculate factorial using recursion. b) WAP to calculate power using recursion.
9	Programs on structure and union <ul style="list-style-type: none"> a) WAP to maintain any student's record and calculate percentage using structure b) WAP to perform union.
10	Program on file handling <ul style="list-style-type: none"> a) WAP to read a file using file handling. b) WAP to read/write a file handling.



LIST OF EXPERIMENTS

Sr. No.	Details
1.	Listening Skills-Techniques of effective listening; listening to the audios and videos of famous personalities then analysis of the same
2.	Reading Comprehension- Strategies for Reading comprehension, Practicing Technical and Non Technical
3.	Writing Skills- writing of story with jumbled words, writing of article
4.	Phonetics-I: Introduction and Basic Concepts use of phonetics in English language; pronunciations
5.	Grammar common errors & usage :Spotting errors, confusing words,
6.	Conversation : listening of conversation through software; Doing conversation based on day to day life
7.	Role Plays : on various situations based on various sectors.
8.	Presentation Skills I: Elements of an effective presentation, Structure and tools of presentation ;body language& voice Module
9.	Presentation Skills II: Sample Presentation by students
10.	Group Discussions: Key Points of Group Discussion; Live Group Discussion
11.	Interview Skills: Concepts and process, pre-interview planning, opening and answering strategies, Interview through telephone and video conferencing; Mock Interviews



LIST OF ACTIVITIES:

1.	Introduction to Personality & Attitude
2.	Entrepreneurial Trait; Role and Importance of Entrepreneurship
3.	Career Exploration: Career Planning and Management, Latest Happenings
4.	Self Management
5.	Reading skills: Newspaper Review & movie Review
6.	Listening Skills: Audio-Video Listening
7.	Writing Skills: E-Mail Writing (do's & don'ts, effective techniques)
8.	Speaking Skills: Debate (do's & don'ts, effective techniques)
9.	Overview to core Human skills
10.	Health & Safety tips
11.	Resume writing

CODE: BTX02616 Discipline and Talent Enrichment Programme (TEP)-II 2 Credits

OVERVIEW AND OBJECTIVES The objective of Discipline and TEP is to provide students with the opportunities to enhance job fetching skills and at the same time to cultivate the student's personal interests and hobbies while maintaining the good disciplinary environment in the University. TEP is integrated into the curriculum for holistic development of students through active participation in various activities falling in Technical and non technical categories.

Discipline and Talent Enrichment Programme (TEP) -II shall be evaluated irrespective of period/time allocation (as in the case of Extra Curricular activity) in the teaching scheme as a **TWO credit** course. The record related to discipline and related activities are maintained for each student and they shall be evaluated for the same also. It shall be counted in calculation of SGPA but it is not a backlog subject. However, the attendance of these classes shall be recorded and accounted in the total attendance. Activities included in this category in the Second Semester are as follows:

Code	Activity	Hours	Credits
BTX02616.1	Online Eligibility Exam(OLE)	1	2
BTX02616.2	Extra Curricular Activities	1	

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POORNIMA
UNIVERSITY

SCHOOL OF ENGINEERING & TECHNOLOGY

B.Tech.

Batch 2013-17

Department of Computer Engineering



**Third
Semester
Detailed Syllabus**

POORNIMA UNIVERSITY

B.Tech. Computer Engineering (Batch 2013-17)

Teaching Scheme for Third Semester (II Yr.)

Subject Code	Subject Name	Teaching Scheme (Hrs per wk)			Credits
		Lec (L)	Tut (T)	Prac (P)	
A.	Core Subjects (Theory)				
BCE03101	Data Structure and Algorithms	4	1	-	4.5
BCE03102	OOP and Design using C++	4	1	-	4.5
BCE03103	Essentials of Information Technology	3	-	-	3
BCE03104	Digital Electronics	4	-	-	4
BCE03105	Discrete Mathematics and Graph Theory	3	1	-	3.5
B.	Departmental Elective (Theory)				
	Nil	-	-	-	-
C.	Open Elective (Theory): ANY ONE				
BOE03121	Industrial Psychology and Sociology	3	-	-	3
BOE03122	Nano Science and Technology				
BOE03123	Data Structure*				
BOE03124	Object Oriented Programming using C++*				
BOE03125	Non Conventional Energy Sources				
BOE03126	French Language				
BOE03127	Basics of Engineering Applications				
D.	Practicals				
BCE03206	Data Structure Lab	-	-	3	1.5
BCE03207	OOP using C++ Lab	-	-	3	1.5
BCE03208	Unix shell programming Lab	-	-	2	1
BCE03209	Digital Electronics Lab	-	-	2	1
BCE03210	Soft Skills - II	-	-	2	1
E.	Project/Seminar				
	Nil	-	-	-	-
F.	Programmes / Activities				
BCE03611	Discipline and Talent Enrichment Programme (TEP) - III				2
BCE03611.1	Non Syllabus Project (NSP)	2	-	-	-
BCE03611.2	Online Eligibility Exam (OLE)	0.5	-	-	-
BCE03611.3/11.4	Library / Internet	0.5	-	-	-
BCE03611.5	Extra-Curricular Activities	-	-		-
	Total	24	3	12	30.5
	Total Teaching Hours		39		

*Not offered to Computer engineering students



CORE THEORY SUBJECTS

Code: BCE03101

DATA STRUCTURE AND ALGORITHMS

4.5 Credits [LTP: 4-1-0]

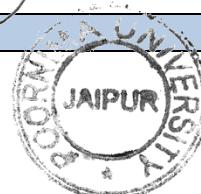
COURSE OVERVIEW AND OBJECTIVES: The objective of this course is to give students a comprehensive introduction of data structures, and algorithms design. It aims to provide students with a deeper understanding of Data Structures and linked list, Stack & Queue operations and Tree, Graph including applications of different data structures. It also includes study of various sorting and searching algorithms. In depth study and implementation of different data structure concepts, efficient parallel and probabilistic algorithms, techniques for designing algorithms using appropriate data structures shall provide an insight to the students about its usage in application design & development. After completing this course student shall have an understanding of data structure concepts in depth and various implementations and operations on data structure concepts like trees, graph, linked list etc.

A. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time required for the Unit (Hours)
1.	Overview of Data Structures and linked list	11
2.	Stack, Queue and Tree	11
3.	Graph	5
4.	Applications of different Data Structures	4
5.	Study of different sorting & searching techniques	9

B. DETAILED SYLLABUS

Unit	Unit Details
1.	Overview of Data Structures and linked list <ul style="list-style-type: none"> Introduction of Unit Overview of Structures, Unions, Files, Macros, Strings, Pointers, Arrays Recursive definitions and Processes, Writing Recursive Programs, Efficiency in Recursion, Towers of Hanoi problem Structure of linked lists (nodes and pointers to linked lists), Insertion and Deletion of Nodes, Circular linked lists, Doubly linked lists, Array implementation of linked lists, Comparison of Dynamic and Array Representations, Conclusion and Summary of Unit
2.	Stack, Queue and Tree <ul style="list-style-type: none"> Introduction of Unit Basic Stack Operations, Linked list implementation of Stacks, Array implementation of Stacks, Queue: Basic Queue Operations, Linked list implementation of Queues, Array implementation of Queues, Circular Queues, Priority Queues Trees: Binary Trees: Terms associated with binary trees, Strictly binary, Complete binary, Almost complete binary tree, Operations on binary tree, Representation of trees, Linked array representation, Implicit array representation, Threaded binary trees Tree Traversals, Properties and Terms associated with trees, Introduction to Balanced Trees, Representation of Balanced trees, Operations on Trees Conclusion and Summary of Unit
3.	Graph <ul style="list-style-type: none"> Introduction of Unit Concept of linear graphs, Directed and undirected graphs, Degree-indegree, outdegree, C Representation of graphs, Adjacency matrix, Adjacency list, Connected components, Spanning trees, Graph Traversals Conclusion and Summary of Unit
4.	Application of Different Data Structures <ul style="list-style-type: none"> Introduction of Unit Application of Stacks: Conversion of Infix to Postfix, Evaluation of Postfix expression Application of Queues: Implementation of a palindrome Application of Linked Lists: The Josephus problem, Operations on polynomials

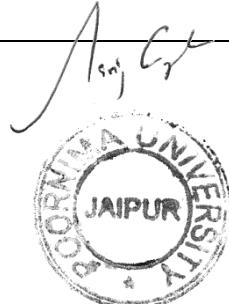


	<ul style="list-style-type: none"> Application of Trees: The Huffman Algorithm, Game trees Application of Graphs: Shortest Path Algorithm. Conclusion and Summary of Unit
5.	Study of different sorting & searching techniques

C. RECOMMENDED STUDY MATERIAL:

Sr.No	Reference Book	Author	Edition	Publication
1.	Fundamentals of Data Structures	Ellis Horowitz and Sartaj Sahni	Latest	Galgotia Publications
2.	An introduction to data structures with applications	Jean Paul Tremblay and Paul G. Sorenson	Latest	Tata McGrawHill
3.	Data Structure Using C & C++	Yedidya Langsam, Moshej Augenstein, Aaron M. Tenenbaum	Latest	Prentice Hall of India.
4.	Programming with C	K. R. Venugopal, Sudeep R. Prasad,	Latest	Tata MacGraw Hill

Websites
<ul style="list-style-type: none"> http://ocw.mit.edu/courses/audio-video-courses/ http://computationalengineering.mit.edu/research/ https://www.khanacademy.org/cs http://www.infocobuild.com/education/audio-video-courses/computer-science/computer-science.html http://iosrjournals.org/IOSR-JCE.html



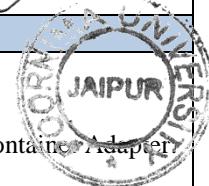
COURSE OVERVIEW AND OBJECTIVES: The objective of this course is to make the students well versed with the fundamentals of C++ object oriented programming language (OOP). The topics included are control structure, functions, arrays, abstraction and encapsulation, classes and abstract classes and objects, inheritance, polymorphism, constructors, access control and overloading, Generics, Collections, and API. OOP is the new way of approaching the job of programming. It is the most widely employed technique for developing robust, reusable software. Students will learn the concept of algorithm design and implementation. In addition, they will write C++ codes using both console or command-line and dialog box or graphical user interface styles. Finally, students can write, compile, execute, and debug their C++ programs

A. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time required for the Unit (Hours)
1.	Overview of C++ and OOP	10
2.	Pointers, Addresses and Indirection	6
3.	Classes and Objects	10
4.	Inheritance and virtual functions	8
5.	Advanced Topics	6

B. DETAILED SYLLABUS

Unit	Unit Details
1.	Overview of C++ and OOP <ul style="list-style-type: none"> Introduction of Unit Meaning of Object Oriented Programming, structured design v/s object oriented Design Data Types, Variables, Operators, simple I/O, Programming Fundamentals, Terminology, Format of C++ program, Programs and data, Data types in C++, Variable Declaration in C++, Operators in C++ Control statements and Loops, Relational and Logical Operators, if statements, switch statement, loops in general, for loop, while loop, do while loop, Importance of pointers, Data variables and memory, Address Operators, Pointers, Functions in C++ Conclusion and Summary of Unit
2.	Pointers, Addresses and Indirection <ul style="list-style-type: none"> Introduction of Unit Efficient handling of large data structures, Arrays and classes Dynamic memory allocation, Allocating memory for 2-D and 3-D arrays, Exception handling Conclusion and Summary of Unit
3.	Classes and Objects <ul style="list-style-type: none"> Introduction of Unit Object Oriented Principles and Definitions, Classes and objects, Writing member functions, Class constructors, class destructors, Array objects, overloaded operators and objects pointers and classes Conclusion and Summary of Unit
4.	Inheritance and virtual functions <ul style="list-style-type: none"> Introduction of Unit Importance of Inheritance, Inheritance basics, Access Specifier basics, Multiple inheritance, Inheritance of constructors and destructors, Inheritance Program Example, Polymorphism and Virtual functions Conclusion and Summary of Unit
5.	Advanced topics <ul style="list-style-type: none"> Introduction of Unit Preprocessor, String and Stream Processing, Standard Template Library, Introduction to STL: Containers, Iterators, Algorithms , Sequence Containers: Vector, List, DeQue, Container Adapter, Stack Adapter, Queue Adapter Conclusion and Summary of Unit



C. RECOMMENDED STUDY MATERIAL:

Sr.No	Reference Book	Author	Edition	Publication
1.	C++ Programming Today	Barbara Johnson	Latest	Pearson Education low priced
2.	Mastering C++	K. R. Venugopal, Rajkumar and T. Ravishankar	Latest	Tata McGrawHill
3.	C++ How To Program	Deitel & Deitel	Latest	Pearson Education
4.	Object Oriented Programming with C++	E.Balaguruswamy,	Latest	Tata McGrawHill
5.	Object Oriented System Development	Ali Bahrami	Latest	McGraw-Hill International Edition

Websites
<ul style="list-style-type: none"> • http://ocw.mit.edu/courses/audio-video-courses/ • http://computationalengineering.mit.edu/research/ • https://www.khanacademy.org/cs • http://www.infocobuild.com/education/audio-video-courses/computer-science/computer-science.html • http://iosrjournals.org/IOSR-JCE.html



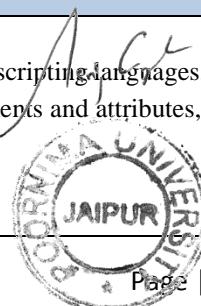
COURSE OVERVIEW AND OBJECTIVES: The objective of this course is to introduce the importance & concept of Open source technologies, concepts of shell programming, Web Technology and Internet. It also includes an exposure to Flex platform. It aims to provide practical knowledge of various concepts required for development of web application. A laboratory experimentation on Unix is also included to train the students as far as practical implementations of the concepts that are needed. The outcome of the course is Knowledge about open source technologies, Unix environment and shell programming. Student shall possess the basic concepts of design and implementation of web applications.

A. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time required for the Unit (Hours)
1.	Open Source Technology	5
2.	Shell Programming	6
3.	Internet principles	8
4.	Web Technologies	11
5.	Flex	10

B. DETAILED SYLLABUS

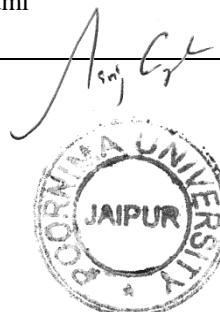
Unit	Unit Details
1	Open Source Technology <ul style="list-style-type: none"> Introduction of Unit OST overview: Evolution & development of OST and contemporary technologies, Factors leading to its growth. Open Source Initiative (OSI), Free Software Foundation and the GNU Project, principle and methodologies Contexts of OST (India & international). Applications of open source (open source teaching and open source media) Risk Factors Myths regarding open source, different flavors of Linux and File System hierarchy, (ex:- Red Hat , Fedora, Ubuntu) Conclusion and Summary of Unit
2	Shell Programming <ul style="list-style-type: none"> Introduction of Unit Shell: meaning and purpose of shell, introduction to types of shell. Bourne Again Shell: shell script-writing and executing, command separation & grouping, redirection, directory stack manipulation, processes, parameters & variables, keyword variables. Introduction Korn Shell and C Shell Shell Programming: Control structures, the Here document, expanding NULL or USET variables, Bulitins , functions, history , aliases, job control, file substitution, source code management- RCS and CVS,, awk utility. Conclusion and Summary of Unit
3	Internet principles <ul style="list-style-type: none"> Introduction of Unit Basic Web concepts, Client Server model, Retrieving data from Internet, Protocols and applications. Web Design process: Web process Model-Goals and problems, design phase, Testing. Site Types and Architecture, Web site types, Dynamic Sites-site structures Conclusion and Summary of Unit
4	Web Technologies <ul style="list-style-type: none"> Introduction of Unit Web protocols-HTTP, DNS, Web Servers components, software, web hosting. HTML and scripting languages, cookies Multimedia in web design, Anatomy of xml document - XML markup-working with elements and attributes, creating valid documents, xml objects. Conclusion and Summary of Unit



5	Flex
	<ul style="list-style-type: none"> • Introduction of Unit • Flex Platform Overview, Creating a simple User Interface , Accessing XML data from your Application , Interacting with Server-Side Applications , Customizing your User Interface • Creating Charts and Graphs • Conclusion and Summary of Unit

C. RECOMMENDED STUDY MATERIAL:

Sr.No	Reference Book	Author	Publication
1	The Design of the UNIX Operating System	Maurice J. Bach	Prentice-Hall of India
2	Web programming with Java	Michael Girdley, Kathryn A. Jones, et al	Sams.net publishing
3	The Complete Reference Web design	Thomas A.Powell	Tata McGraw-Hill
4	File organization and Processing	Tharp Alan L	John Wiley & Sons
5	Web Technology – A Developer’s Perspective	N.P. Gopalan, J. Akilandeswari,	PHI
6	Internet and WWW: How to Program	Deitel, Deitel, Goldberg	Tata McGraw-Hill
Websites			
<ul style="list-style-type: none"> • http://ocw.mit.edu/courses/audio-video-courses/ • http://computationalengineering.mit.edu/research/ • https://www.khanacademy.org/cs • http://www.infocobuild.com/education/audio-video-courses/computer-science/computer-science.html • http://iosrjournals.org/IOSR-JCE.html 			



COURSE OVERVIEW AND OBJECTIVES: The objective of this course is to make the student understand the concepts and terminology of digital electronics. It includes introduction to Boolean Algebra, logical simplifications, Combinational logic implementations, Latches, Flip-Flops, Counters & Shift registers, sequential machine concept and hardware description language Verilog. At the end of course work student is expected to present various concepts of digital electronics and the methodology to implement these concepts using Verilog.

A. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time required for the Unit (Hours)
1.	Introduction & Boolean algebra and logic simplification	11
2.	Combinational logic implementation & Latches, flip-flops	10
3.	Counters & Shift register	10
4.	Sequential Machines	5
5.	Introduction to Verilog Hardware Description Language	4

B. DETAILED SYLLABUS

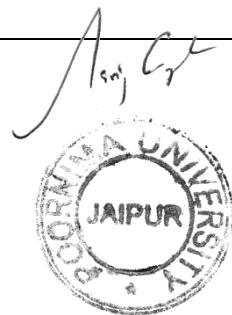
Unit	Unit Details
1.	Introduction & Boolean algebra and logic simplification <ul style="list-style-type: none"> • Introduction of Unit • Digital concepts, Number systems and operations. Binary codes – error correction and detection codes • Logic gates – all basic gates and secondary gates. • Implementation using K- maps and Tabular method. Combinational logic analysis using NAND and NOR gates. • Conclusion and Summary of Unit
2.	Combinational logic implementation & Latches, flip-flops <ul style="list-style-type: none"> • Introduction of Unit • Adders, Subtractors, Comparators, Encoders, Decoders, Code converters, Multiplexers and De-multiplexers, Parity generators/checkers. • Basic latches, flip-flops; D flip-flop, JK flip-flop, Master slave JK flip-flop, T flip-flop. Flip-flop operating characteristics, conversion of one flip-flop to another. Flip-flop applications • Conclusion and Summary of Unit
3.	Counters & Shift register <ul style="list-style-type: none"> • Introduction of Unit • Asynchronous counter operation, types and their design. ripple counters – synchronous counters – ring counters – up/down counters – modulus counters. Counter applications. • Basic shift register function, SISO Shift register, SIPO Shift register, PISO Shift register, PIPO Shift register, Bidirectional shift register, Shift register counters. • Shifts register applications. • Conclusion and Summary of Unit
4.	Sequential Machines <ul style="list-style-type: none"> • Introduction of Unit • Memory and Programmable Logic: Random Access Memory – memory decoding – error detection and correction – Read Only Memory – Programmable Logic Arrays – Programmable Array Logic. • Asynchronous Sequential Logic : Analysis procedure – circuits with Latches – Design procedure – Reduction of state and Flow tables – Race-Free state assignment – Hazards. • Conclusion and Summary of Unit
5.	Introduction to Verilog Hardware Description Language <ul style="list-style-type: none"> • Introduction of Unit • HDL for combinational circuits

	<ul style="list-style-type: none"> • Sequential circuits • Registers and counters • HDL description for binary multiplier. • Conclusion and Summary of Unit
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C. RECOMMENDED STUDY MATERIAL:

Sr.No	Reference Book	Author	Publication
1.	Digital Fundamentals	Thomas L. Floyd	Prentice Hall
2.	Introduction to Digital circuits	A. Anand Kumar	Prentice Hall
3.	Computer Architecture and Logic Design	Thomas C Bartee	TMH Publication
4.	Digital Logic and Computer Design	Morris Mano	Prentice Hall
5.	Digital Principles and Applications	Malvino & Leach,	TMH

Websites
<ul style="list-style-type: none"> • http://ocw.mit.edu/courses/audio-video-courses/ • http://computationalengineering.mit.edu/research/ • https://www.khanacademy.org/cs • http://www.infocobuild.com/education/audio-video-courses/computer-science/computer-science.html • http://iosrjournals.org/IOSR-JCE.html



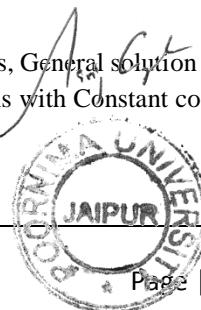
COURSE OVERVIEW AND OBJECTIVES: The objective of this course is to introduce to the students a number of Discrete Mathematical Structures (DMS) which are found to be serving as tools even today in the development of theoretical computer science. Course focuses on how Discrete Structures actually helped computer engineers to solve problems occurred in the development of programming languages. Also, course highlights the importance of discrete structures towards simulation of a problem in computer science and engineering. It includes set theory, Integers, division counting principles, Monoids & Vector spaces, Propositional Calculus & Recurrence relations, Graph theory & Trees. At the end of course student should possess the knowledge on various discrete structures available in the literature. Should realize some satisfaction of having learnt that discrete structures are indeed useful in computer science and engineering & Gain confidence on how to deal with problems which may arrive in computer science and engineering in near future.

A. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time required for the Unit (Hours)
1.	Set Theory, Integers and Division & Counting Principles	7
2.	Monoids & Vector spaces	6
3.	Propositional Calculus & Recurrence relations	11
4.	Graph Theory	8
5.	Trees	8

B. DETAILED SYLLABUS

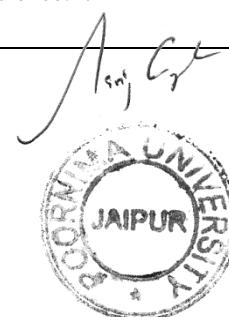
Unit	Unit Details
1.	Set Theory, Integers and Division & Counting Principles <ul style="list-style-type: none"> Introduction of Unit Set Operations, Relations, Equivalence Relations and Partially Ordered Sets. Divisibility in the Set of Integers, Fundamental Theorem of Arithmetic, Division algorithm, Modular Arithmetic, Congruence and Properties. One-to-One Functions, Onto Functions, One-to-One Correspondence, Inverse Function, Composition of functions. Pigeon Hole Principle and Inclusion – Exclusion Principle with Applications. Conclusion and Summary of Unit
2.	Monoids & Vector spaces <ul style="list-style-type: none"> Introduction of Unit Introduction to monoids, Submonoids, Submonoid generated by a set. Introduction to Groups, Abelian groups, Subgroups, Subgroup generated by a set, Cyclic groups, Normal sub groups, Group homomorphism and isomorphism. Introduction to rings, Introduction to fields, Introduction to vector spaces, Linear independence, Linear span, Basis, Dimension of a vector space, Subspaces, Linear transformations, Rank and Nullity Conclusion and Summary of Unit
3.	Propositional Calculus & Recurrence relations <ul style="list-style-type: none"> Introduction of Unit Definition, Properties of Boolean Algebras, Boolean lattices, Boolean functions and expressions, Principal Disjunctive/Conjunctive Normal Forms Introduction to Propositional Calculus, Well formed statement formula, Substitution Instance, Replacement Process, Functionally Complete set of connectives, and Inference Theory of Propositional Calculus Principle of Mathematical Induction and applications. Linear Recurrence relations with constant coefficients, Order of Linear Recurrence relations, General solution of Linear Recurrence Relations with Constant Coefficients, Solutions of Linear Recurrence Relations with Constant coefficients with Boundary Conditions, Formulation of Recurrence Relations Conclusion and Summary of Unit



4.	Graph Theory
	<ul style="list-style-type: none"> • Introduction of Unit • Introduction to Graphs, Types of Graphs, Representations of Graphs, Graph Isomorphism, Paths and Circuits, Connectedness, Shortest Path in a Graph, Dijkstra's Algorithm for Shortest Path in a Graph, Eulerian and Hamiltonian Paths/ Circuits, Algorithm to Determine Eulerian Paths/ Circuits. • Conclusion and Summary of Unit
5.	Trees
	<ul style="list-style-type: none"> • Introduction of Unit • Introduction to Trees, Binary and m-ary trees, Spanning Trees, Minimal Spanning Trees, Kruskal's Algorithm to Determine a Minimal Spanning Tree, Transport Networks with Single Source and Single Sink, Ford- Fulkerson Labeling Procedure to Determine the Maximum Flow through a Transport Network. • Conclusion and Summary of Unit

C. RECOMMENDED STUDY MATERIAL:

Sr.No	Reference Book	Author	Publication
1.	Discrete Mathematics and Its Applications	Kenneth H. Rosen,	Tata McGraw Hill.
2.	Discrete Mathematical Structures	B Kolman, R.C. Busby and Sharon C. Ross	Prentice Hall
3.	Foundation of Discrete Mathematics	K.D.Joshi	New Age International Ltd
4.	Discrete Structures, An introduction to Computer Science	F. R. Norris	Prentice Hall
5.	Discrete Mathematical Structures with Applications to Computer Science	J. P. Tremblay and R. Manohar	TMH
6.	Basic Graph Theory	K. R. Parthasarathy	TMH
Websites			
<ul style="list-style-type: none"> • http://ocw.mit.edu/courses/audio-video-courses/ • http://computationalengineering.mit.edu/research/ • https://www.khanacademy.org/cs • http://www.infocobuild.com/education/audio-video-courses/computer-science/computer-science.html • http://iosrjournals.org/IOSR-JCE.html 			



OPEN ELECTIVES

Code: BOE03121

INDUSTRIAL PSYCHOLOGY AND SOCIOLOGY

3 Credits [LTP: 3-0-0]

COURSE OVERVIEW AND OBJECTIVES: The course on Industrial Psychology and Sociology encompasses the knowledge of scientific management of an industry including human relations. The course will make the student understand as to how the work force can be dealt to perform in the best possible way to give efficient output. It also covers the motivational techniques, stress management and encouraging the labor class. The important component of training & development is also being covered. The courses a combination of industrial sociology also providing development of industries in India including policy resolutions and handling of grievances including labor laws. The course will act as a catalyst for combined knowledge of dealing with industry, relations and legal issues.

A. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time required for the Unit (Hours)
1.	Introduction to Industrial Psychology	10
2.	Individual in Workplace	6
3.	Performance Management	6
4.	Nature and Scope of Industrial Sociology	10
5.	Contemporary Issues	6

B. DETAILED SYLLABUS

Unit	Unit Details
1.	Introduction to Industrial Psychology <ul style="list-style-type: none"> • Introduction to Industrial Psychology – Definitions & scope. • Major influences on industrial Psychology • Scientific management and human relations schools Hawthorne Experiments • Conclusion and Summary of Unit
2.	Individual in Workplace <ul style="list-style-type: none"> • Introduction of Unit • Individual in Workplace: Motivation and Job satisfaction, stress management. • Organizational culture, Leadership & group dynamics. • Conclusion and Summary of Unit
3.	Performance Management <ul style="list-style-type: none"> • Introduction of Unit • Performance Management : Training & Development • Conclusion and Summary of Unit
4.	Nature and Scope of Industrial Sociology <ul style="list-style-type: none"> • Introduction of Unit • Nature and Scope of Industrial Sociology • Development of Industrial Sociology and Industrialization in India. • Industrial Poling Resolutions – 1956. • Conclusion and Summary of Unit
5.	Contemporary Issues <ul style="list-style-type: none"> • Introduction of Unit • Contemporary Issues: Grievances and Grievance handling Procedure. • Industrial Disputes: courses, strikes & lockouts • Industrial Relations Machinery Bi-partite & Tri-partite Agreement • Labour courts & Industrial Tribunals, Code of Discipline, Standing order. • Conclusion and Summary of Unit

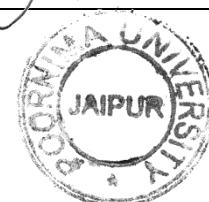


C. RECOMMENDED STUDY MATERIAL:

Sr.No	Reference Book	Author	Publication
1.	Industrial / Organizational Psychology	Miner J.B.	McGraw Hill.
2.	Industrial Psychology. Its Theoretical & Social Foundations	Blum & Naylor	CBS Publication
3.	Human Resource Management	Aswathappa K.	Tata McGraw Hill
4.	Fundamentals of Industrial sociology	Gisbert Pascal	Tata McGraw Hill New Delhi
5.	Industrial Sociology	Schneider Engno V	Tata McGraw Hill New Delhi
6.	Dynamics of Industrial Relations in India	Mamoria C.B. & Mamoria S	---
7.	Industrial Relations and Labour Legislations	Sinha G.P. & P.R.N. Sinha	Oxford and IBH Publishing Co.
8.	Industrial/Organizational Psychology : An Applied Approach	Aamodt, M.G Wadsworth/ Thompson : Belmont, C.A.	---

Websites

- http://en.wikipedia.org/wiki/Industrial_and_organizational_psychology,
- <http://www.wisegeek.org>
- <http://psychology.about.com>
- http://en.wikipedia.org/wiki/Industrial_sociology
- <http://home.iitk.ac.in/~amman/soc474/indsoc.html>
- www.gwu.edu/~ccps/etzioni/A12.pdf, www.ijhssi.org



COURSE OVERVIEW AND OBJECTIVES

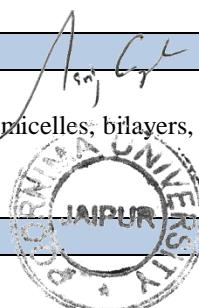
- To impart basic knowledge on Nano Science & Technology.
- To make students understand various process techniques available for processing of Nano structured materials.
- To impart knowledge about various Nano particles process methods and their applications.

A. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time required for the Unit (Hours)
1.	Introduction	8
2.	Nano Material Properties and preparation environment	8
3.	Synthesis and Lithography for Nano scale devices	8
4.	Quantum Dots and Nano Tubes	8
5.	Physical Properties of Nano Structured Materials	8

B. DETAILED SYLLABUS

Unit	Unit Details
1.	Introduction <ul style="list-style-type: none"> • Introduction of Unit • Nano scale Science and Technology- Implications for Physics, Chemistry, Biology and Engineering- • Classifications of Nano structured materials- Nano particles- quantum dots, Nano wires-ultra-thin films-multilayered materials. • Length Scales involved and effect on properties: Mechanical, Electronic, Optical, Magnetic and Thermal properties. Atomic size surfaces & dimensional space top down & bottom up. • Conclusion and Summary of Unit
2.	Nano Material Properties and preparation environment <ul style="list-style-type: none"> • Introduction of Unit • Opportunity at the nano scale – Length and time scale in structures-energy landscapes • Inter dynamic aspects of inter molecular forces-Evolution of band structure and Fermi surface. • Clean rooms: specifications and design, air and water purity, requirements for particular processes, Vibration free environments: Services and facilities required. • Working practices, sample cleaning, Chemical purification, chemical and biological contamination, Safety issues, flammable and toxic hazards, biohazards. • Conclusion and Summary of Unit
3.	Synthesis and Lithography for Nano scale devices <ul style="list-style-type: none"> • Introduction to Nano scale Synthesis and processing • Introduction to optical/UV electron beam and X-ray Lithography systems and processes, • Wet etching, dry (Plasma /reactive ion) etching, Etch resists-dip pen lithography, method of nano structured materials preparation – mechanical grinding, wet chemical synthesis – sol-gel processing, gas phase synthesis, gas condensation processing, chemical vapor condensation – nano composite synthesis • Conclusion and Summary of Unit
4.	Quantum Dots and Nano Tubes <ul style="list-style-type: none"> • Introduction of Unit • Quantum dots- Nano wires-Nano tubes 2D and 3D films Nano and Mesopores, micelles, bilayers, vesicles, bio-nano machines—biological membranes • Conclusion and Summary of Unit.
5.	Physical Properties of Nano Structured Materials



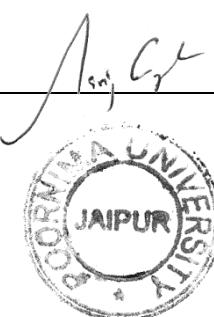
	<ul style="list-style-type: none"> • Introduction of Unit • Influence of Nano structuring on Mechanical optical, electronic magnetic and chemical properties, grain size effects on strength of metals optical properties of quantum dots and quantum wires electronic transport in quantum wires and carbon nano tubes magnetic behavior of single domain particles and nanostructures surface chemistry of tailored monolayer self assembling. • Conclusion and Summary of Unit
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C. RECOMMENDED STUDY MATERIAL:

Sr.No	Reference Book	Author	Edition	Publication
1.	Nanomaterials: Synthesis, Properties and Applications	A.S. Edelstein and R.C. Cammearata, eds.,	Latest	Institute of Physics Publishing, Bristol and Philadelphia
2.	Nanoscale characterisation of surfaces & Interfaces	N John Dinardo	Latest	Weinheim Cambridge, Wiley-VCH
3.	Nanotechnology	G Timp	Latest	AIP press/Springer
4.	The Hand Book of Nano Technology, Nanometer Structure, Theory, Modeling and Simulations	Akhlesh Lakhtakia	Latest	Prentice-Hall of India (P) Ltd, Latest
5.	Nano Technology: Basic Science and Emerging Technologies	Mick Wilson, Kamali Kannargare, Goff Smith	Latest	Overseas Press
6.	Introduction to Nanotechnology	Charles P. Poole, Frank J. Owens	Latest	Wiley Inter science
7.	Nano Technology: A gentle introduction to the next Big Idea	Mark A. Ratner, Daniel Ratner	Latest	Prentice Hall
8.	Nanoscale Science and Technology	Robert W. Kelsall, Ian W. Hamley and Mark Geoghegan,	Latest	John Wiley & Sons Ltd., UK
9.	Bio-Inspired Nano materials and Nanotechnology	Yong Zhou	Latest	Nova Publishers
10.	Nano: The Essentials : Understanding Nanoscience and Nanotechnology	T. Pradeep	Latest	Tata McGraw-Hill Publishing company Ltd., New Delhi

Websites

- www.nstc.in/; www.aspbs.com/jnn; www.vjnano.org; www.khanacademics.com
- www.mindtools.com
- www.khaki.com
- www.Raifoundation.org
- www.tryengineering.com
- www.tryscience.com
- www.video lectures.com, MTNL,MIT,IIT Websites



COURSE OVERVIEW AND OBJECTIVES: The objective of this course is to give students of other disciplines of engineering an introduction of data structures, and algorithms design. It aims to provide students with a deeper understanding of Data Structures Stack, Tree, Graph. After completing this course, students shall have an understanding of data structure concepts in depth and various implementations and operations on data structure concepts like trees, graph, linked list etc.

A. OUTLINE OF THE COURSE

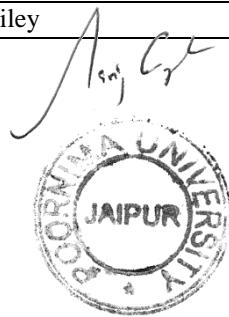
Unit No.	Title of the unit	Time required for the Unit (Hours)
1.	Performance Measurement	7
2.	Array & Matrices	8
3.	Stacks	8
4.	Trees	8
5.	Graphs	8

B. DETAILED SYLLABUS

Unit	Unit Details
1.	Performance Measurement <ul style="list-style-type: none"> Introduction of Unit Space complexity and Time complexity, big oh, omega and theta notations and their significance. Linear Lists - Array and linked representation, Singly & Doubly linked lists. Concept of circular linked lists Conclusion and Summary of Unit
2.	Array & Matrices <ul style="list-style-type: none"> Introduction of Unit Row and Column Major mapping & representation, irregular 2D array Matrix operations Special matrices: diagonal, tri-diagonal, triangular, symmetric. Sparse matrices representation and its transpose. Conclusion and Summary of Unit
3.	Stacks & Queue <ul style="list-style-type: none"> Introduction of Unit Representation in array & linked lists, basic operation Applications of stacks in parenthesis matching, towers of Hanoi etc. Queues - Representation in array & linked lists, applications, circular queues. Conclusion and Summary of Unit
4.	Trees <ul style="list-style-type: none"> Introduction of Unit Binary Tree, representation in array & linked lists, basic operation on binary trees, binary tree traversal (preorder, post order, in order). Search Trees - Binary search tree, indexed-binary search tree, basic operation, AVL tree, B-tree. Conclusion and Summary of Unit
5.	Graphs <ul style="list-style-type: none"> Introduction of Unit Representation of unweighted graphs, BFS, DFS Minimum cost spanning trees, Single source shortest path. Sorting - Bubble sort, insertion sort, merge sort, selection sort, quick sort, heap sort. Conclusion and Summary of Unit

C. RECOMMENDED STUDY MATERIAL:

Sr.No	Reference Book	Author	Publication
1.	Data Structures	Lipschutz & Pai	TMH
2.	Data Structures And Algorithms	Pai	TMH
3.	Data Structure Using C (Sigma Series)	Mukherjee	TMH
4.	Introduction To Data Structures With Applications	Tremblay	TMH
5.	Data Structure Using C	Krishnamoorthy	TMH
6.	Data Structures	Keogh	Wiley



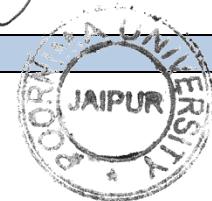
COURSE OVERVIEW AND OBJECTIVES: The objective of this course is to make the students well versed with the fundamentals of C++ object oriented programming language (OOP). The topics included are Introduction to JAVA, Operators & control statements, Package & Interface. OOP is the new way of approaching the job of programming. It is the most widely employed technique for developing robust, reusable software. Students will learn the concept of algorithm design and implementation. In addition, they will write C++ codes using both console or command-line and dialog box or graphical user interface styles. Finally, students can write, compile, execute, and debug their C++ programs

A. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time required for the Unit (Hours)
1.	OOP Fundamentals	8
2.	Programming in C++	8
3.	Java	8
4.	Operators and Control Statements	8
5.	Package and Interfaces	8

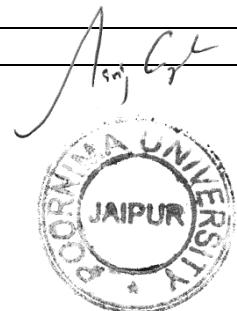
B. DETAILED SYLLABUS

Unit	Unit Details
1.	OOP Fundamentals <ul style="list-style-type: none"> Introduction of Unit Concept of class and object, attributes, public, private and protected members, derived classes, single & multiple inheritance, Conclusion and Summary of Unit
2.	Programming in C++ <ul style="list-style-type: none"> Introduction of Unit Enhancements in C++ over C, Data types, operators and functions. Inline functions, constructors and destructors. Friend function, function and operator overloading. Working with class and derived classes. Single, multiple and multilevel inheritances and their combinations, virtual functions, pointers to objects. Input output flags and formatting operations. Working with text files. Conclusion and Summary of Unit
3.	Java <ul style="list-style-type: none"> Introduction of Unit Variation from C++ to JAVA. Introduction to Java byte code, virtual machine, application & applets of Java, integer, floating point, characters, Boolean, literals, and array declarations Conclusion and Summary of Unit
4.	Operators and Control Statements <ul style="list-style-type: none"> Introduction of Unit Arithmetic operators, bit wise operators, relational operators, Boolean logic operators, the assignment operators, ?: operators, operator precedence. Switch and loop statements. Conclusion and Summary of Unit
5.	Package and Interfaces <ul style="list-style-type: none"> Introduction of Unit Packages, access protection, importing & defining packages. Defining and implementing interfaces. Conclusion and Summary of Unit



C. RECOMMENDED STUDY MATERIAL:

Sr. No	Reference Book	Author	Publication
1.	Object Oriented Programming With C++	Sahay	--
2.	Object Oriented Programming With C++	Josuttis	Oxford
3.	An Introduction To Programming & OO Design Using Java	J. Nino & F. A. Hosch	Wiley
4.	Object Oriented Programming With C++	Shukla	Wiley
5.	OOP	Timothy Budd	Wiley
6.	Object Oriented Programming With C++	Balagurusamy	Pearson
7.	Programming With C++ (Sie) (Schaum's Outline Series)	Hubbard	TMH
8.	Mastering C++,	Venugopal	TMH
9.	Programming With C++,	Ravichandran	TMH



COURSE OVERVIEW AND OBJECTIVE: Human resource development in the area of energy, in general, and in new and renewable sources of energy, in particular, has been neglected all over the world, and more so in developing countries. In the context of depleting fossil fuel resources and the need to develop sustainable energy systems for the future, it is necessary to incorporate non-conventional energy sources as a subject in all the undergraduate courses of engineering. This course is primarily intended to serve as a basic course of non-conventional energy sources with stress on scientific understanding, analysis and applications of non-conventional energy technologies. It covers basis study describing the fundamental physical processes governing various non conventional energy technologies and their applications

A. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time required for the Unit (Hours)
1.	Introduction to Energy Sources	7
2.	Solar Energy	8
3.	Wind and Geothermal Energy	8
4.	Biomass and Ocean Energy	8
5.	Fuel Cells, Hydrogen Energy and Hybrid Systems	8

B. DETAILED SYLLABUS

Unit	Unit Details
1.	Introduction to Energy Sources <ul style="list-style-type: none"> • Introduction of Unit • Types of Energy Sources and its classification • Energy consumption as a measure of Nation's development • Strategy for meeting the future energy requirements, Global, National and State scenarios • Prospects of renewable energy sources • Conclusion and Summary of Unit
2.	Solar Energy <ul style="list-style-type: none"> • Introduction of Unit • Solar Thermal Systems: Solar radiation spectrum. Radiation measurement. Technologies. Applications: Heating, Cooling, Drying, Distillation, Power generation • Solar Photovoltaic Systems: Operating principles. Photovoltaic cell concepts. Cell, module, array. Series and parallel connections. Maximum power point tracking. Applications: Battery charging, Pumping, Lighting, and Peltier cooling. • Conclusion and Summary of Unit
3.	Wind and Geothermal Energy <ul style="list-style-type: none"> • Introduction of Unit • Wind Energy: Basic principle of wind energy conversion, efficiency of conversion, site selection. Electric power generation-basic components, horizontal axis and vertical axis wind turbines, towers, generators, control and monitoring components. Wind energy in India. • Geothermal Energy: Geothermal fields, estimates of geothermal power. Basic geothermal steam power plant, Advantages and disadvantages of geothermal energy. Geothermal energy in India. • Conclusion and Summary of Unit
4.	Biomass and Ocean Energy <ul style="list-style-type: none"> • Introduction of Unit • Biomass Energy: Introduction, biomass categories, bio-fuels. Introduction to biomass conversion technologies. Biogas generation, basic biogas plants-fixed dome type, floating gasholder type, Deen Bandhu biogas plant, Pragati design biogas plant.



	<ul style="list-style-type: none"> • Ocean Energy: Ocean Thermal Electric Conversion (OTEC) systems like open cycle, closed cycle, Hybrid cycle, prospects of OTEC in India. Energy from tides, basic principle of tidal power, single basin and double basin tidal power plants, advantages, limitation and scope of tidal energy. • Conclusion and Summary of Unit.
5.	Fuel Cells, Hydrogen Energy and Hybrid Systems
	<ul style="list-style-type: none"> • Introduction of Unit • Fuel Cells: Introduction, Design principle and operation of fuel cell, Types of fuel cells, conversion efficiency of fuel cell, application of fuel cells • Hydrogen Energy: Introduction, Hydrogen Production methods, Hydrogen storage, hydrogen transportation, utilization of hydrogen gas, hydrogen as alternative fuel for vehicles. • Hybrid Systems: Need for Hybrid Systems. Range and type of Hybrid systems. Case studies of Diesel-PV, Wind-PV, electric and hybrid electric vehicles. • Conclusion and Summary of Unit

C. RECOMMENDED STUDY MATERIAL:

Sr.No	Reference Book	Author	Publication
1.	Non-Conventional Resources of Energy	Dr. A.N. Mathur	---
2.	Renewable Energy	Boyle	Oxford
3.	Solar Energy	S.P. Sukhatme	TMH
4.	Solar Engineering of Thermal Processes	Duffie & Beckman	----
5.	Non-Conventional Energy Resources	BH KHAN	TMH
6.	Solar Energy : Fundamentals and Applications	GARG & PRAKASH	TMH
7.	Bio Energy	David Boyles	Elis Horwood Ltd
8.	Renewable energy sources and conversion technology	N.K. Bansal, M. Kleemann, M. Heliss	Tata Mc-Graw-Hill
9.	Solar Energy Hand Book	Frank Kreith	--
10.	Principles and Application of Solar Energy	N. Chermisinogg and Thomes, C. Regin	--
11.	Energy from Biomass	W. Palz., P. Chartier and D.O. Hall	--
12.	Non-conventional energy sources	G.D. Rai	Khanna Publishers
13.	Alternative Energy Sources	B.L. Singhal	Tech Max Publication
14.	Renewable energy resources and emerging technologies	Kothari D.P	Prentice Hall of India



COURSE OVERVIEW AND OBJECTIVE: After the completion of 40 hours of French learning, participants can complete the basic level of French language Level 1, with the following skills in:

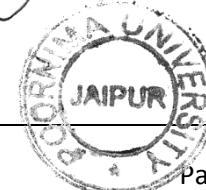
1. Reading: Can understand familiar names, words and very simple sentences, on notices, posters or in catalogues.
2. Grammatical structures: Basic grammatical command. Shows limited control of simple grammatical structures which enable basic communication to take place.
3. Listening: Can recognize familiar words and very basic phrases.
4. Speaking: Can use simple phrases and sentences to describe where he or she lives and people he or she knows.
5. Writing: Can write a short, simple postcard, for example sending holiday greetings. Can fill in forms with personal details.

A. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time required for the Unit (Hours)
1.	Parlez-vous Français	8
2.	Elle s'appelle Laura	8
3.	Mon quartier est un monde	8
4.	Tes amis sont mes amis et Jour après jour	8
5.	On fait les boutiques?	7

B. DETAILED SYLLABUS

Unit	Unit Details
1.	Parlez-vous Français <ul style="list-style-type: none"> • Introduction of Unit • Greetings, introductions and farewell. • To provide information about oneself and to ask for information • To introduce oneself to a group • To introduce one's family • Conclusion and Summary of Unit
2.	Elle s'appelle Laura <ul style="list-style-type: none"> • Introduction of Unit • To communicate in class • Days of the week and months of the year • Counting • Nationality • Conclusion and Summary of Unit
3.	Mon quartier est un monde <ul style="list-style-type: none"> • Introduction of Unit • To ask for and to indicate the directions • Describe a city/ area • To ask for an explanation • Express the quantity • To write post card • Conclusion and Summary of Unit
4.	Tes amis sont mes amis et Jour après jour <ul style="list-style-type: none"> • Introduction of Unit • To give physical and psychological description of a person • To talk about his tastes and preferences • To speak of one's daily activities and one's interests



	<ul style="list-style-type: none"> • To indicate the time, to make an appointment • To describe the weather • Conclusion and Summary of Unit.
5.	On fait les boutiques?

C. RECOMMENDED STUDY MATERIAL:

Sr.No	Reference Book	Author	Publication
1.	Version originale 1		
2.	Me Talk Pretty One Day	David Sedaris	---
3.	Dictionnaire Larousse (English-French-English)	---	---



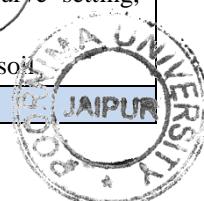
COURSE OVERVIEW AND OBJECTIVE: - Basics of Engineering Applications will provide a common platform to the new budding technocrats to excel themselves in field of Engineering. This course can help to grow out the hidden seed of knowledge in a different discipline which can further enhanced by grasping knowledge of that discipline. This course will act as a catalyst for combined knowledge of recent technologies of all the sectors and can full fill the requirements of industries. It contains basic knowledge of different discipline like Mechanical, Civil, Electronics & Communication, Information Technology, Computer Engineering and Electrical Engineering.

A. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time required for the Unit (Hours)
1.	Basics of Mechanical Engineering	9
2.	Basics of Civil Engineering	7
3.	Basics of Electronics & Communication Engineering	7
4.	Basics of Information Technology & Computer Engineering	8
5.	Basics of Electrical Engineering	9

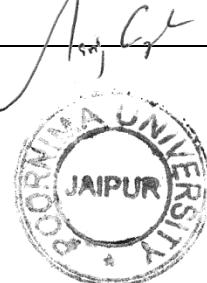
B. DETAILED SYLLABUS

Unit	Unit Details
1.	Basics of Mechanical Engineering <ul style="list-style-type: none"> • Basics Machines & Tools – Levers, Pulleys, Chain, Gears, Ropes, Screwdrivers, Pliers, pipe wrench, Chisel, hammers. • Lathe Machines, Drilling Machines, Milling Machine, Surface Grinder, Cylindrical Grinder, Tool and Cutter grinders, Bend saw, Hacksaw, Planners. • Welding, Soldering, Brazing. • Engines- Scooter, Car, Petrol Engine and Diesel Engine. • Engineering Materials – Cast iron, Steel, Aluminum, Glass, Plastic and Alloying Elements. • Properties of Engineering materials – Elasticity, Plasticity, Ductility, Brittleness, Strength, and Hardness. • Engineering Processes –Drilling, Turning, Milling, Boring and Grinding. • Manufacturing Component, Inspection, Assembly and Testing. • Power Plants- Thermal , Hydroelectric, Nuclear and Diesel Power Plant.
2.	Basics of Civil Engineering <ul style="list-style-type: none"> • Building Materials :- Cement, grade of cement, Types of cement & strength, Aggregate Properties. Sand, wood or timber, steel, paint. Bricks Strength and properties, size, bond & Masonary. Stone-Bond masonry. Concrete, its properties and uses. • Building construction :- Type of building, Constituent of building, foundation, wall, door, window, roof, floor, Plastering, Pointing, scaffolding, shoring, underpinning. • Structure :- Type of structure, load conditions, deflection, slope, failure of structure, Steel structure, R.C.C structure. • Highway Engineering :- Highway material, Load condition, X-sec. drainage system, curve, super elevation, camber. • Railway Engineering :- Gauges of Railway, Rails, Sleeper, blast, Railway crossing, Yards, passenger facilities. • Water Resource Engineering:- Irrigation – Delta base period, different crops, canal, drainage, super passage, siphon, effective cross- section of Canal, reservoir, dam , River training works. • Public Health Engineering:- Environmental Engineering – Water supply, sewerage, rain water harvesting, filtration & Treatment, drinking water quality, sanitary fittings. • Surveying:- Principle of surveying, uses of survey, different equipments, leveling, contouring, curve setting, Topography. • Geotech Engineering:- Different type of soil, bearing capacity, Three phase diagram, Different task on soil.
3.	Basics of Electronics & Communication Engineering



	<ul style="list-style-type: none"> Semiconductor physics:- Basics of semiconductor , Materials and their property, Generation & recombination of charges. Diodes: - Basics of Junction, Junction formation, construction & characteristics of diodes. Transistors:- Transistor Characteristics, Construction & working (BJT & UJT), Basics of HOSFT) Transducers:- Basics of transducers & their classification. Amplifiers:- Small signal amplifiers (Analysis of BJT & FET), Feedback amplifiers – classification & Feedback concept. Oscillators, criterion of oscillation, types of oscillators. Power amplifiers – basics & types. Digital Electronics:- Basic of number system & basic logic gates, Minimizations techniques (K-Mapping). Basics of combinational System & Sequential Systems. Basics & Operational amplifiers, op-amp configurations. Filter designing. Communication:- Sender, Receiver. Modulation, types of modulation (AM, FM, PM) noise, Digital Communication (Basics of ASK, FSK, PSK). Microwave –basics, Microwave generation. Control System – Stability criterion. Antenna System, Definition of Antenna & Types of Antenna. Applications of Electronics & Communication:- Radar, Wireless, Planet & Planet Satellite.
4.	Basics of Information Technology & Computer Engineering
	<ul style="list-style-type: none"> Understanding Information Technology:- Algorithms & Data Structures, like Graphs, Trees, Stacks, Quests, Linked list, Heaps etc. Object oriented programming concepts:- Abstraction, Polymorphism, encapsulation, Inheritance. Principles of different programming languages. Database Management, Operating systems, Computer Architecture, Memory organization. Pipelining & Vector Processing, Computer Networks, Java Programming. Theory of Computation, information system, Security, Artificial Intelligence Understanding Computer Technology:- Overview of Computer Organization, Memory types, CPU types, Services & characteristics, types of Operating systems Operating Systems:- introduction & need of OS, Characteristics and Services, types of OS, Booting Process. Application and system software Database:- Overview of database concept and its applications, Introduction to RDBMS (examples of RDBMS) Programming Concept:- Programming languages with examples, Front end and Backend tools. Computer Networks:- Types of network (LAN, WAN, MAN), Internet and Intranet, www, http, Network peripherals (bridge, switches, routers, Hub) Advance Computing Concepts:- Cloud Computing, AI, Fuzzy Logic, Neural Network and soft computing.
5.	Basics of Electrical Engineering
	<ul style="list-style-type: none"> Basic Concepts:- Volt, Current, AC supply, DC supply, RMS values, Energy, Power, Non-Ideal Sources. Components:- Passive, Active, Semiconductors, Transducers, Solenoids, DC/DC Convertor, AC/DC Convertors, Switches. Wiring:- AWG, House Wiring, Grounding, Distribution, Underground Cables. Circuit Theory:- Ohm's Law, Impedence, Mesh, Node, Dividers, Equivalent, Matrix, Network Reduction, Superposition, Thevenin Theorem, Dependent Sources, Complex Numbers, Real Power, Reactive power, Apparent power, Power triangle. Filters:- Passive, Active, Frequency Response, Resonance, Response, Q-factor, Bandwidth. Machines:- Dynamic machines – Introduction about general Motors & Generators and their difference, types of motor depends on the supply type, types of generators depend on the supply type, applications. Static Machines:- Introductions about single phase transformers, types of transformers, importance of transformers and its application. Power Systems:- 3-Phase, Delta – Why, Breakers, Fuses, Relays, PF Correction.

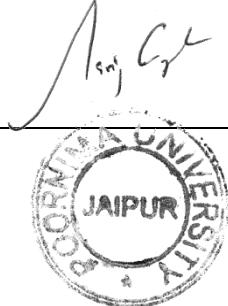
C. RECOMMENDED STUDY MATERIAL:



Sr.No	Reference Book	Author	Edition	Publication
1.	Basic Mechanical Engineering	Basant Agrawal	Latest	John Wiley & Sons
2.	Comprehensive Basic Mechanical Engineering	R.K. Rajput	Latest	Laxmi Publication
3.	Basic Civil Engineering	Rakesh Ranjan Bechar	Latest	Laxmi Publication
4.	Basic Civil Engineering	Dr. B.C. Punmia, Ashok Kumar Jain	Latest	Laxmi Publication
5.	Fundamentals of information technology	G. G. Wilkinson, Anthony R. Winterflood	Latest	Willy and Sons
6.	Engineering Basics: Electrical, Electronics And Computer Engineering	T. Thyagarajan	Latest	New Age Internatonal Publishers
7.	Basic Comp Eng - RGPV	Sanjay Silakari, Rajesh K. Shukla	Latest	Tata McGraw Hill
8.	Fundamentals Of Computers	V. Rajaraman,	Latest	Prentice Hall India Pvt.,
9.	Basic Electrical & Electronics Engineering	Dr. K. R. Niyazi	Latest	Ashirwad Publication
10.	Basic Electrical Engineering	K.N. Srinivas	Latest	I K International

Websites

- www.nptel.com
- www.oocities.org/venkatej/mech/
- en.wikipedia.org/wiki/Mechanical_engineering
- www.nprcet.org/e%20content/
- web.eece.maine.edu/programs/undergrad/ce/cen_cs.php
- www.mlbd.com › Computers/IT
- en.wikipedia.org/wiki/Information_technology
- www.bruface.eu/.../Electronics_and_Information_Technology_Engi...
- www.facstaff.bucknell.edu/mastascu/elessonsHTML/EEIndex.html
- www.learnerstv.com/Free-Engineering-Video-lectures-ltv152-Page1....
- www.oup.co.in ... › Electronics Engineering



PRACTICALS

Code: BCE03206

DATA STRUCTURE LAB

1.5 Credits [LTP : 0-0-3]

LIST OF EXPERIMENTS: Implement following experiments using C/C++

1.	Implementation of Sorting techniques
2.	Implementation of Searching techniques
3.	Implementation of stack and queue operations using linked list and array
4.	Expression evaluation
5.	Polynomial addition Using Linked list
6.	Sparse matrix addition using array or linked list
7.	Binary tree representation and traversal techniques(Pre, Post and Inorder)
8.	Binary search trees using Linked list
9.	Graph representation and traversal techniques (BFS and DFS)
10.	Single source shortest path algorithm
11.	Hashing and collision resolution techniques

Code: BCE03207

OOP USING C++ LAB

1.5 Credits [LTP: 0-0-3]

LIST OF EXPERIMENTS: Programs using C++ concepts like

1	Classes & objects
2	Constructors & Destructors
3	Function Overloading
4	Inheritance
5	Operator overloading
6	Polymorphism & virtual functions
7	I/O streams
8	File operations
9	Templates
10	Exception handling
11	String operations

CODE: BCE03208

UNIX SHELL PROGRAMMING LAB

1 Credit [LTP : 0-0-2]

LIST OF EXPERIMENTS: Implement following experiments using shell programming in unix /linux

1	Introduction of cat, comm, cpio, Diff, find, grep, ls, mkdir, sort, tail, tar, wc, commands
2	Write a programme to show the working of while, until loop and if command
3	Write a shell script to generate the Fibonacci series.
4	Write a shell program to reverse the digits of an input number “n”
5	Write a shell program that accepts one or more file names as arguments and converts their contents to upper case
6	Find all logged in user having names of at least four characters or whose user id is greater than 200
7	The length and breadth of a rectangle and radius of circle are input through keyboard. Write a shell program to calculate area and perimeter of the rectangle and area and circumference of the circle.
8	Write a client server programme for named pipes.
9	Write a programme for sharing data between processes using files
10	Write a programme to count word, characters and lines in a file.



LIST OF EXPERIMENTS:

1.	Implementation of logic circuits using gates <ul style="list-style-type: none"> • Full adder/full subtractor • Implementation of logic functions using universal gates only • Code converters • Parity generator and Checker • Design of priority encoder • Implementation of Boolean functions using MUX • Design of decoder, Demultiplexer.
2.	Implementation of circuits using MSI <ul style="list-style-type: none"> • Synchronous counters • Asynchronous counters • Binary multiplier • Decimal Adder • Universal shift register • Design of Arithmetic unit
3.	Interface experiments with MSI <ul style="list-style-type: none"> • Design of ALU • Interface of ALU with memory
4.	Design and Implementation of combinational circuits using Verilog Hardware Description Language (VHDL)
5.	<ul style="list-style-type: none"> • Combinational circuits – Adder/ Subtractor, Binary multiplier • Sequential circuits – Flip flops, counters.



COURSE OVERVIEW AND OBJECTIVES: The content of Soft Skills training aims at developing awareness among students about skills related to the Process of Recruitment.

The Soft Skills syllabus of semester III is targeted to introduce Skills related to Recruitment Process to the students. Activities related to Communication skills are included to make the students express themselves effectively. Further, the students have learned the basics of English Grammar in I & II semester. In this semester the students will practice their acquired language skills through *Functional English* sessions. The analytical skills are another prerequisite to excel in the life after the university degree. These skills are imparted through Newspaper Article Analysis and the Analysis of a Video. Group Discussion and Personal Interview have become essential steps of a Recruitment process. In this semester an overview of these two processes is provided to the students. Finally, without Creativity and Lateral thinking, it is very hard to survive in the rapidly changing world. Therefore, activities related to these skills are included in this semester. The content is delivered in the form of training wherein the students understand concepts through simulation exercises, role plays, group tasks, handouts, games, etc.

A. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time required for the Unit (Hours)
1.	Communication Skills	8
2.	Functional English	8
3.	Analytical Skills	8
4.	Group Discussion and Personal Interview	8
5.	Creativity and Lateral Thinking	8

B. DETAILED SYLLABUS

Unit	Unit Details
1.	Communication Skills <ul style="list-style-type: none"> • Me against Myself • Picture Perception • Story Making (Verbal) • Extempore
2.	Functional English <ul style="list-style-type: none"> • Spotting Errors • Multiple Choice Questions • Fill in the Blanks • Vocabulary: Synonyms and Antonyms • Reading Comprehension • Paragraph Jumble • Sentence Jumble
3.	Analytical Skills <ul style="list-style-type: none"> • Analytical Skills: Introduction and Relevance • Newspaper Article Analysis • Analysis of a Video
4.	Group Discussion and Personal Interview <ul style="list-style-type: none"> • Group Discussion: Introduction • Group Discussion: Do's and Don'ts • Mock Group Discussion • Personal Interview: Introduction • Personal Interview: Do's and Don'ts • Mock Personal Interview
5.	Creativity and Lateral Thinking



	<ul style="list-style-type: none"> • Creativity and Teamwork • Collage Making • Comic Strip • Story Making (Written) • Designing of Newspaper/Initiation/Brochure
--	--

C. RECOMMENDED STUDY MATERIAL:

Sr.No	Reference Book	Author	Edition	Publication
1.	Personality Development and Soft skills	Barun K Mitra	Latest	Oxford Univ Press
2.	Business communication	Meenakshi Raman	Latest	Oxford Univ Press
3.	Communication Skills	---	Latest	Ferguson Publishing
4.	The ACE of Soft Skills: Attitude, Communication and Etiquette for Success	Gopalaswamy Ramesh & Mahadevan Ramesh	Latest	Pearson Publishing

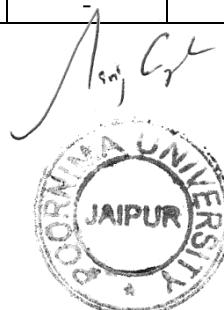
Code : BCE03611 DISCIPLINE AND TALENT ENRICHMENT PROGRAMME (TEP)-III 1 Credit

OVERVIEW AND OBJECTIVES The objective of Discipline and TEP is to provide students with the opportunities to enhance job fetching skills and at the same time to cultivate the student's personal interests and hobbies while maintaining the good disciplinary environment in the University. TEP is integrated into the curriculum for holistic development of students through active participation in various activities falling in Technical and non technical categories.

Discipline and Talent Enrichment Programme (TEP)-III shall be evaluated irrespective of period/time allocation (as in the case of Extra Curricular activity) in the teaching scheme as a **TWO credit** course. The record related to discipline and related activities are maintained for each student and they shall be evaluated for the same also. It shall be counted in calculation of SGPA but it is not a backlog subject. However, the attendance of these classes shall be recorded and accounted in the total attendance.

Activities included in this category in the Third Semester are as follows:

Code	Activity	Hours	Credits
BCE03611.1	Non Syllabus Project (NSP)	2	2
BCE03611.2	Online Eligibility Exam(OLE)	0.5	
BCE03611.3/11.4	Library / Internet	0.5	
BCE03611.5	Extra Curricular Activities	-	





POORNIMA
UNIVERSITY

SCHOOL OF ENGINEERING & TECHNOLOGY

B.Tech.

Batch 2013-17

Department of Computer Engineering



**Fourth
Semester
Detailed Syllabus**

CORE THEORY SUBJECTS

Code: BCE04101

OPERATING SYSTEMS

3 Credits [LTP: 3-0-0]

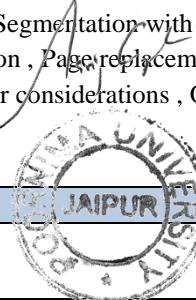
COURSE OVERVIEW AND OBJECTIVES: The basic objective of this course is to make students aware of various operational concepts and algorithms used in operating systems to make the hardware working as per user requirements. It includes study of architectures of operating system, Process model, Process Scheduling concepts and algorithms, Process Management, Storage Management, and Protection & security issues in operating systems. The contents are designed to focus the operations in depth and provide practical exposure to the students. At the end of course, it is expected that students bear good concepts of working of various operating systems and implement the concepts using some known platforms such as C, C++ and MOS.

A. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time required for the Unit (Hours)
1.	Introduction	7
2.	Process Management	9
3.	Memory Management	10
4.	Storage Management	7
5.	Protection and Case Study	7

B. DETAILED SYLLABUS

Unit	Unit Details
1.	Introduction <ul style="list-style-type: none"> • Introduction of Unit • Introduction and need of operating system, layered architecture/logical structure of operating system, Type of OS, operating system as resource manager and virtual machine, OS services, BIOS, System Calls/Monitor Calls, Firmware-BIOS, Boot Strap Loader. • Process model, creation, termination, states & transitions, hierarchy, context switching, process implementation, process control block. Threads- processes versus threads, threading, concepts, models, kernel & user level threads, thread usage, benefits. • Process scheduling- Basic concepts, classification, CPU and I/O bound, CPU scheduler- short, medium, long-term, dispatcher, scheduling:- preemptive and non-preemptive, Static and Dynamic Priority, Co-operative & Non-cooperative, Criteria/Goals/Performance Metrics, scheduling algorithms- FCFS, SJFS, shortest remaining time, Round robin, Priority scheduling, multilevel queue scheduling, multilevel feedback queue scheduling, Fair share scheduling • Conclusion of Unit including real life applications
2.	Process Management <ul style="list-style-type: none"> • Introduction of Unit • Process Management -The critical-section problem -Peterson's solution Synchronization hardware -Semaphores - Classic problems of synchronization- Monitors - Synchronization examples -Atomic transactions -System model - Deadlock characterization - Methods for handling deadlocks -Deadlock prevention - Deadlock avoidance - Deadlock detection - Recovery from deadlock. • Conclusion of Unit including real life applications
3.	Memory management <ul style="list-style-type: none"> • Introduction of Unit • Memory management ,Swapping , Contiguous memory allocation , Paging Segmentation ,Segmentation with paging, Example: The Intel Pentium virtual memory: Background , Demand paging ,Process creation , Page replacement , Allocation of frames ,Thrashing , Memory, Mapped files , Allocating kernel memory ,Other considerations , Operating system examples • Conclusion of Unit including real life applications
4.	Storage management <ul style="list-style-type: none"> • Introduction of Unit • File concept -Access methods -Directory structure - File - system mounting



	<ul style="list-style-type: none"> • Protection, Directory implementation, Allocation methods, Free-space management, Efficiency and Performance, Recovery, NFS-example: The WAFL File System • Disk scheduling, Disk management, Swap-space management -RAID structure stable , Storage implementation, Tertiary Storage structure, I/O hardware, Application I/O Interface, Kernel I/O subsystem, Transforming I/O requests to hardware operations, Streams. • Conclusion of Unit including real life applications
5.	Protection and Case study

C. RECOMMENDED STUDY MATERIAL:

Sr.No	Reference Book	Author	Edition	Publication
1.	Operating System Concepts	Abraham Silberschatz, Peter B. Galvin and Greg Gagne	Latest	Addison Wesley
2.	Modern Operating Systems	Andrew S. Tanenbaum	Latest	Addison Wesley
3.	Operating Systems	Harvey M. Deitel, Paul J. Deitel, and David R. Choffnes	Latest	Prentice Hall
4.	Operating System	William Stallings	Latest	Prentice Hall of India
5.	Operating System, A Design-Oriented Approach	Charles Crowley	Latest	Pearson Education Pvt. Ltd
6.	Operating Systems: A Modern Perspective	Gary J. Nutt	Latest	Addison Wesley

Websites

- <http://ocw.mit.edu/courses/audio-video-courses/>
- <http://computationalengineering.mit.edu/research/>
- <https://www.khanacademy.org/cs>
- <http://www.infocobuild.com/education/audio-video-courses/computer-science/computer-science.html>
- <http://iosrjournals.org/IOSR-JCE.html>



COURSE OVERVIEW AND OBJECTIVES: This course is added with an objective to give the students an exposure of data processing and management. This course introduces Database Management System (DBMS) which is computer software designed for the purpose of managing databases. It is a collection of programs that enables the students to store, modify, and extract information from a database. The students will learn Database concepts, Data Models, various approaches to Database Design, Relational Model, Optimization principles and Control. It includes various database models, their architectures, database design issues, Relational model and design of relational database, Integrity and security, storage and file structure, and data Transactions. It aims to make the students learn the concepts of database design for any application. The outcome of this course is expected that every student understand the key concepts and terminology of RDBMS, Learn the basics of database modeling, understand database design and normalization techniques, Implement access to the data using various techniques, know the strategies and methods for query processing, optimization, database transaction processing and security.

A. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time required for the Unit (Hours)
1.	Introduction	9
2.	Relational Model	12
3.	Integrity and Security	9
4.	Storage and File Structures	5
5.	Transaction	5

B. DETAILED SYLLABUS

Unit	Unit Details
1.	Introduction <ul style="list-style-type: none"> Introduction of Unit Introduction to Database Systems: Overview, Data Models, Database System Architecture, History of Database Systems. Entity-Relationship Model: Basic Concepts, Constraints, Keys, Design Issues, Entity Relationship Diagram, Weak Entity Sets, Extended E-R Features, Design of an E-R Database Schema, Reduction of E-R Schema to Tables Conclusion of Unit including real life applications
2.	Relational Model <ul style="list-style-type: none"> Introduction of Unit Structure of Relational Databases, Relational Algebra, Extended , Relational Algebra Operations, Modification of Database , Views, Tuple Relational, Calculus, Domain Relational Calculus. SQL: Background, Basic Structure, Set, Operations, Aggregate Functions, Null Values, Nested Sub queries, Views, Complex Queries, Modification of the database, Joined Relations, Data-Definition Language. Other Relational Languages: Query-by-Example. Conclusion of Unit including real life applications
3.	Integrity and Security <ul style="list-style-type: none"> Introduction of Unit Domain Constraints, Referential Integrity, Assertions, Triggers, Security and Authorization, Authorization in SQL. Relational-Database Design: Normalization, first normal form , second normal form, third normal form, Boyce-Codd normal form, fourth normal form. Conclusion of Unit including real life applications
4.	Storage and File Structures <ul style="list-style-type: none"> Introduction of Unit Overview of Physical Storage Media, Magnetic Disks, RAID, Tertiary Storage, Storage Access, File Organization, Indexing and Hashing: Basic Concepts, Ordered Indices, B+Tree Index Files, B-Tree Index Files Conclusion of Unit including real life applications

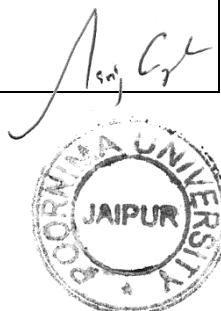


5.	Transaction
	<ul style="list-style-type: none"> • Introduction of Unit • Transaction concept, Transaction State, Implementation of Atomicity and Durability, Concurrent Executions, Serializability, Testing for Serializability. • Concurrency Control: Lock-Based Protocols, Timestamp Based Protocols. • Introduction to Recovery and Atomicity, Log-Based Recovery, Shadow Paging • Conclusion of Unit including real life applications

C. RECOMMENDED STUDY MATERIAL:

Sr.No	Reference Book	Author	Edition	Publication
1.	Database System Concepts	Silberschatz, Korth, Sudarshan	4th	McGraw-Hill Higher Education
2.	An Introduction to Database Systems	Bipin C Desai	Latest	Galgotia Publications
3.	Fundamentals of database Systems	Elmasri, Navathe	3 rd	Addison Wesley
4.	A First Course in Database Systems	Jefrey D.Ulman, Jenifer Widom	Latest	Pearson Education Asia
5.	Modern Database Management	Fred R McFadden, Jeffery A Hoffer, Mary B. Prescott	5 th	Addison Wesley

Websites
<ul style="list-style-type: none"> • http://ocw.mit.edu/courses/audio-video-courses/ • http://computationalengineering.mit.edu/research/ • https://www.khanacademy.org/cs • http://www.infocobuild.com/education/audio-video-courses/computer-science/computer-science.html • http://iosrjournals.org/IOSR-JCE.html



COURSE OVERVIEW AND OBJECTIVES: The goal of this course is to provide students with an understanding of basic concepts in the theory of computation. It includes Finite Automata and Regular Expressions, Regular Sets and Context Free Grammars, Pushdown Automata and Parsing Algorithms, Turing machines, and Introduction to Computational Complexity. At the end of this course students should be able to construct finite state machines and the equivalent regular expressions, prove the equivalence of languages described by finite state machines and regular expressions, construct pushdown automata and the equivalent context free grammars, prove the equivalence of languages described by pushdown automata and context free grammars and formal understanding of algorithms and procedures.

A. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time required for the Unit (Hours)
1.	Finite Automata and Regular Expressions	6
2.	Regular Sets and Context Free Grammars	9
3.	Pushdown Automata and Parsing Algorithms	11
4.	Turing machines	7
5.	Introduction to Computational Complexity	7

B. DETAILED SYLLABUS

Unit	Unit Details
1.	Finite Automata and Regular Expressions <ul style="list-style-type: none"> • Introduction of Unit • Deterministic and Non-Deterministic Finite Automata, Finite Automata with ϵ-moves, regular expressions – equivalence of NFA and DFA, • Two-way finite automata • Moore and Mealy machines • Applications of finite automata. • Conclusion of Unit including real life applications
2.	Regular Sets and Context Free Grammars <ul style="list-style-type: none"> • Introduction of Unit • Properties of regular sets, context-Free, Grammars – derivation trees • Chomsky Normal Forms and Greibach Normal Forms, • Ambiguous and unambiguous grammars • Minimization of finite automata. • Conclusion of Unit including real life applications
3.	Pushdown Automata and Parsing Algorithms <ul style="list-style-type: none"> • Introduction of Unit • Pushdown Automata and context-free languages • Top-down parsing and Bottom-up parsing • Properties of CFL • Applications of pumping lemma, closure properties of CFL and decision algorithms. • Conclusion of Unit including real life applications
4.	Turing machines <ul style="list-style-type: none"> • Introduction of Unit • Turing machines(TM), computable languages and functions, • turing machine constructions • storage in finite control • variations of TMs • recursive and recursive enumerable languages • Conclusion of Unit including real life applications



5.	Introduction to Computational Complexity
	<ul style="list-style-type: none"> • Introduction of Unit • Time and Space complexity of TMs , A non recursive language and unsolvable Decision problems, Reducing one problem to another • The halting problem, Rice's Theorem , Closure Properties of families of languages • Conclusion of Unit including real life applications

C. RECOMMENDED STUDY MATERIAL:

Sr.No	Reference Book	Author	Edition	Publication
1.	Introduction to Automata Theory, Languages and Computation	John E. Hopcroft and Jeffrey D. Ullman	Latest	Narosa Publishers
2.	Introduction to the Theory of Computations	Michael Sipser	Latest	Brooks/Cole Thomson Learning
3.	Introduction to Languages and the Theory of Computaiton	John c. Martin,	Latest	Tata McGraw-Hill,
4.	Theory of Computer Science	By Brady	Latest	McGraw Hill
5.	Automata Theory	K.L.P. Mishra	Latest	PHI
6.	Introduction of the Theory and Computation.	Michael Sipser	Latest	Thomson Brooke/cole, 1997
Websites				
<ul style="list-style-type: none"> • http://ocw.mit.edu/courses/audio-video-courses/ • http://computationalengineering.mit.edu/research/ • https://www.khanacademy.org/cs • http://www.infocobuild.com/education/audio-video-courses/computer-science/computer-science.html • http://iosrjournals.org/IOSR-JCE.html 				



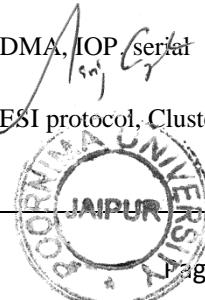
COURSE OVERVIEW AND OBJECTIVES: The objective of this course is to make the students understand hardware architecture and operational concepts of a Computer. It includes basic computer organization, Micro Programmed Control, Memory Organization, Arithmetic, Input-Output organization & Parallel processing concepts. At the end of course student should be equipped with the knowledge of Computer Architecture, Central Processing unit, peripherals and their operation.

A. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time required for the Unit (Hours)
1.	Basic Computer Organization and Design	6
2.	Micro programmed Control	9
3.	Memory Organization	11
4.	Computer Arithmetic	7
5.	Input-Output Organization & Parallel Processing	7

B. DETAILED SYLLABUS

Unit	Unit Details
1.	Basic Computer Organization and Design <ul style="list-style-type: none"> Introduction of Unit Instruction Codes, Computer Registers, Computer Instructions, Timing and Control, Instruction Cycle Memory reference Instructions - Input , Output and Interrupt Design of Basic Computer, Design of Accumulator logic. Conclusion of Unit including real life applications
2.	Micro programmed Control <ul style="list-style-type: none"> Introduction of Unit Control Memory, Address sequencing, Micro program Example, Design of control unit. Processor Organization: general register organization, stack organization, instruction formats, addressing modes, data transfer and manipulation, program control. Conclusion of Unit including real life applications
3.	Memory Organization <ul style="list-style-type: none"> Introduction of Unit Semiconductor Memory: Memory Hierarchy, Characteristics of Memory System, Semiconductor RAM Memories, Internal Organization of Memory Chip, Static RAM, Asynchronous DRAM, Synchronous DRAM, Connection of Memory to the processor, RAM Bus memory. Cache Memory: Basics of Cache, Structure, Read operation, Elements of Cache Design, Associative Memory / Mapping, Magnetic Disk, RAID, OPTICAL Memory Conclusion of Unit including real life applications
4.	Computer Arithmetic <ul style="list-style-type: none"> Introduction of Unit Adder, Ripple carry Adder, carry look Ahead Adder, Multiplication: Add and Shift, Array multiplier and Booth Multiplier, Division: restoring and Non-restoring Techniques. Floating Point Arithmetic: Floating point representation, Add, Subtract, Multiplication, Division. Conclusion of Unit including real life applications
5.	Input-Output Organization and Parallel Processing <ul style="list-style-type: none"> Introduction of Unit Input-output interface, asynchronous data transfer, modes of transfer, priority interrupt, DMA, IOP serial communication. Multiple processor organizations, Symmetric Multi processors, Cache coherence and MESI protocol, Clusters, Non Uniform Memory Access, Vector Computation Conclusion of Unit including real life applications

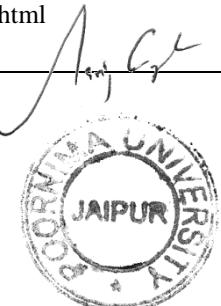


C. RECOMMENDED STUDY MATERIAL:

Sr.No	Reference Book	Author	Edition	Publication
1.	Computer System Architecture	M. Morris Mano	Latest	Prentice- Hall of IndiaPvt. Ltd.
2.	Computer Organization and Architecture	William Stallings	Latest	Prentice- Hall of IndiaPvt. Ltd.
3.	Computer Architecture and Organisation	John P.Hayes	Latest	McGraw Hill
4.	Computer Organization and Design	P.Pal Chaudhuri	Latest	Prentice-Hall of India Pvt. Ltd
5.	Computer System Design and Architecture	Vincent P. Heuring ,Harry F. Jordan	Latest	Prentice Hall of India Pvt. Ltd
6.	Computer Organization	Carl Hamacher, Zvonko G. Vranesic, Safwat G. Zaky,	Latest	McGraw-Hill

Websites

- <http://ocw.mit.edu/courses/audio-video-courses/>
- <http://computationalengineering.mit.edu/research/>
- <https://www.khanacademy.org/cs>
- <http://www.infocobuild.com/education/audio-video-courses/computer-science/computer-science.html>
- <http://iosrjournals.org/IOSR-JCE.html>



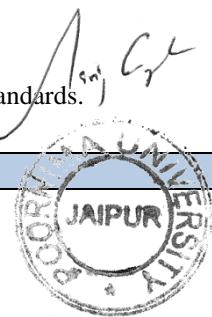
COURSE OVERVIEW AND OBJECTIVES: This course addresses current issues and practices in object oriented software engineering with an emphasis on the software development process. Topics covered include concepts and terminology, the software development process, software planning and management, software requirements specifications, system modeling, quality specifications, program specifications, software design approaches. At the end of this course, student should be able to specify a software system, create an object-oriented design for it, implement it with readable, reusable, modular, object-oriented techniques, test for validity, correctness and completeness, understand and use software project management.

A. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time required for the Unit (Hours)
1.	Software Engineering: An overview	6
2.	Software Process and Life Cycle models	11
3.	Software System Design	6
4.	Software Measurements and Testing	11
5.	Management of Software Project	6

B. DETAILED SYLLABUS

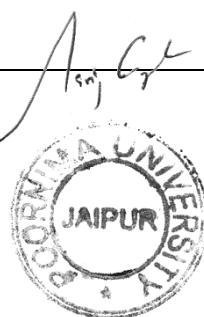
Unit	Unit Details
1.	Software Engineering: An Overview <ul style="list-style-type: none"> Introduction of Unit Introduction -A case for a software engineering approach to building an imaging system The role of the software engineer The nature of software for imaging system Case study: A visual inspection system. Imaging software and its properties: Classification of software qualities Basic software engineering principles. Conclusion of Unit including real life applications
2.	Software Process and Life Cycle models <ul style="list-style-type: none"> Introduction of Unit Software processes and methodologies Software life cycle models -V model , Spiral model, Evolutionary model, Fountain model Lightweight methodologies, Unified process mode, CMM Software standards. Software Requirements: Requirements engineering process, Types of requirements , Requirements users Formal methods in software specifications, Specification of imaging systems Case study , Object oriented analysis- organizing the requirements document, Requirements validation and reviews. Conclusion of Unit including real life applications
3.	Software System Design <ul style="list-style-type: none"> Introduction of Unit The design activity- Procedural oriented design, Object oriented design Hardware considerations in imaging system -Fault tolerant design. The Software production process: Programming languages-Writing and testing code, Coding standards. Conclusion of Unit including real life applications
4.	Software Measurements and Testing <ul style="list-style-type: none"> Introduction of Unit The role of metrics -Faults -Failures and bugs The role of testing, Testing techniques, Design of testing plans. Hardware -Software Integration and maintenance: Goals of system integration



	<ul style="list-style-type: none"> • System Unification, System verification, System integration tools, Software integration, Post integration software optimization , A software reengineering process model , A maintenance process model, Software reuse - The second system effect, code and program maintenance. • Conclusion of Unit including real life applications
5.	Management of Software Project
	<ul style="list-style-type: none"> • Introduction of Unit • Software project management -General project maintenance - Managing and Mitigating risks- Personnel management- Assessment of project personnel -Tracking and reporting progress-Cost estimation using COCOMO • Conclusion of Unit including real life applications

C. RECOMMENDED STUDY MATERIAL:

Sr.No	Reference Book	Author	Edition	Publication
1.	Introduction to the Personal Software Process	Humphrey, Watts S.	Latest	Boston, MA: Addison - Wesley
2.	Software Engineering: A Practitioner's Approach	Roger S Pressman	6 th	Tata McGrawHill
3.	An Integrated Approach to Software Engineering,	Jalote P	3 rd	Narosa Publishers
4.	Software Engineering Fundamentals	Ali Behforooz, Frederick J Hudson	2 nd	Oxford University Press
5.	Software Engineering	Ian Sommerville	7 th	Pearson Education
6.	Software Engineering Concepts	Fairley R	2 nd	Tata McGraw Hill
Websites				
<ul style="list-style-type: none"> • http://ocw.mit.edu/courses/audio-video-courses/ • http://computationalengineering.mit.edu/research/ • https://www.khanacademy.org/cs • http://www.infocobuild.com/education/audio-video-courses/computer-science/computer-science.html • http://iosrjournals.org/IOSR-JCE.html 				



DEPARTMENTAL ELECTIVES

Code: BCE04106

DEVICE INTERFACING AND PC MAINTENANCE

3 Credits [LTP: 3-0-0]

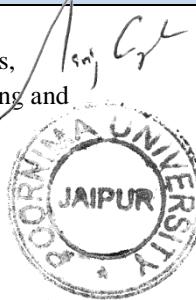
COURSE OVERVIEW AND OBJECTIVES: The objective of this course is to review various components of a desktop computer including input/output and other interfacing devices. It also includes troubleshooting tools and methodologies. The course includes study of 8086 processor, 8254, 8259 peripheral ICs, CMOS & motherboard configuration, hard drive and CD Technologies, Video & Sound T2 and Troubleshooting tools used for PC maintenance. After a thorough understanding of the system it enables the students to diagnose, detect and resolve practical problems in computer systems. At the end of this course, the student should be able to: Thoroughly understand the inner workings of a computer system. Detect and resolve practical problems in computer devices such as mother board, processors, cache memory, RAM, ROM, different types of cards, storage media, display units, printer, input devices and other peripheral devices.

A. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time required for the Unit (Hours)
1.	8086, 8254, and 8259A	9
2.	CMOS and Motherboards	12
3.	Hard drive and CD Technologies	9
4.	Video and Sound T2	5
5.	Troubleshooting & Tools	5

B. DETAILED SYLLABUS

Unit	Unit Details
1.	8086, 8254, and 8259A <ul style="list-style-type: none"> • Introduction of Unit • 8086 Interrupts and Interrupt Responses Overview, An 8086 Interrupt Response Example, An 8086 Interrupt Program Example, 8086 Interrupt types • 8254 Software-Programmable Timer/ counter • Basic 8253 and 8254 operation, System Connections for an 8254 Timer/Counter • Initializing an 8254 Programmable Peripheral Device, 8254 Counter Modes and Applications • 8259A Priority Interrupt Controller • 8259A Overview and system Connections, 8259A System Connections and Cascading • Initializing an 8259A • Conclusion of Unit including real life applications
2.	CMOS and Motherboards <ul style="list-style-type: none"> • Introduction of Unit • BIOS and CMOS: Function of BIOS, CMOS set up utilities, BIOS and device drivers, Power-On self test (POST) • Motherboards: How motherboard works, Types of motherboards, Chipset varieties • Upgrading and installing motherboards, Trouble shooting motherboards • Conclusion of Unit including real life applications
3.	Hard drive and CD Technologies <ul style="list-style-type: none"> • Introduction of Unit • How Hard drives work, Hard drive interfaces, Bios support: configuring CMOS and installing drivers, Troubleshooting Hard drive installation, Partitioning Hard drives, Formatting Hard drives, Maintaining and troubleshooting Hard drives • CD and DVD Media: CD media, DVD media, Installing CD and DVD media Drives • Troubleshooting • Conclusion of Unit including real life applications



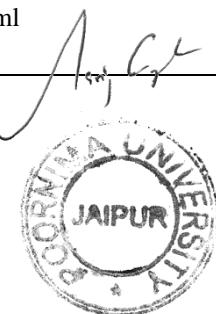
4.	Video and Sound T2
	<ul style="list-style-type: none"> • Introduction of Unit • CRT and LCD Displays, The video card, Installing and configuring video software • Troubleshooting video • How sound works in a PC, Getting the right sound card, Installing a sound card in a windows system, Troubleshooting sound, Printer Technologies, The Laser printing process, Installing a printer in windows, Trouble shooting printers • Conclusion of Unit including real life applications
5.	Troubleshooting & Tools
	<ul style="list-style-type: none"> • Introduction of Unit • In-Circuit Emulators ,Logic State/Timing Analysers ,Digital Multimeters ,CROs , Signature Analysers , Troubleshooting problems of system boards, add on cards and peripherals • Conclusion of Unit including real life applications

C. RECOMMENDED STUDY MATERIAL:

Sr.No	Reference Book	Author	Edition	Publication
1.	Microprocessors and Interfacing – Programming and Hardware	Douglas V. Hall	Latest	McGraw-Hill
2.	A+ Guide to Managing and Troubleshooting PCs	Michael Meyers, Scott Jernigan	Latest	Tata McGraw-Hill
3.	Troubleshooting, Maintaining and Repairing PCs	Stephen J. Bigelow	Latest	Tata McGraw-Hill
4.	Advanced Microprocessors and peripherals – Architecture, programming and Interfacing	Ajoy Kumar Ray, Kishor M. Bhurchandi	Latest	Tata McGraw-Hill
5.	Indispensable PC Hardware Book	Hans Peter Messmer	Latest	Pearson Education
6.	IBM PC and Clones	Govindarajulu	Latest	Tata McGraw-Hill

Websites

- <http://ocw.mit.edu/courses/audio-video-courses/>
- <http://computationalengineering.mit.edu/research/>
- <https://www.khanacademy.org/cs>
- <http://www.infocobuild.com/education/audio-video-courses/computer-science/computer-science.html>
- <http://iosrjournals.org/IOSR-JCE.html>



COURSE OVERVIEW AND OBJECTIVE: This course concerns the interplay between problem modeling and programming languages. Problem solving relies on having good models that are written in a language that can support the modeling concepts. It includes Learning principles of programming languages: The elements of programming languages; abstraction means in programming languages; formal definition of programming languages – concrete syntax, abstract syntax, operational semantics, Elementary and structured data types, Advances in language design, Functional language and logic languages. At the end of the course students shall be able to compare programming languages, describe the main principles of imperative, functional, object oriented and logic oriented programming languages, recite the high points of programming language history; and read the central formalisms used in the description of programming languages.

A. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time required for the Unit (Hours)
1.	Introduction	6
2.	Elementary and structured data type	9
3.	Advances in language design	11
4.	Functional Language	7
5.	Logic Languages	7

B. DETAILED SYLLABUS

Unit	Unit Details
1.	Introduction <ul style="list-style-type: none"> Introduction of Unit Characteristics of programming Languages, Factors influencing the evolution of programming language, Development in programming methodologies, desirable features and design issues. Programming Language processors: Structure and operations of translators, software simulated computer, syntax, semantics, structure, virtual computers, binding and binding time. Conclusion of Unit including real life applications
2.	Elementary and structured data type <ul style="list-style-type: none"> Introduction of Unit Data object variables, constants, data types, elementary data types, declaration, assignments and initialization, enumeration, characters string. Structured data type and objects: Specifications of data structured types, vectors and arrays, variable size data structure, pointers and programmer constructed data structure, Set files. Imperative Languages: Block structure, Scope rules, Parameter Passing, Construct like co-routines, Tasks etc. Conclusion of Unit including real life applications
3.	Advances in language design <ul style="list-style-type: none"> Introduction of Unit Variation on sub-program, Parallel programming, Formal properties of languages, Language Semantics, Structural languages, Logic programming languages with reference to suitable example of each and comparison among different languages. Fortran, C, Prolog. Conclusion of Unit including real life applications
4.	Functional Language <ul style="list-style-type: none"> Introduction of Unit Functional programming concepts – Referential transparency, Types, Type systems, Name, bindings, environment and scope, Recursive functions, Polymorphic functions, Type variables, High order functions, Curried functions, Lists and programming with lists, Definition of new user defined types in ML, Abstract data types, Evaluation methods. Conclusion of Unit including real life applications



5.	Logic Languages
	<ul style="list-style-type: none"> • Introduction of Unit • Review of predicate logic, Clause form, logic, Logic as a programming language, Unification algorithm, Abstract interpreter for logic programs, Theory of logic programs, SLD resolution, Negation as failure extension • Conclusion of Unit including real life applications

C. RECOMMENDED STUDY MATERIAL:

Sr.No	Reference Book	Author	Edition	Publication
1.	Programming Languages: Design and Implementation	Terrence W. Pratt, Marvin V. Zelkowitz	Latest	Prentice Hall,
2.	Essentials of Programming Language	Daniel P. Friedman, Mitchell Wand, Christopher Thomas Haynes	Latest	The MIT Press
3.	Programming Languages: Concepts and Constructs	Ravi Sethi	Latest	Addison-Wesley
4.	Programming Languages	Tucker A.B. , ISE	Latest	McGraw Hill
Websites				
<ul style="list-style-type: none"> • http://ocw.mit.edu/courses/audio-video-courses/ • http://computationalengineering.mit.edu/research/ • https://www.khanacademy.org/cs • http://www.infocobuild.com/education/audio-video-courses/computer-science/computer-science.html • http://iosrjournals.org/IOSR-JCE.html 				



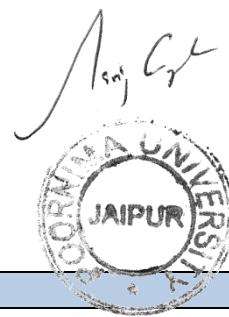
COURSE OVERVIEW AND OBJECTIVE: The objective of this course is to make the students understand the operating principles of major electronic devices, circuit models and connection to the physical operation of devices. It includes basic concepts of electronics, Transistors, Small signal Amplifiers, Feedback Amplifiers and oscillators. At the end of course student should posses basic concepts of electronics shall be able to apply this knowledge to the analysis and design of basic circuits, and have the ability to analyze and design discrete or integrated electronic circuits.

A. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time required for the Unit (Hours)
1.	Introduction	6
2.	Transistors	9
3.	Small Signal Amplifiers at Low Frequency	11
4.	Feedback Amplifiers	7
5.	Oscillators	7

B. DETAILED SYLLABUS

Unit	Unit Details
1.	Introduction <ul style="list-style-type: none"> Introduction of Unit Mobility and conductivity, charge densities in a semiconductor Fermi Dirac distribution, carrier concentrations and fermi levels in semiconductor, Generation and recombination of charges, diffusion and continuity equation Mass action Law, Hall effect Junction diodes, Diode as a circuit element, load line concept, clipping and clamping circuits Voltage multipliers Conclusion of Unit including real life applications
2.	Transistors <ul style="list-style-type: none"> Introduction of Unit Transistor characteristics, Current components, Current gains: alpha and beta. Operating point. Hybrid model, h-parameter equivalent circuits. CE, CB and CC configuration. DC and AC analysis of CE,CC and CB amplifiers. Ebers-Moll model. Biassing & stabilization techniques. Thermal runaway, Thermal stability Conclusion of Unit including real life applications
3.	Small Signal Amplifiers at Low Frequency <ul style="list-style-type: none"> Introduction of Unit Analysis of BJT and FET, RC coupled amplifiers. Frequency response, midband gain, gains at low and high frequency. Miller's Theorem. Cascading Transistor amplifiers, Emitter follower. JFET, MOSFET, Equivalent circuits and biasing of JFET's & MOSFET's. Low frequency CS and CD JFET amplifiers. FET as a voltage variable resistor. Source follower. Conclusion of Unit including real life applications
4.	Feedback Amplifiers <ul style="list-style-type: none"> Introduction of Unit Classification, Feedback concept, Transfer gain with feedback, General characteristics of negative feedback amplifiers. Analysis of voltage-series, voltage-shunt, current-series and current-shunt feedback amplifier.



	<ul style="list-style-type: none"> • Stability criterion. • Conclusion of Unit including real life applications
5.	Oscillators <ul style="list-style-type: none"> • Introduction of Unit • Classification. Criterion for oscillation. Tuned collector, Hartley, Colpitts, RC Phase shift, Wien bridge and crystal oscillators, Astable, monostable and bistable multivibrators. Schmitt trigger. • Conclusion of Unit including real life applications

C. RECOMMENDED STUDY MATERIAL:

Sr.No	Reference Book	Author	Edition	Publication
1.	Electronic Devices and circuits	Jacob Millman and C. Halkias, Satya brata Jit	Latest	McGraw Hill
2.	Micro-Electronics	Jacob Millman and Arvin Grabel	Latest	McGraw Hill
3.	Electronic devices and circuit theory	Robert L. Boylestad and Louis Neshelsky	Latest	Prentice -Hall India
Websites				
<ul style="list-style-type: none"> • http://ocw.mit.edu/courses/audio-video-courses/ • http://computationalengineering.mit.edu/research/ • https://www.khanacademy.org/cs • http://www.infocobuild.com/education/audio-video-courses/computer-science/computer-science.html • http://iosrjournals.org/IOSR-JCE.html 				



COURSE OVERVIEW AND OBJECTIVES: Objective of this course is to introduce to the students various concepts of information & data management and storage systems. It includes basics of MIS, applications of MIS, MIS and networks and Data warehouse. The outcome of this course is that the student posses the knowledge of information processing & management through the networks.

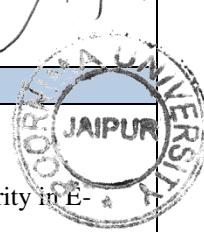
A. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time required for the Unit (Hours)
1.	Introduction to MIS	6
2.	Basic of Management Information System	9
3.	Application of Management Information system	11
4.	MIS and Networks	7
5.	MIS and Data warehouse	7

B. DETAILED SYLLABUS

Unit	Unit Details
1.	Introduction to MIS <ul style="list-style-type: none"> Introduction of Unit MIS concepts, definition, Role, Impact of MIS, MIS and computers, MIS and academics, MIS support to Management, Role and importance of management. MIS and process of management MIS in organization structure and strategic management business. Conclusion of Unit including real life applications
2.	Basic of Management Information System <ul style="list-style-type: none"> Introduction of Unit Decision making, Decision methods, behavioral concepts, organizational decision making, MIS and decision making concepts, Information; concepts and classification Methods of data and information collection: value of information, organization and information. Human as an information processor. Development of MIS and choice of IT. Conclusion of Unit including real life applications
3.	Application of Management Information System <ul style="list-style-type: none"> Introduction of Unit Applications in manufacturing sector, applications in service sector Introduction to service, sector, Creating a destructive services, MIS applications in service industries and role of MIS in source industries. DSS: Concepts and philosophy, deterministic systems and knowledge based expert systems. MIS and role of DSS. MIS in Enterprise Management System. Conclusion of Unit including real life applications
4.	MIS and Networks <ul style="list-style-type: none"> Introduction of Unit Network Topology, LAN, Data Communication, ATM Technology, Business Process Reengineering: Introduction BP, Process Model of organization, Value stream model, Delays in BP, Relevance of IT, MIS and BPR. Conclusion of Unit including real life applications
5.	MIS and Data Warehouse <ul style="list-style-type: none"> Introduction of Unit Architecture, Design and Justification of datawarehouse, organization. Management and implementation of data -warehousing, E-Business: Models, WWW, E-payment, security in E-business, MIS and E-business. Conclusion of Unit including real life applications

C. RECOMMENDED STUDY MATERIAL:



Sr.No	Reference Book	Author	Edition	Publication
1.	Management Information System	W. S. Jawadekar	2 nd	TMH
2.	Management Information System	Kenneth C. Landon & J. P. Landon	8 th	Pearson Education
Websites				
<ul style="list-style-type: none"> • http://ocw.mit.edu/courses/audio-video-courses/ • http://computationalengineering.mit.edu/research/ • https://www.khanacademy.org/cs • http://www.infocobuild.com/education/audio-video-courses/computer-science/computer-science.html • http://iosrjournals.org/IOSR-JCE.html 				



PRACTICALS

Code: BCE04210

OPERATING SYSTEM LAB USING C++

1 Credit [LTP : 0-0-2]

LIST OF EXPERIMENTS:

1	WAP to calculate turnaround time, average waiting time, and plot giant chart for Round robin algorithm
2	WAP to implement producer-consumer problem using buffer.
3	WAP to implement Worst-fit algorithm.
4	WAP to demonstrate Readers-Writers problem.
5	WAP to demonstrate Memory management strategy.
6	WAP to implement first –fit algorithm.
7	WAP to implement FCFS process scheduling algorithm.
8	WAP to demonstrate Dinning Philosopher problem.
9	WAP to read system configuration.

Code: BCE04211

DATA BASE LAB USING SQL

2Credits [LTP : 0-0-4]

LIST OF EXPERIMENTS: Implement following experiments using SQL server/Oracle

1.	Study of Database Concepts Relational Model – Table – Operations On Tables –Index – Tablespace – Clusters – Synonym – View –Schema – Data Dictionary – Privilege – Role –Transactions
2.	Study of SQL Primitive Data Types – User Defined data Types – Built-in Functions –Parts of Speech of CREATE, ALTER, DROP, SELECT, INSERT, DELETE, UPDATE, COMMIT, ROLLBACK, SAVEPOINT, GRANT, REVOKE
3.	Study of Query Types Queries involving Union, Intersection, Difference, Cartesian Product, Divide Operations – Sub Queries – Join Queries – Nested Queries –Correlated Queries – Recursive Queries
4.	Study of PL/SQL Blocks, Exception Handling, Functions, Procedures, Cursors, Triggers, Packages
5.	Application Design and develop any two of the following using backhand SQL server/Oracle and fronthand tool as .NET, Java, C++ <ul style="list-style-type: none">• Library Information System• Logistics Management System• Students' Information System• Ticket Reservation System• Hotel Management System• Hospital Management System• Inventory Control• Retail Shop Management• Employee Information System• Payroll System• Any other Similar System <p>Clearly mention the scope of the system. Use standard tools for expressing the design of the systems.</p>



LIST OF EXPERIMENTS: Implement following experiments using PhP and SQL server

1.	Installing a Webserver with PHP and MySQL (XAMPP in Windows)
2.	The echo() function outputs one or more strings.
3.	Write a programme using if...else statement to execute some code if a condition is true and another code if the condition is false.
4.	Write a programme to show the working of while, for, do while, foreach loop in PHP
5.	Write a programme to show the use of GET and POST variable
6.	Write PHP programme to Counts how many users have viewed your page as per count of refresh button clicked
7.	Write a PHP programme Upload file and get file related information like file name, file size, etc
8.	Create HTML form for getting email subject and message from the user
9.	Write a PHP programme to Change the value of a existing cookie.

COURSE OVERVIEW AND OBJECTIVES: The areas included in the present syllabus aim at strengthening the skills prerequisite to placement. As far as Soft Skills are concerned, IV semester is the pre-final semester as Soft Skills are not scheduled in V semester and VI is the last semester for Soft Skills training. Therefore, in IV semester an intensive training of Interpersonal Skills including Leadership Skills, Time Management, Positive thinking and Effective Listening is included. The level and scope of Group Discussion and Personal Interview is also advanced and wide in this semester's training. In Analytical Skills, the students are required to analyze a magazine article, a movie and a book and they are to give Power Point Presentations on these. Keeping in perspective the Group Discussion and Personal Interview, the students have to face during their recruitment process, General Awareness, General Knowledge, General Science, Puzzles and Vocabulary building activities are included in the syllabus. The sessions to acquire the knowledge about how to acquire information from Internet, Magazines and Journals are targeted to make the students aware of the knowledge sources apart from their textbooks. At regular intervals mock drills of Group Discussion and Personal Interview are held. Through quizzes, presentations, comprehension and group tasks, lot of activities are conducted.

A. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time required for the Unit (Hours)
1.	Interpersonal Skills	8
2.	Group Discussion	8
3.	Analytical Skills: Advanced	8
4.	Lateral Thinking	8
5.	Personal Interview	8

B. DETAILED SYLLABUS

Unit	Unit Details
1.	Interpersonal Skills <ul style="list-style-type: none"> • Leadership Skills • Time Management • Positive Thinking • Effective Listening
2.	Group Discussion <ul style="list-style-type: none"> • Topic Based Group Discussion • Case Based Group Discussion • Group Discussion on Newspaper Article • Group Discussion on Video
3.	Analytical Skills: Advanced <ul style="list-style-type: none"> • Magazine Article Analysis • Movie Analysis and Presentation • Book Reading: Presentation



4.	Lateral Thinking
	<ul style="list-style-type: none"> • General Awareness • General Knowledge and Science • Lateral Thinking Puzzles • Vocabulary Games: Crosswords, • Use of Internet, Magazines and Journals
5.	Personal Interview
	<ul style="list-style-type: none"> • Résumé Making • Activities related to Self Awareness and Self Expression • Mock Personal Interview

C. RECOMMENDED STUDY MATERIAL:

Sr.No	Reference Book	Author	Edition	Publication
1.	Personality Development and Soft skills	Barun K Mitra	Latest	Oxford Univ Press
2.	Business communication	Meenakshi Raman	Latest	Oxford Univ Press
3.	Communication Skills	---	3rd	Ferguson Publishing
4.	The ACE of Soft Skills: Attitude, Communication and Etiquette for Success	Gopalaswamy Ramesh & Mahadevan Ramesh	1st	Pearson Publishing

CODE: BCE04614 DISCIPLINE AND TALENT ENRICHMENT PROGRAMME (TEP)-IV 1 Credit

OVERVIEW AND OBJECTIVES: The objective of Discipline and TEP is to provide students with the opportunities to enhance job fetching skills and at the same time to cultivate the student's personal interests and hobbies while maintaining the good disciplinary environment in the University. TEP is integrated into the curriculum for holistic development of students through active participation in various activities falling in Technical and non technical categories.

Discipline and Talent Enrichment Programme (TEP) –IV shall be evaluated irrespective of period/time allocation (as in the case of Extra Curricular activity) in the teaching scheme as a **TWO credit** course. The record related to discipline and related activities are maintained for each student and they shall be evaluated for the same also. It shall be counted in calculation of SGPA but it is not a backlog subject. However, the attendance of these classes shall be recorded and accounted in the total attendance.

Activities included in this category in the Fourth Semester are as follows:

Code	Activities	Hours	Credits
BCE04614.1	Online Eligibility Exam (OLE)	0.5	2
BCE04614.2/14.3	Library / Internet	0.5	
BCE04614.4	Aptitude / Campus Recruitment Training	2	
BCE04614.5	Extra Curricular Activities	-	



PROFESSIONAL CERTIFICATE COURSE (PCC)

COURSE OVERVIEW AND OBJECTIVES: The student of one particular class/section will get an opportunity to pursue one Certificate course from the basket of technical certificate courses offered as per the scheme of curriculum. The selection of course will be done on the basis of market requirements and decided by the HOD of the concern Department.

The Objectives of the course are:

- To impart training of latest trends and technology commonly employed in current scenario.
- To certify the students as expert after successful completion of the training.

After successful completion of PCC course a certificate may be issued to all the students at the end of the semester along with the grade sheet with marking their performance in the 5 point scale as excellent (5 point), very good (4 point), Good (3 point), average (2 point) and below average (1 point). This course may be considered as a non credit course and therefore will not be the part of mark sheet/grade sheet. However, the attendance of these classes shall be recorded and accounted in the total attendance. The evaluation of this course shall be made two times i.e. After Mid-Term exam and End Term Exam.

Areas for Professional Certificate Course (PCC)

1.	Training on Android platform for application development
2.	Training on iOS platform for application development
3.	Training on MATLAB, may be one, two, three phases covering Simulink, Neural Networks, Fuzzy Systems, Digital Image Processing toolboxes.
4.	Training on Network Simulator tools
5.	Training on CloudSim tools
6.	Training on GridSim tools
7.	Training on Hadoop
8.	Training on IBM tools may be in different phases including z/ OS, DB2, Rational Rose, Mainframe data management, Monitoring & Diagnostics tools for JAVA etc.
9.	Training on Data Storage System- Data Center
10.	Training on design and development of hardware software co-design applications
11.	Training on Wireless Network design and implementation using Zigbee.
12.	Training on API design and Development using JAVA.
13.	Conduction of CCNA, MCSE etc. Cisco Technology based courses.





POORNIMA
UNIVERSITY

SCHOOL OF ENGINEERING & TECHNOLOGY

B.Tech.

Batch 2013- 17

Department of Computer Engineering



**Detailed Syllabus
for Fifth Semester**

POORNIMA UNIVERSITY						
B.Tech. Computer Engineering (Batch 2013-17)						
Teaching Scheme for Fifth Semester (IIIYr.)						
Subject Code	Subject Name	Teaching Scheme (Hrs per wk)			Credits	
		Lec	Tut	Prac		
A.	Core Subjects (Theory)					
BCE05101	Computer Graphics	4	1	-	4.5	
BCE05102	Compiler Design	4	-	-	4	
BCE05103	Introduction to Micro Processor and Interfaces	4	1	-	4.5	
BCE05104	Programming in Java	4	1	-	4.5	
B.	Departmental Elective (Theory)					
	Nil	-	-	-	-	-
C.	Open Elective (Theory): ANY ONE					
BOE05128	Essentials of Management	4	-	-	4	
BOE05129	Essentials of Information Technology*					
BOE05130	Organizational Behaviour & Cyber Law					
BOE05131	Project Management					
BOE05132	Human Values and Professional Ethics					
BOE05133	Introduction to Soft Computing					
D.	Practicals					
BCE05205	Core Java lab	-	-	2	1	
BCE05206	Microprocessor Lab	-	-	2	1	
BCE05207	Computer Graphic lab using C	-	-	2	1	
BCE05208	Unified Modeling Language Lab	-	-	3	1.5	
E.	Project/Seminar					
BCE05409	Industrial Training Seminar - I	-	-	1	0.5	
F.	Programmes / Activities					
BCE05610	Discipline and Talent Enrichment Programme (TEP) - V					2
BCE05610.1	Non Syllabus Project (NSP)	2	-	-	-	-
BCE05610.2	Online Eligibility Exam (OLE)	1	-	-	-	-
BCE05610.3/10.4	Library / Internet	1	-	-	-	-
BCE05610.5	Extra Curricular Activities	-	-	-	-	-
	Total	24	3	10		
	Total Teaching Hours				37	28.5

Professional Certificate Course (PCC) shall be offered to all students equivalent to **2 hrs/wk**. This course is Non credit Certificate course and therefore is not a part of marksheets / gradesheet.

Note: * This subject is not available for Computer Engineering Students.

CORE THEORY SUBJECTS

Code: BCE05101

Computer Graphics

4 Credits [LTP: 4-0-0]

COURSE OVERVIEW AND OBJECTIVES: Computer Graphics is the illustration field of Computer Science. Its use today spans virtually all scientific fields and is utilized for design, presentation, education and training. Computer Graphics and its derivative, *visualization*, have become the primary tools by which the flood of information from Computational Science is analyzed. This course is designed to provide a comprehensive introduction to computer graphics leading to the ability to understand contemporary terminology, progress, issues, and trends.

A. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time required for the Unit (Hours)
1.	Introduction and Line, Circle, Ellipse Generation	10
2.	2-D Transformation, Viewing And Clipping	10
3.	Three Dimensional and Filling	8
4.	Curve and Surfaces	10
5.	Visible-Surface Detection and Illumination Models	10

B. DETAILED SYLLABUS

Unit	Unit Details
1.	Introduction and Line, Circle, Ellipse Generation <ul style="list-style-type: none"> • Introduction To Unit • Graphics Applications • Video Display Devices – Refresh CRT, Raster and Random Scan Display, Color CRT Monitor, DVST, Flat Panel Displays, LCD • Frame Buffer and Video Controller • Input Devices • Line Drawing Algorithms: DDA, Slope Intercept Method, Bresenham's, Mid-Point Line Algorithm • Circle Generating Algorithms: Properties of Circles, Mid-Point Algorithm • Ellipse Generating Algorithms: Properties of Ellipse, Mid-Point Algorithm • Conclusion of Unit
2.	2-D Transformation, Viewing And Clipping <ul style="list-style-type: none"> • Introduction To Unit • 2-D Geometric Transformations: • Basic Transformation- Translation , Rotation , Scaling • Matrix Representations And Homogenous Coordinates, Composite Transformations, Reflections And Shearing • Viewing And Clipping: Viewing Pipeline, Viewing Coordinate Reference Frame, Window To-Viewpoint Coordinate Transformations • Clipping Operations: Line Clipping Algorithms- Cohen-Sutherland, Liang Barsky, Nicholl-Lee-Nicholl Algorithms, and Line Clipping Using Nonrectangular Clip Windows. • Polygon Clipping: Sutherland-Hodgeman Polygon Clipping, Weiler-Atherton Polygon Clipping. • Curve Clipping And Text Clipping • Conclusion of Unit
3.	Three Dimensional and Filling <ul style="list-style-type: none"> • Introduction To Unit • 3-D Geometric Primitives, 3-D Object Representation • 3-D Transformation • 3-D Viewing, Projections • Filled Area Primitives: Scan Line Polygon Filling Algorithm , Boundary Fill Algorithm , Flood Fill Algorithm • Conclusion of Unit
4.	Curve and Surfaces <ul style="list-style-type: none"> • Introduction To Unit • Curved Line and Surfaces: Quadric Surfaces, Spheres, Ellipsoid, Torus

	<ul style="list-style-type: none"> • Superquadrics, Blobby Objects • Spline Representation: Interpolation & Approximation Splines, Parametric Continuity Condition, Specification • Cubic Spline Interpolation Methods: Natural Cubic Spline, Hermite interpolation, Cardinal Spline, Kochanek-Bartels Splines. • B-spline curve : Uniform , Periodic B-splines ,Cubic , Periodic B-splines , Open ,Uniform B-Spline , Non-Uniform B-splines • Bezier Curves : Properties, Design Techniques • Conclusion of Unit
5.	Visible-Surface Detection and Illumination Models

C. RECOMMENDED STUDY MATERIAL:

Sr.No	Reference Book	Author	Edition	Publication
1	Computer Graphics	Donald Hearn and M Pauline Baker	Latest	PHI/Pearson Education
2	Computer Graphics Second Edition	Zhigand xiang, Roy Plastock, Schaum's outlines	Latest	Tata Mc-Graw hill
3	Computer Graphics Principles & Practice	C,Foley, VanDam, Feiner and Hughes	Latest	Pearson Education
Websites				
<ul style="list-style-type: none"> • www.slideshare.net/rhspcte/introduction-to-computer-graphicsppt • csce.uark.edu/~jgauch/4813/notes/cg01.ppt • www.4shared.com/q/CCAD/1/computer%20graphics 				

COURSE OVERVIEW AND OBJECTIVES: The goal of the course is to provide an introduction to the system software like assemblers, compilers, and macros. It provides the complete description about inner working of a compiler. The main focus is on the design of compilers and optimization techniques. It also focuses on the design of Compiler writing tools. The course also aims to convey the language specifications, use of regular expressions and context free grammars behind the design of compiler.

A. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time required for the Unit (Hours)
1.	Introduction	8
2.	Lexical Analysis	10
3.	Syntax Analysis	10
4.	Syntax Directed Translation	10
5.	Code Generation and Optimization	10

B. DETAILED SYLLABUS

Unit	Unit Details
1.	Introduction <ul style="list-style-type: none"> • Introduction To Unit • Review Of Languages & Grammar, Compiler And Interpreter- Basic Concepts • Phases of a Compiler, Bootstrapping and cross compilers • Syntax Definition • Parsing: Top-Down Parsing, Predictive Parsing, Designing a Predictive Parser, Left Recursion. • Lexical Analysis: Removal of White Space and Comments, Reading Ahead, Constants, Recognizing Keywords and Identifiers, Lexical Analyzer, Symbol Tables. • Conclusion Of Unit
2.	Lexical Analysis <ul style="list-style-type: none"> • Introduction To Unit • The Role of Lexical Analyzer • Input Buffering, Specification of Tokens • Recognition of Tokens • The Lexical -Analyzer Generator Lex • Conclusion Of Unit
3.	Syntax Analysis <ul style="list-style-type: none"> • Introduction To Unit • The Role of the Parser, Representative Grammars, Syntax Error Handling, Error-Recovery Strategies. • Context –Free Grammars, Writing a Grammar • Top-Down Parsing: Recursive-Descent Parsing, FIRST and FOLLOW, LL(1) Grammars Non recursive Predictive Parsing, Error Recovery in Predictive Parsing . • Bottom-Up Parsing: Reductions, Handle Pruning, Shift-Reduce Parsing , Conflicts During Shift-Reduce Parsing • Introduction to LR Parsing: Items and the LR(0) Automaton, The LR-Parsing Algorithm, Constructing SLR- Parsing Tables, Viable Prefixes • Canonical LR Parsing: Canonical LR(1) Items , Constructing LR(1) Sets of Items, Canonical LR(1) Parsing Tables, Constructing LALR Parsing Tables, Efficient Construction of LALR Parsing Tables • Conclusion of Unit
4.	Syntax Directed Translation <ul style="list-style-type: none"> • Introduction To Unit • Syntax-Directed Definitions • Evaluation Orders for SDD's • Applications of Syntax-Directed Translation • Syntax-Directed Translation Schemes • Conclusion of Unit.

5.	Code Generation and Optimization
	<ul style="list-style-type: none"> • Introduction To Unit • Variants of Syntax Trees • Three-Address Code • Issues in the Design of a Code Generator • Addresses in the Target Code • Basic Blocks and Flow Graphs • Optimization of Basic Blocks • Peehole Optimization • Conclusion of Unit.

C. RECOMMENDED STUDY MATERIAL:

Sr.No	Reference Book	Author	Edition	Publication
1	Compilers Principles, Techniques and Tools	Alfred Aho, Ravi Sethi, Jeffrey D Ullman	Latest	Pearson Education Asia
2	System Programming and Operating system	D.M. Dhamdhere	Latest	TMH
3	Introduction to Compiler Techniques	J.P. Bennet	Latest	Tata Mc Graw- Hill
4	Modern Compiler Design	Dick Grune, Henry E. Bal, Cariel T. H. Jacobs	Latest	Wiley dreamtech
Websites				
<ul style="list-style-type: none"> • www.4shared.com/q/1/compiler%20design?view=ls&suggested • engineeringppt.blogspot.com/2009/08/compiler-design-ppt_21.html • http://csvls.blogspot.in/2010/07/compiler-design-video-lectures10-videos.html 				

COURSE OVERVIEW AND OBJECTIVES:

The purpose of this course is to teach students the fundamentals of microprocessor and microcontroller systems. The student will be able to incorporate these concepts into their electronic designs for other courses where control can be achieved via a microprocessor/controller implementation. Although assembly language programming is a large component of the course, this course is extremely hardware-oriented. Students will comprehend the basic requirements and layout for building a microcomputer and applying those concepts to achieve a dedicated “embedded” controller as a component of a larger system.

A. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time required for the Unit (Hours)
1	Introduction to 8085	8
2	Microprocessor Architecture and Interfacing	10
3	8085 Instructions and Programming Techniques	10
4	Stack, Subroutines and Interrupts	10
5	Interfacing Peripherals	10

B. DETAILED SYLLABUS

Unit	Unit Details
1	Introduction to 8085 <ul style="list-style-type: none"> • Introduction to Unit • Introduction to Microprocessors • Microprocessor Instruction Set and Computer Languages • Large Computers to Single Chip Microcontroller • 8085 Programming Model • Instruction Classification • Instruction, Data Format and Storage • Writing, Assembly and Execution of a Program • 8085 Instruction Set • Conclusion of Unit
2	Microprocessor Architecture and Interfacing <ul style="list-style-type: none"> • Introduction to Unit • Microprocessor Architecture and Its Operations • Memory • Input and Output Devices • 8085 MPU • Example of 8085 Based Microcomputer • Memory Interfacing • Interfacing 8155 Memory Segment • Interfacing Output Displays • Interfacing Input Devices • Memory Mapped I/O • Conclusion of Unit
3	8085 Instructions and Programming Techniques <ul style="list-style-type: none"> • Introduction to Unit • Data Transfer Operations • Arithmetic, Logic and Branch Operations • Writing and Debugging Assembly Language Program • Programming Techniques: Looping , Counting and Indexing • Additional Data Transfer and 16 Bit Arithmetic Instructions • Arithmetic Operations Related to Memory • Logic Operations: Rotate • Conclusion of Unit
4	Stack, Subroutines and Interrupts <ul style="list-style-type: none"> • Introduction to Unit • Counters and Time Delays

	<ul style="list-style-type: none"> • Program on Hexadecimal Counter • Stack and Subroutine • Restart, Conditional Call and Return Instruction • 8085 Interrupt, 8085 Vectored Interrupts • Restart as Software Instructions • Conclusion of Unit
5	Interfacing Peripherals

C. RECOMMENDED STUDY MATERIAL:

Sr.No	Reference Book	Author	Edition	Publication
1	Microprocessor Architecture, Programming and Applications with 8085	Ramesh Gaonkar	Latest	PRI
2	Advanced Microprocessors and Interfacing	Budri Ram	Latest	Tata McGraw Hill Edition
3	Microprocessors and Interfacing: Programming and Hardware	Douglas V. Hall	Latest	Tata McGraw Hill Edition
4	Microprocessors: Principles and Applications	Charles M.Gilmore	Latest	McGraw Hill
5	The 80x86 Family, Design, Programming and Interfacing	John E.Uffenbeck	Latest	Pearson Education Inc.
6	The 8088 and 8086 Microprocessors, Programming, Interfacing, Software, Hardware and Applications	Water A.Triebel and Avtar Singh	Latest	Pearson Education Inc

Websites
<ul style="list-style-type: none"> • www.slideshare.net/ParveshGautam/8085-microprocessor-architecture-ppt • www.4shared.com/q/CCAD/1/microprocessor?recommended • www.forum.jntuworld.com/showthread.php?19651-Microprocessors-and-Microcontrollers-Study-Materials-Notes

COURSE OVERVIEW AND OBJECTIVES:

The purpose of this course is to familiarize students with the fundamentals of Java programming, program design and problem-solving. The course is oriented towards practical skills including current Java programming technologies for Java applets; graphical user interfaces (GUIs) and Web pages. The course covers the basic Java syntax and language features, compilation, interpretation, execution, class and object usage, graphical interfaces, program-user interaction, and the Java API. Problem-solving techniques and object-oriented programming are also covered.

A. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time required for the Unit (Hours)
1	Introduction of Java Programming	8
2	Wrapper Classes & String	10
3	Inheritance , Interfaces & Packages	10
4	Exception Handling & Multithreading	10
5	Java.io.packages, Applets, AWT and Swing	10

B. DETAILED SYLLABUS

Unit	Unit Details
1	Introduction of Java Programming <ul style="list-style-type: none"> • Introduction to Unit • Introduction to Java : Features, JVM, Difference between C, C++ and Java • Importing Classes, Naming conventions • Data types and type casting • Operators , Control Statements (if...else, else if, switch), Looping statements, Mathematical Functions • Arrays & Command line argument • Classes, objects and methods • Nesting of Classes • Constructors • Conclusion of Unit
2	Wrapper Classes & String <ul style="list-style-type: none"> • Introduction to Unit • Wrapper classes • String Constructors-String length, String Literals • String Concatenation-String concatenation with other data types, String Conversion and to String() • Character Extraction, String Comparison, Searching Strings, Modifying a String • Data Conversion and value Of()-Changing the case of characters-String Buffer • Conclusion of Unit
3	Inheritance , Interfaces & Packages <ul style="list-style-type: none"> • Introduction to Unit • Basics-Member Access and Inheritance • Super class variable referring to a sub class • Applications of keyword super • Creating a Multilevel Hierarchy • Order of calling constructors • Method Overriding • Dynamic method dispatch • Abstract classes-Using final with Inheritance • Defining a package, Different Types of Packages, Interfaces in Package, Creating Sub packages in a package • CLASSPATH - Defining an Interface, Implementing interfaces, Variables in interfaces, Extending interface • Conclusion of Unit
4	Exception Handling & Multithreading

	<ul style="list-style-type: none"> • Introduction to Unit • Exceptions- Types - Uncaught Exceptions - try and catch - Multiple catch, Nested Try - throw, throws and finally, Built-in Exceptions • Single Tasking, Multi-Tasking • Creating & Running Thread • Thread Class Method • Dead Lock Thread • Thread Communication • Thread Priorities& Group • Daemon Thread & Applications of Thread • Multithreading Programming: The Java Thread Model • Conclusion of Unit
5	Java.io.packages, Applets, AWT and Swing

C. RECOMMENDED STUDY MATERIAL:

Sr.No	Reference Book	Author	Edition	Publication
1	Head First Java	Sierra & Bates	Latest	SPD
2	The Complete Reference: Java	Herbert Schildt	Latest	TMH
3	Programming in JAVA	E. Balagurusamy	Latest	TMH
4	Core Java –An Integrated Approach	Dr. R. Nageswara Rao	Latest	Dreamtech
Websites				
<ul style="list-style-type: none"> • www.4shared.com/q/CCAD/1/core%20java?recommended • http://forum.jntuworld.com/showthread.php?3840-JAVA-Notes-All-8-Units-(PPT-S-Included) • http://www.freebookcentre.net/JavaTech/javaCategory.html 				

OPEN ELECTIVES

Code: BOE05128

ESSENTIALS OF MANAGEMENT

4 Credits [LTP: 4-0-0]

OVERVIEW AND OBJECTIVES: To acquaint the students with various concepts of management which will be very basic to appreciate the subject. To provide knowledge on principles of management, decision making techniques, accounting principles and basic management streams.

A. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time required for the Unit (Hours)
1.	Fundamentals of Management	07
2.	Forms and Groups	09
3.	Social Responsibility	07
4.	Marketing Management	09
5.	Financial Management:	08

B. DETAILED SYLLABUS

Unit	Unit Details
1.	Fundamentals of Management <ul style="list-style-type: none"> Introduction: Meaning of management, definitions of management, characteristics of management, management vs. administration Management: art, science and profession, importance of management Fayol's principles of management Management functions Inter relationship of managerial functions Conclusion of Unit
2.	Forms and Groups <ul style="list-style-type: none"> Introduction of Unit Forms: Forms of organizational structure (line, line & staff, functional); delegation of authority; centralization & decentralization. Groups: Formal & informal groups; stages in team development, empowerment concept, significance; changing nature of managerial work; outsourcing. Conclusion of Unit
3.	Social Responsibility <ul style="list-style-type: none"> Introduction of Unit Corporate Social Responsibility: Corporate social responsibility – meaning; responsibility towards different stakeholders; ethics in management – meaning; factors effecting ethical choices. Staffing: Nature and significance of staffing; human resource management - functions of human resource management; human resource planning; process of human resource planning; recruitment, selection; promotion-seniority vs. merit. Conclusion of Unit
4.	Marketing Management <ul style="list-style-type: none"> Introduction of Unit Marketing Management: Marketing management – definition of marketing, marketing concept, objectives and functions of marketing marketing mix (basics of 4Ps of marketing) difference between goods and services; steps of personal selling Conclusion of Unit
5.	Financial Management: <ul style="list-style-type: none"> Introduction of financial management; Objectives of financial management Functions and importance of financial management Brief introduction to the concept of capital structure and various sources of finance. Conclusion of Unit

C. RECOMMENDED STUDY MATERIAL:

Sr.No	Book	Author	Publication
a. Reference Books			
1.	“Principles and Practice of Management”	Chhabra T. N	Dhanpat Rai Publishers,
2.	“Organization and Management”,	Aggarwal R. D	Tata McGraw Hill,
3.	“Principles and Practice of Management”	Prasad L. M	Sultan Chand & Sons
4.	“Management”	Harold, Koontz and O'Doneell Cyril	McGraw Hill,
5.	“Marketing Management”	Sherlekar S. A	Himalaya Publishing Hous
6.	“Organizational Behavior”,	Prasad L. M.	SultanChand & Sons,
b. Websites			
<ul style="list-style-type: none"> • www.theiet.org › ... › Professional development › Professional skills • staffweb.ncnu.edu.tw/clhung/Management/chap001.ppt 			

COURSE OVERVIEW AND OBJECTIVES: The objective of this course is to introduce the importance & concept of Open source technologies, concepts of shell programming, Web Technology and Internet. It also includes an exposure to Flex platform. It aims to provide practical knowledge of various concepts required for development of web application. A laboratory experimentation on Unix is also included to train the students as far as practical implementations of the concepts that are needed. The outcome of the course is Knowledge about open source technologies, Unix environment and shell programming. Student shall possess the basic concepts of design and implementation of web applications.

A. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time required for the Unit (Hours)
1.	Open Source Technology	5
2.	Shell Programming	6
3.	Internet principles	8
4.	Web Technologies	11
5.	Flex	10

B. DETAILED SYLLABUS

Unit	Unit Details
1	Open Source Technology <ul style="list-style-type: none"> Introduction of Unit OST overview: Evolution & development of OST and contemporary technologies, Factors leading to its growth. Open Source Initiative (OSI), Free Software Foundation and the GNU Project, principle and methodologies Contexts of OST (India & international). Applications of open source (open source teaching and open source media) Risk Factors Myths regarding open source, different flavors of Linux and File System hierarchy, (ex:- Red Hat , Fedora, Ubuntu) Conclusion and Summary of Unit
2	Shell Programming <ul style="list-style-type: none"> Introduction of Unit Shell: meaning and purpose of shell, introduction to types of shell. Bourne Again Shell: shell script-writing and executing, command separation & grouping, redirection, directory stack manipulation, processes, parameters & variables, keyword variables. Introduction Korn Shell and C Shell Shell Programming: Control structures, the Here document, expanding NULL or USET variables, Bulitins , functions, history , aliases, job control, file substitution, source code management- RCS and CVS,, awk utility. Conclusion and Summary of Unit
3	Internet principles <ul style="list-style-type: none"> Introduction of Unit Basic Web concepts, Client Server model, Retrieving data from Internet, Protocols and applications. Web Design process: Web process Model-Goals and problems, design phase, Testing. Site Types and Architecture, Web site types, Dynamic Sites-site structures Conclusion and Summary of Unit
4	Web Technologies <ul style="list-style-type: none"> Introduction of Unit Web protocols-HTTP, DNS, Web Servers components, software, web hosting. HTML and scripting languages, cookies Multimedia in web design, Anatomy of xml document - XML markup-working with elements and attributes, creating valid documents, xml objects. Conclusion and Summary of Unit
5	Flex

	<ul style="list-style-type: none"> • Introduction of Unit • Flex Platform Overview, Creating a simple User Interface , Accessing XML data from your Application , Interacting with Server-Side Applications , Customizing your User Interface • Creating Charts and Graphs • Conclusion and Summary of Unit
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C. RECOMMENDED STUDY MATERIAL:

Sr.No	Reference Book	Author	Publication
1	The Design of the UNIX Operating System	Maurice J. Bach	Prentice-Hall of India
2	Web programming with Java	Michael Girdley, Kathryn A. Jones, et al	Sams.net publishing
3	The Complete Reference Web design	Thomas A.Powell	Tata McGraw-Hill
4	File organization and Processing	Tharp Alan L	John Wiley & Sons
5	Web Technology – A Developer’s Perspective	N.P. Gopalan, J. Akilandeswari,	PHI
6	Internet and WWW: How to Program	Deitel, Deitel, Goldberg	Tata McGraw-Hill

Websites
<ul style="list-style-type: none"> • http://ocw.mit.edu/courses/audio-video-courses/ • http://computationalengineering.mit.edu/research/ • https://www.khanacademy.org/cs • http://www.infocobuild.com/education/audio-video-courses/computer-science/computer-science.html • http://iosrjournals.org/IOSR-JCE.html

COURSE OVERVIEW AND OBJECTIVES:

This course deals with human behavior in organizations. Conceptual frameworks, case discussions, and skill-oriented activities are applied to course topics which include: motivation, learning and development, group dynamics, leadership, communication, power and influence, change, diversity, organizational design, and culture. Class sessions and assignments are intended to help participants acquire skills and analytic concepts to improve organizational relationships and effectiveness.

A. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time required for the Unit (Hours)
1.	Introduction to Organizations and Individuals	8
2.	Interpersonal and Group Processes	6
3.	Organizational Structure	6
4.	Cyber World and E-Commerce	9
5.	Intellectual Property Rights and IT ACT 2000	7

B. DETAILED SYLLABUS

Unit	Unit Details
1.	Introduction to Organizations and Individuals <ul style="list-style-type: none"> Introduction: What is an organization, components of organization, nature and variety of organizations (in terms of objectives, structure etc.), Models of analyzing organizational phenomena, organizational and business variables, organizations in the Indian context, institutions and structures, basic roles in an organization, etc. Perceptions, attitudes, motives (achievement, power and affiliation), commitment, values, creativity, and other personality factors, profile of a manager and an entrepreneur. Conclusion of Unit
2.	Interpersonal and Group Processes <ul style="list-style-type: none"> Introduction of Unit Interpersonal trust, understanding the other person from his/her point of view, interpersonal communication, listening, feedback, counseling, transactional analysis, self-fulfilling prophecy, etc. Leadership, motivating people, working as a member of a team, team functioning, team decision-making, team conflict resolution, team problem solving. Conclusion of Unit
3.	Organizational Structure <ul style="list-style-type: none"> Introduction of Unit Organizational structure and integrating interpersonal and group dynamics elements of structure, functions of structures, determinants of structures, dysfunctional ties of structures, structure - technology? Environment-people relationships, principles underlying design of organizations, organizational politics, issues of power and authority, organizational communications, organizational change, integrating cases (s). Conclusion of Unit
4.	Cyber World and E-Commerce <ul style="list-style-type: none"> Introduction to Cyberspace and Cyber Law; Different Components of cyber Laws; Cyber Law and Netizens. Introduction to E-Commerce; Different E-Commerce Models; E-Commerce Trends and Prospects; E-Commerce and Taxation; Legal Aspects of E-Commerce. Conclusion of Unit
5.	Intellectual Property Rights and IT ACT 2000 <ul style="list-style-type: none"> Introduction of Unit IPR Regime in the Digital Society; Copyright and Patents; International Treaties and Conventions; Business Software Patents; Domain Name Disputes and Resolution. Aims and Objectives; Overview of the Act; Jurisdiction; Role of Certifying Authority; Regulators under IT Act; Cyber Crimes-Offences and Contraventions; Grey Areas of IT Act. Conclusion of Unit

C. RECOMMENDED STUDY MATERIAL:

Sr.No	Reference Book	Author	Publication
1	Human relations and organizational behavior	Dwivedi, RS	Macmillan India Ltd., Delhi,
2	Essentials of organizational behavior	Robbins	Prentice Hall of India Pv1. Ltd
3	Organizational Behavior	Luthans Fred	McGraw Hill
4	A Guide to Cyber Laws & IT Act 2000 with Rules & Notification	Nandan Kamath	
5	Handbook of Cyber Laws	Vakul Sharma	Mc Millian
6	Cyber Cops, Cyber Criminals & Internet	Keith Merill & Deepti Chopra	IK Inter
Websites			
<ul style="list-style-type: none"> • www.media-studies.ca/articles/internet_law.htm • www.4shared.com/q/CCAD/1/Organizational%20Behaviour?recommended 			

OVERVIEW AND OBJECTIVES: With increasing technological and scientific advances, the efficient and effective planning and implementation of major projects, especially in hi-tech sectors, is becoming increasingly complex and critical. This course is aimed at providing both basic and some advanced exposure to PM, so as to enable the manager of tomorrow to successfully complete sophisticated projects within the constraints of capital, time, and other resources.

A. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time required for the Unit (Hours)
1.	Project Management Concepts	08
2.	Project Organization & Project Contracts	09
3.	Project Appraisal & Cost Estimation	08
4.	Project Planning & Scheduling	09
5.	Modification & Extensions of Network Models	07

B. DETAILED SYLLABUS

Unit	Unit Details
1.	Project Management Concepts <ul style="list-style-type: none"> Introduction, project characteristics, taxonomy of projects, project identification and formulation Establishing the project and goals Nature & context of project management; phases of PM, A framework for PM issues, PM as a conversion process, project environment & complexity. Organizing human resources, organizing systems & procedures for implementation. Project direction. Conclusion of Unit
2.	Project Organization & Project Contracts <ul style="list-style-type: none"> Introduction, functional organization, project organization, matrix organization, modified matrix organization, pure project organization, selection of project organization structure, project breakdown structures. Project contracts, types of contracts, types of payments to contractors. Conclusion of Unit
3.	Project Appraisal & Cost Estimation <ul style="list-style-type: none"> Introduction, technical appraisal, commercial appraisal, economic appraisal, financial appraisal, management appraisal, social cost/benefit analysis, project risk analysis. Cost analysis of the project, components of capital cost of a project, modern approach to project performance analysis. Conclusion of Unit
4.	Project Planning & Scheduling <ul style="list-style-type: none"> Introduction of Unit Introduction to PERT & CPM, planning and scheduling networks, time estimation, determination of critical path, CPM model, event slacks & floats, PERT model, expected time for activities, expected length of critical path, calculating the project length and variance. PERT & CPM cost accounting systems, lowest cost schedule, crashing of networks, linear programming formulation of event oriented networks, updating of networks, LOB technique. Conclusion of Unit
5.	Modification & Extensions of Network Models <ul style="list-style-type: none"> Introduction of Unit Complexity of project scheduling with limited resources, resource leveling of project schedules, resource allocation in project scheduling - heuristic solution. Precedence networking- examples with algorithm, decision networks, probabilistic networks. Computer aided project management- essential requirements of PM software, software packages for CPM. Enterprise- wide PM, using spread sheets for financial projections. Conclusion of Unit

C. RECOMMENDED STUDY MATERIAL:

Sr.No	Book	Author	Publication
a. Reference Books			
1.	Project Management, A Systems Approach –	H. Kerzner,	CBS Publishers
2.	A Management Guide to PERT/CPM -	Wiest , J. D. and F. K. Levy,	Prentice Hall
3.	Management by Network	S. Bhattacharya	Institution of Engg.
4.	PERT and CPM, Principles and Applications -	L. S. Srinath	East-West Press
5.	Project Management	Dr, A K Singh	Laxmi Publication
6.	Entrepreneurship Development and Management	Dr A.K.Singh	Laxmi Publication.
7.	Network Based Management System	O'Brien,	McGraw Hill
b. Websites			
<ul style="list-style-type: none"> • xa.yimg.com/kq • www.inf.ed.ac.uk/ • www.tlu.ee/imke/projectman/Lecture-notes.doc 			

OVERVIEW AND OBJECTIVES : To help the students appreciate the essential complementarily between ‘VALUES’ and ‘SKILLS’ to ensure sustained happiness and prosperity which are the core aspirations of all human beings. To highlight plausible implications of such a Holistic understanding in terms of ethical human conduct, trustful and mutually satisfying human behavior and mutually enriching interaction with Nature.

A. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time required for the Unit (Hours)
1.	Introduction to value education	07
2.	Understanding the harmony at various levels	08
3.	Implications of the right understanding	08
4.	IPR and Patents	08
5.	Copyrights and Trademarks	08

B. DETAILED SYLLABUS

Unit	Unit Details
1.	Introduction To Value Education <ul style="list-style-type: none"> • Introduction of Unit • Understanding Value Education • Self-Exploration as the Process for Value Education • The Basic Human Aspirations-Continuous Happiness and prosperity • The program to Fulfil Basic Human Aspirations • Conclusion of Unit
2.	Understanding The Harmony At Various Levels <ul style="list-style-type: none"> • Introduction of Unit • Understanding the Human Being as co-existence of self and body • Harmony in Self • Harmony with the body • Harmony in the Family • Harmony in the Society • Harmony in Nature • Harmony in Existence • Conclusion of Unit
3.	Implications of the right understanding <ul style="list-style-type: none"> • Introduction of Unit • Providing the Basis for Universal Human values and Ethical Human Conduct • Basis for the Holistic Alternative towards Universal Human Order • Professional Ethics in the Light of Right Understanding • Vision for Holistic Technologies, Production Systems and Management Models • Journey towards the Holistic Alternative- The Road Ahead • Conclusion of Unit
4.	IPR and Patents <ul style="list-style-type: none"> • Introduction to IPR: Nature and Enforcement, International Character of IPRs, Role of IPRs in Economic Development. • Patents: Introduction to Patents, Object of Patent Law, Inventions not Patentable, Obtaining Patents, Rights and Obligations of a Patentee. • Conclusion of Unit
5.	Copyrights and Trademarks <ul style="list-style-type: none"> • Introduction of Unit • Copyrights: Introduction to Copyrights, Subject – Matters of Copyright, Rights Conferred by Copyright, Infringement, Assignment and Licensing of Copyrights, Copyright Societies, International Copyright, Performers’ Rights. • Trademarks: Functions, Significance and Types of Trademarks, Distinctiveness and Deceptive Similarity, Registration Procedure, Trademark Registry, Grounds for Refusal of Registration of Trademarks, Concurrent Use, Character Merchandising. • Conclusion of Unit

C. RECOMMENDED STUDY MATERIAL

S. No	Book	Author	Publication
a. Reference Books			
1.	A Foundation Course in Human Values and Professional Ethics	R R Gaur, R Sangal, G P Bagaria	Excel Books Private Limited, New Delhi
2.	Human Values	Tripathi A.N.	New Age International (P) Ltd
3.	Limits to Growth – Club of Rome's report.	Donella H. Meadows, Dennis L. Meadows, Jorgen Randers, William W. Behrens III	Universe Books.
4.	Jeevan Vidya ek Parichay	A Nagraj	Divya Paht Sansthan, Amarkantak.
5.	Fundamentals of Ethics for Scientists & Engineers	EG Seebauer & Robert L. Berry	Oxford University Press
6.	Engineering Ethics (including Human Values)	M Govindrajan, S. Natrajan & V.S. Senthil Kumar	Eastern Economy Edition, Prentice Hall of India Ltd.
7.	Intellectual Property Law	Narayanan, P.	Eastern Law House (2007)
8.	Organizational Behavior	Robbins, S.P.	Prentice Hall of India (2007)
9.	Journal of Intellectual Property Rights		National Institute of Science Communication, CSIR
Websites / CDs, Movies and Documentaries			
<ul style="list-style-type: none"> • Value Education website, http://www.uptu.ac.in • Story of Stuff, http://www.storyofstuff.com • Al Gore, An Inconvenient Truth, Paramount Classics, USA • Charlie Chaplin, Modern Times, United Artists, USA • IIT Delhi, Modern Technology – the Untold Story • http://www.academia.edu/1749178/ Professional Ethics and Human Values 			

COURSE OVERVIEW AND OBJECTIVES:

Soft computing covers non-traditional technologies or approaches for solving hard real-world problems. Content of course, in accordance with meaning of its name, is as follow: Tolerance of imprecision and uncertainty as the main attributes of soft computing theories. Neural networks. Fuzzy logic. Genetic algorithms. Probabilistic reasoning. Rough sets. Chaos. Hybrid approaches (combinations of neural networks, fuzzy logic and genetic algorithms).

A. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time required for the Unit (Hours)
1	Introduction to Soft Computing and Genetic Algorithms	8
2	Neural Networks	6
3	Supervised Learning	8
4	Fuzzy Systems	8
5	Swarm Intelligence	6

B. DETAILED SYLLABUS

Unit	Unit Details
1.	Introduction to Soft Computing and Genetic Algorithms <ul style="list-style-type: none"> • Introduction - What is soft computing? Differences between soft computing and hard Computing, Soft Computing constituents, Methods in soft computing, Applications of Soft computing. • Introduction to Genetic Algorithms- Introduction to Genetic Algorithms (GA), Representation, • Operators in GA, Fitness function, population, building block hypothesis and schema theorem.; • Genetic algorithms operators- methods of selection, crossover and mutation, simple GA(SGA), other types of GA, generation gap, steady state GA, Applications of GA • Conclusion of Unit
2.	Neural Networks <ul style="list-style-type: none"> • Introduction of Unit • Concept, biological neural system, Evolution of neural network, McCulloch-Pitts neuron model, activation functions, feed forward networks, feedback networks, learning rules – Hebbian, Delta, Perceptron learning and Windrow-Hoff, winner-take-all. • Conclusion of Unit
3.	Supervised Learning <ul style="list-style-type: none"> • Introduction of Unit • Perceptron learning, single layer/multilayer perceptron, linear separability, hidden layers, back propagation algorithm, Radial Basis Function network; • Unsupervised learning - Kohonen, SOM, Counter-propagation, ART, Reinforcement learning, adaptive resonance architecture, applications of neural networks to pattern recognition systems such as character recognition, face recognition, application of neural networks in image processing. • Conclusion of Unit
4.	Fuzzy Systems <ul style="list-style-type: none"> • Introduction of Unit • Basic definition and terminology, set-theoretic operations, Fuzzy Sets, Operations on Fuzzy Sets, Fuzzy Relations, Membership Functions, Fuzzy Rules & Fuzzy Reasoning, Fuzzy Inference Systems, Fuzzy Expert Systems, Fuzzy Decision Making; Neuro-fuzzy modeling- Adaptive Neuro-Fuzzy Inference Systems, Coactive Neuro-Fuzzy Modeling, • Classification and Regression Trees, Data Clustering Algorithms, Rulebase Structure Identification and Neuro-Fuzzy Control, Applications of neuro-fuzzy modeling. • Conclusion of Unit
5.	Swarm Intelligence

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| | <ul style="list-style-type: none"> • Introduction of Unit • What is swarm intelligence? Various animal behavior which have been used as examples, ant colony optimization, swarm intelligence in bees, flocks of birds, shoals of fish, antbased routing, particle swarm optimization • Conclusion of Unit |
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C. RECOMMENDED STUDY MATERIAL:

Sr.No	Reference Book	Author	Publication
1	Principle of soft computing	S.N. Shivanandam	Wiley
2	Neuro-Fuzzy and Soft Computing	Jyh-Shing Roger Jang, Chuen-Tsai Sun, Eiji Mizutani	Prentice-Hall of India
3	Fuzzy Sets and Fuzzy Logic-Theory and Applications	George J. Klir and Bo Yuan	Prentice Hall
4	Neural Networks Algorithms, Applications, and Programming Techniques	James A. Freeman and David M. Skapura	Pearson Editions
5	An Introduction to Genetic Algorithm	Mitchell Melanie	Prentice Hall
6	Genetic Algorithms in Search, Optimization & Machine Learning	David E. Goldberg	Addison Wesley
Websites			
<ul style="list-style-type: none"> • www.slideshare.net/ankush281290/introduction-to-soft-computing • www.4shared.com/q/CCAD/1/soft%20computing?recommended • http://www.academia.edu/4981131/Fundamentals_of_Neural_Networks_Soft_Computing_Topics_Lectures_8_hours_Slides 			

PRACTICALS

Code: BCE05205

Core Java Lab

1.5 Credit [LTP : 0-0-3]

LIST OF EXPERIMENTS:

1.	To become familiar with classes that represents entities that can interact with the user.
2.	Demonstrating the use of methods of Math class and String class.
3.	To successfully write simple programs that involve if statements and loops.
4.	To gain practice in the use of Boolean operators like && and .
5.	To construct a class that represents a simple ATM (automatic teller machine).
6.	Write a new program called Options.java that will request that the user enter an integer and then will display the message .positive., .negative., or zero. if the value that was entered was greater than zero, less than zero, or equal to zero, respectively
7.	To demonstrate static variables and methods
8.	To demonstrate inheritance using super and this
9.	To demonstrate static variables and methods
10.	To demonstrate Exceptions
11.	Write a Java program for event handling.
12.	Write a Java program for multithreading.
13.	Write a Java program that allows the user to draw lines, rectangles and ovals.
14.	Write program for Java Applets.
15.	To demonstrate Labels and Buttons with proper events.

Code: BCE05206

Microprocessor Lab

1 Credit [LTP : 0-0-2]

LIST OF EXPERIMENTS:

1.	Study of 8085 and 8086 Microprocessor Kits.
2.	Write a program to add two 8-bit number using 8085. Write a program to add two 16-bit number using 8085.
3.	Write a program to subtract two 8-bit number using 8085. Write a program to subtract two 16-bit number using 8085.
4.	Find 1's complement of 8 bit number. Find 2's complement of 8 bit number
5.	Write a program to multiply two 8 bit numbers by repetitive addition method using 8085.
6.	Write a program to copy 12 bytes of data from source to destination using 8086.
7.	Write a program to find maximum and minimum from series using 8086.
8.	Write a program to sort series using bubble sort algorithm using 8085.
9.	Find Largest among an array of ten numbers (8 bit).
10.	Sum of series of 8 bit numbers.
11.	Write a program to control the operation of stepper motor using 8085/8086 microprocessors and 8255 PPI.
12.	Write a program to control speed of DC motor using 8085/8086 microprocessors and 8255 PPI.

Code: BCE05207	Computer Graphics Lab	1 Credit [LTP : 0-0-2]
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LIST OF EXPERIMENTS:

1.	Implementation of line generation using slope's method, DDA and Bresenham's algorithms.
2.	Implementation of circle generation using Mid-point method and Bresenham's algorithm.
3.	Implementation of ellipse generation using Mid-point method.
4.	Implementation of polygon filling using Flood-fill, Boundary-fill and Scan-line algorithms.
5.	Implementation of 2D transformation: Translation, Scaling, Rotation, Mirror Reflection and Shearing (write a menu driven program).
6.	Implementation of Line Clipping using Cohen-Sutherland algorithm and Bisection Method.
7.	Implementation of Polygon Clipping using Sutherland-Hodgman algorithm.
8.	Implementation of 3D geometric transformations: Translation, Scalind and rotation.
9.	Implementation of Curve generation using Interpolation methods.
10.	Implementation of Curve generation using B-spline and Bezier curves.
11.	Implementation of any one of Back face removal algorithms such as Depth-Buffer algorithm, Painter's algorithm, Warnock's algorithm, Scan-line algorithm)

Code: BCE05208	Mini Project using CASE Tool	1.5 Credit [LTP : 0-0-3]
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LIST OF EXPERIMENTS:

The Student will undertake one project over the academic semester, which will involve the analysis, design of a system or sub system in the area of Information Technology and Computer Science and Engineering.

The project will be undertaken preferably by a group of at most 3 students who will jointly work and implement the project. The group will select a project with approval of the guide (Staff member assigned).

The aim of project is to allow the students to study the feasibility of the project, planning project, studying existing systems, tools available to implement the project and state of art software testing procedures and technology with use of case tools. Every group must submit the preliminary project report of the project by the end of first month from the commencement of the first term. It should have the following details in it.

1. Introduction
2. Aims and objectives
3. Literature survey
4. Problem statement
5. Project Requirements
6. Proposed architecture/ high level design of the project
7. Project plan

A panel of examiner will evaluate the viability of project and allot the term work marks.
The group will submit at the end of semester II.

- a) The Workable project.
- b) Project report in the form of bound journal complete in all respect – 1 copy for the Institute and 1 copy of each student in the group for certification.

The term work will be assessed by the examiners in consultation with the guide. Oral examination will be based on the project work completed by the candidates. Preliminary report work completed by candidates. Preliminary report must also be presented during the oral examination.

The project report contains the details.

1. Problem definition and requirement specification acceptance test procedure (ATP).
2. System definition - requirement Analysis.
3. System design.
4. System implementation – code documentation – dataflow diagrams/ algorithm, protocols used.
5. Test result and procedure – test report as per ATP.
6. Platform choice use.
7. Conclusions.
8. Appendix tools used, References.

Documentation will use UML approach with presentation, Category, Use Case, Class Diagrams etc.

Code: BCE05409	INDUSTRIAL TRAINING SEMINAR - I	0.5 Credits [LTP : 0-0-1]
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OBJECTIVE: To expose engineering students to technology development at workplaces and appraise them regarding shop-floor problems. To provide practical experience in solving open ended problems in real work setting so as to cause transfer of college based knowledge and skills to solve practical problems and thereby develop confidence in the students in the analysis, synthesis and evaluation of practical problems leading to creative thinking.

- At the end of the Fifth semester each student would undergo Industrial Training in an industry/ Professional organization / Research Laboratory with the prior approval of the Head of Department and Training & Placement Officer, and shall be required to submit a **written typed report** along with a certificate from the organization and present a PPT based on the training.
- This period shall include orientation and preparation for the said Training incorporated in the curriculum after Fifth Semester.
- The report of the Training shall be evaluated during VI Semester by a Board of Examiners to be appointed by the Faculty Coordinator-Training Seminar who will award the grades.

CODE: BCE05610	Discipline and Talent Enrichment Programme (TEP)-V	2 CREDIT
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OVERVIEW AND OBJECTIVES: The objective of Discipline and TEP is to provide students with the opportunities to enhance job fetching skills and at the same time to cultivate the student's personal interests and hobbies while maintaining the good disciplinary environment in the University. TEP is integrated into the curriculum for holistic development of students through active participation in various activities falling in Technical and non-technical categories.

Discipline and Talent Enrichment Programme (TEP)-V shall be evaluated on the basis of its sub constituent programmes, as a complete **Two credit** course. It shall be counted in calculation of SGPA but it is not a backlog subject. However, the attendance of these classes shall be recorded and accounted in the total attendance.

Activities included in this category in the FIFTH Semester are as follows:

Code	Activity	Hours	Credits
BCE05610.1	Non Syllabus Project (NSP)	2	2

BCE05610.2	Online Eligibility Exam(OLE)	1	
BCE05610.3 /10.4	Library / Internet	1	
BCE05610.5	Extra-Curricular Activities	-	

PROFESSIONAL CERTIFICATE COURSE (PCC)

COURSE OVERVIEW AND OBJECTIVES: The student of one particular class/section will get an opportunity to pursue one Certificate course from the basket of technical certificate courses offered as per the scheme of curriculum. The selection of course will be done on the basis of market requirements and decided by the HOD of the concern Department.

The Objectives of the course are:

- To impart training of latest trends and technology commonly employed in current scenario.
- To certify the students as expert after successful completion of the training.

After successful completion of PCC course a certificate may be issued to all the students at the end of the semester along with the grade sheet with marking their performance in the 5 point scale as excellent (5 point), very good (4 point), Good (3 point), average (2 point) and below average (1 point). This course may be considered as a non credit course and therefore will not be the part of mark sheet/grade sheet. However, the attendance of these classes shall be recorded and accounted in the total attendance. The evaluation of this course shall be made two times i.e. After Mid-Term exam and End Term Exam.

Areas for Professional Certificate Course (PCC)

1.	Training on Android platform for application development
2.	Training on iOS platform for application development
3.	Training on MATLAB, may be one, two, three phases covering Simulink, Neural Networks, Fuzzy Systems, Digital Image Processing toolboxes.
4.	Training on Network Simulator tools
5.	Training on CloudSim tools
6.	Training on GridSim tools
7.	Training on Hadoop
8.	Training on IBM tools may be in different phases including z/ OS, DB2, Rational Rose, Mainframe data management, Monitoring & Diagnostics tools for JAVA etc.
9.	Training on Data Storage System- Data Center
10.	Training on design and development of hardware software co-design applications
11.	Training on Wireless Network design and implementation using Zigbee.
12.	Training on API design and Development using JAVA.
13.	Conduction of CCNA, MCSE etc. Cisco Technology based courses.



POORNIMA
UNIVERSITY

SCHOOL OF ENGINEERING & TECHNOLOGY

B.Tech.

Batch 2013-17

Department of Computer Engineering



**Detailed Syllabus
for Sixth Semester**

POORNIMA UNIVERSITY

B.Tech. Computer Engineering (Batch 2013-17)

Teaching Scheme for Sixth Semester (IIIYr.)

Subject Code	Subject Name	Teaching Scheme (Hrs per wk)			Credits
		Lec	Tut	Prac	
A. Core Subjects (Theory)					
BCE06101	Design and analysis of Algorithms	4	-	-	4
BCE06102	Computer Networks	4	1	-	4.5
BCE06103	Programming in Advance Java	4	1	-	4.5
BCE06104	Artificial intelligence	3	-	-	3
B. Departmental Elective (Theory): ANY ONE					
BCE06105	Digital Signal Processing	4	-	-	4
BCE06106	Computer Hardware Design				
BCE06107	Information Theory and Coding				
BCE06108	Mobile Computing				
C. Open Elective (Theory)					
	Nil	-	-	-	-
D. Practicals					
BCE06209	Advanced java Lab	-	-	3	1.5
BCE06210	DAA Lab using C/C++	-	-	2	1
BCE06211	Computer Network lab	-	-	2	1
BCE06212	Human Skills-III	-	-	2	1
E. Project/Seminar					
BCE06413	Industrial Training Seminar - II	-	-	2	1
F. Programmes / Activities					
BCE06615 Discipline and Talent Enrichment Programme (TEP) - VI					2
BCE06614.1	Online Eligibility Exam (OLE)	1	-	-	-
BCE06614.2/14.3	Library / Internet	1	-	-	-
BCE06614.4	Aptitude / Campus Recruitment Training	2	-	-	-
BCE06614.5	Extra Curricular Activities	-	-	-	-
	Total	23	2	11	27.5
	Total Teaching Hours	36			

Professional Certificate Course (PCC) shall be offered to all students equivalent to **3 hrs/wk**. This course is Non credit Certificate course and therefore is not a part of marksheets / gradesheet.

CORE THEORY SUBJECTS

Code: BCE06101

Design and Analysis of Algorithm

4 Credits [LTP: 4-0-0]

COURSE OVERVIEW AND OBJECTIVES:

The design and analysis of algorithms is the core subject matter of Computer Science. Given a problem, we want to (a) find an algorithm to solve the problem, (b) prove that the algorithm solves the problem correctly, (c) prove that we cannot solve the problem any faster, and (d) implement the algorithm. Designing an algorithm for a computational problem involves knowledge of the problem domain, a thorough knowledge of the data structures that are available and suitable and no small measure of creativity. This course concentrates on the above problems, studying useful algorithmic design techniques, and methods for analyzing algorithms.

A. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time required for the Unit (Hours)
1.	Introduction	10
2.	Dynamic Programming, Branch and Bound	10
3.	Pattern Matching and Assignment Problem	8
4.	Randomized Algorithm	10
5.	NP -Hard and NP-Complete Problem	10

B. DETAILED SYLLABUS

Unit	Unit Details
1.	Introduction <ul style="list-style-type: none"> • Introduction to Unit • Algorithm Specification, Algorithm Complexity and Order Notations. • Divide and Conquer Method: General Method, Binary Search, Merge Sort, Quick sort and strassen's matrix multiplication algorithm. • Greedy Method: General method, Knapsack Problem, Job Sequencing, Optimal Merge Patterns and Minimal Spanning Trees: Prim's, Kruskal's algorithm. • Conclusion of Unit
2.	Dynamic Programming, Branch and Bound <ul style="list-style-type: none"> • Introduction to Unit • Dynamic Programming: Matrix Chain Multiplication, Longest Common Subsequence and 0/1 Knapsack Problem, All pairs shortest path, Flow shop scheduling • Branch And Bound: Traveling Salesman Problem, Bounding, FIFO Branch and Bound, • Backtracking: The 8- queens problem, Hamiltonian cycles • Comparison between Dynamic , Backtracking and Branch Bound • Conclusion of Unit
3.	Pattern Matching and Assignment Problem <ul style="list-style-type: none"> • Introduction to Unit • Pattern Matching Algorithms: Naïve and Rabin Karp string matching algorithms, KMP Matcher and Boyer Moore Algorithms. • Assignment Problems: Formulation of Assignment and Quadratic Assignment Problem • Conclusion of Unit
4.	Randomized Algorithm <ul style="list-style-type: none"> • Introduction to Unit • Probabilistic Analysis & Randomized Algorithms: Las Vegas algorithm, Monte Carlo algorithm, The Hiring Problem, Indicator Random Variables, Randomized Algorithms, Birthday Paradox Method • Maximum Flow: Flow networks, Ford Fulkerson Method • Conclusion of Unit

5.	NP -Hard and NP-Complete Problem
	<ul style="list-style-type: none"> • Introduction to Unit • Basic concepts , NP hard graph problems – CDP, NCDP, CNDP, DHC, TSP, AOG • NP Hard Scheduling Problems: Scheduling Identical processors, Flow Shop and Job Shop scheduling • NP Hard Code Generation Problems – Core generation with Common Sub expressions, Implementing parallel assignment instructions • Approximation Algorithms - Vertex Cover, Set Cover Problem, Randomization and linear programming, Subset-sum problem, The Travelling –Salesman Problem • Introduction to some NPC Problem • Conclusion of Unit

C. RECOMMENDED STUDY MATERIAL:

Sr.No	Reference Book	Author	Edition	Publication
1	Fundamentals of Computer Algorithms	E.Horowitz & S.Sahani	Latest	Galgotia Publications
2	Introduction to Algorithms	Corman, Leiserson & Rivest	Latest	MIT Press
3	Algorithm Analysis & Design	Goodrich, Tamassia	Latest	Wiley
4	Computer Algorithms, Introduction to Design and Analysis	Sara Basse, A.V. Geider	Latest	

Websites
<ul style="list-style-type: none"> • http://engineeringppt.net/category/algorithm-analysis-and-design/ • http://forum.jntuworld.com/showthread.php?16500-Design-and-Analysis-of-Algorithms-(DAA)-Study-Materials-Notes • www.cse.iitd.ernet.in/~ssen/csl356/root.pdf

COURSE OVERVIEW AND OBJECTIVES:

This course is to provide students with an overview of the concepts and fundamentals of data communication and computer networks. Topics to be covered include: data communication concepts and techniques in a layered network architecture, communications switching and routing, types of communication, network congestion, network topologies, network configuration and management, network model components, layered network models (OSI reference model, TCP/IP networking architecture) and their protocols, various Types of networks (LAN, MAN, WAN and Wireless networks) and their protocols.

A. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time required for the Unit (Hours)
1.	Introduction	8
2.	Application Layer	10
3.	Transport Layer	10
4.	Network Layer	10
5.	Data Link Layer and Point to Point Protocol	10

B. DETAILED SYLLABUS

Unit	Unit Details
1.	Introduction <ul style="list-style-type: none"> • Introduction to Unit • Internet: Nuts and Bolts, Service Description, Protocol • The Network Edge : End System, Clients and Servers, Connectionless and Connection-oriented Services • The Network Core : Circuit and Packet Switching • Access Network and Physical Media • Delay and Loss in Packet-Switched Networks • Protocol Layers and Their Service Models • Interconnections: Hub, Switch, Bridge, Router, Gateway , Link Layer Switches • Conclusion of Unit
2.	Application Layer <ul style="list-style-type: none"> • Introduction to Unit • Principles of Network Applications • The Web and HTTP • File Transfer Protocol • Electronic Mail in the Internet • DNS –The Internet’s Directory Service • Conclusion of Unit
3.	Transport Layer <ul style="list-style-type: none"> • Introduction to Unit • Introduction and Transport Layer Service • Multiplexing and Demultiplexing • Connectionless Transport: UDP • Principles of Reliable Data Transfer • Connection-Oriented Transport: TCP • Principles of Congestion Control • TCP Congestion Control • Conclusion of Unit
4.	Network Layer <ul style="list-style-type: none"> • Introduction to Unit • Forwarding and Routing, Network Service Models • Virtual Circuit, Datagram Networks

	<ul style="list-style-type: none"> Router – Input Ports, Switching Fabric, Output Ports The Internet Protocol (IP) – Datagram Format, IPv4 Addressing, ICMP, IPv6 Routing Algorithms – Link-State, Distance-Vector and Hierarchical Routing Routing in the Internet – RIP, OSPF, BGP Broadcast and Multicast Routing Conclusion of Unit
5.	Data Link Layer and Point to Point Protocol

C. RECOMMENDED STUDY MATERIAL:

Sr.No	Reference Book	Author	Edition	Publication
1	Computer Networking	Kurose, Rose	Latest	Pearson
2	Computer Networks	Tanenbaum, A.S	Latest	Prentice Hall (2003)
3	Data communication and Networking	Forouzan, B.A	Latest	McGraw Hill (2006)
4	Computer Network	Leon And Garcia TMH	Latest	

Websites
<ul style="list-style-type: none"> www.cs.ucr.edu/~weesan/cs6/03_basic_computer_network.ppt www.slideshare.net/SantoshDelwar1/computer-network-ppt http://search.4shared.com/q/1/Computer%20networks?view=ls

COURSE OVERVIEW AND OBJECTIVES:

The objective of this course is to provide the student with an expertise in Java Programming. This course includes Java Fundamentals, Network Programming in Java, and Applications in Distributed Environment, Multi-Tier Application Development, and Enterprise Applications. After successful completion of the course, the student should be able to develop, design and maintain web-based enterprise applications effectively.

A. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time required for the Unit (Hours)
1.	Java Fundamentals	8
2.	Network Programming In Java	10
3.	Applications In Distributed Environment	10
4.	Multi-Tier Application Development	10
5.	Enterprise Applications	10

B. DETAILED SYLLABUS

Unit	Unit Details
1.	Java Fundamentals <ul style="list-style-type: none"> • Introduction to Unit • Java I/O streaming • Filter and Pipe streams • JAR File Creation • Threading • Inter Thread Communication Synchronization • Swing(JFC) • Conclusion of Unit
2.	Network Programming In Java <ul style="list-style-type: none"> • Introduction to Unit • Sockets – secure sockets, custom sockets, One Way Communication, Two Way Communication • UDP datagram • Multicast sockets URL Classes • Reading Data from the server, writing data • Configuring the connection Reading the header • Telnet application • Java Messaging services(JMS) • Conclusion of Unit
3.	Applications In Distributed Environment <ul style="list-style-type: none"> • Introduction to Unit • Remote method Invocation • Activation models • RMI custom sockets • Object Serialization • RMI – IIOP implementation • Naming Services • CORBA – IDL technology • CORBA programming Models • RMI and CORBA Comparison • Conclusion of Unit

4.	Multi-Tier Application Development
	<ul style="list-style-type: none"> • Introduction to Unit • Server side programming • Servlets, ServletContext, ServletConfig, Session Techniques, Filter • Java Server Pages, Implicitly Object, JSP, Action , Custom Tag • Applet to Applet communication, Applet to Servlet communication • JDBC, Connection Statement, Prepared Statement, ResultSet, Data Base Meta Data • Applications on databases • Multimedia streaming applications • Java Media Framework(JMF) • Conclusion of Unit
5.	Enterprise Applications
	<ul style="list-style-type: none"> • Introduction to Unit • Server Side Component Architecture • Introduction to J2EE • Session Beans • Entity Beans • Persistent Entity Beans. • Conclusion of Unit

C. RECOMMENDED STUDY MATERIAL:

Sr.No	Reference Book	Author	Edition	Publication
1	Java Network Programming	Elliott Rusty Harold		O'Reilly publishers
2	Mastering Enterprise Java Beans	Ed Roman		John Wiley & Sons Inc
3	Core Java 2 Advanced Features	Hortsman & Cornell		PearsonEducation
4	Complete Reference: Java2	Patrick Naughton		Tata McGraw-Hill
Websites				
<ul style="list-style-type: none"> • www.slideshare.net/Vidyacenter/advance-java-360348 • andrei.clubcisco.ro/cursuri/.../TA_advanced_Java_JDBC-Eran_Toch.ppt • http://search.4shared.com/q/CCAD/1/advance%20java • www.authorstream.com/Presentation/hansraj36-476329-advance-java 				

COURSE OVERVIEW AND OBJECTIVES:

This course introduces the basic concepts and techniques of Artificial Intelligence. Artificial intelligence is the sub area of computer science devoted to creating software and hardware to get computers to do things that would be considered intelligent as if people did them. Artificial intelligence has had an active and exciting history and is now a reasonably mature area of computer science.

A. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time required for the Unit (Hours)
1.	Introduction	10
2.	Game playing	10
3.	Natural Language Processing & Learning	8
4.	Expert System, Fuzzy Logic and Genetic Algorithm	10
5.	Prolog	10

B. DETAILED SYLLABUS

Unit	Unit Details
1.	Introduction <ul style="list-style-type: none"> • Introduction to Unit • History of AI • Intelligent agents • Structure of agents and its functions • Problem Solving by Searching - Agents, Formulating Problems, Example Problems, Searching for Solutions, Search Strategies, Avoiding Repeated States, Constraints Satisfaction Search. • Informed Search Methods – Best-First Search, Heuristic Functions, Memory Bounded Search, Interactive Improvement Algorithms • Conclusion of Unit
2.	Game playing <ul style="list-style-type: none"> • Introduction to Unit • Game Playing – Introduction Games as Search Problems, Perfect Decision in Two-Person Games, Imperfect Decisions, Alpha-Beta Pruning, Games that include an element of chance, State-of-the-Art Game Programs. • Knowledge Based Agent, The Wumpus World Environment, Representation, Reasoning and Logic, Propositional Logic. • Properties of Good and Bad Knowledge Bases, Knowledge Engineering, Electronic Circuits Domain, and General Ontology. • Inference Rules involving Quantifiers, An example Proof, Generalized Modus Ponens, Forward and Backward Chaining. • Conclusion of Unit
3.	Natural Language Processing & Learning <ul style="list-style-type: none"> • Introduction to Unit • Natural Language Processing – Syntactic Processing, Semantic Analysis, Discourse and Pragmatic Processing, Statistical Natural Language Processing, Spell Checking. • Learning – Rote Learning, Learning in Problem Solving, Explanation-based Learning, Formal Learning Theory, Neural Net Learning and Genetic Learning. • Machine Learning – Perceptron, Checker Playing example, Learning Automata, Genetic Algorithm, Intelligent Editors. • Conclusion of Unit
4.	Expert System, Fuzzy Logic and Genetic Algorithm <ul style="list-style-type: none"> • Introduction to Unit • Expert System – Representing and using domain knowledge, Expert System shells, Explanation, Knowledge Acquisition. • Perception and action – Real time search, perception, action, robot architectures. • Introduction to Fuzzy Logic Systems & Genetic Algorithm • Conclusion of Unit

5.	Prolog
	<ul style="list-style-type: none"> • Introduction to Unit • Converting English to Prolog facts and Rules • Goals, Prolog Terminology, Variables • Control Structures, Arithmetic Operators • Matching in Prolog, Backtracking, Cuts, Recursion • Lists, Dynamic Databases • Input / Output and Streams • Some Aspect Specific to LPA Prolog • Conclusion of Unit

C. RECOMMENDED STUDY MATERIAL:

Sr.No	Reference Book	Author	Edition	Publication
1	Artificial Intelligence: A Modern Approach	Stuart J. Russell and Peter Norvig	Latest	Pearson Education Asia
2	Artificial Intelligence	Elaine Rich, Kevin Knight and Shivashankar B.Nair	Latest	Tata McGraw-Hill
3	Artificial Intelligence and Intelligent System	N. P. Padhy	Latest	Oxford University Press
4	Introduction to Artificial Intelligence and Expert Systems	DAN W. Patterson	Latest	PHI
Websites				
	<ul style="list-style-type: none"> • www.ics.uci.edu/~smyth/courses/cs271/topic0_introduction.ppt • www.slideshare.net/.../artificial-intelligence-presentation-9383640 • http://search.4shared.com/q/CCAD/1/artificial%20intelligence?suggested • www.cse.iitd.ac.in/~saroj/AI/ai2013/L1.ppt 			

DEPARTMENT ELECTIVES

Code: BCE06105	Digital Signal Processing	4 Credits [LTP: 4-0-0]
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OBJECTIVE OF THE COURSE

The objective of the course in Digital signal processing is to provide the student with significant skills in general as well as advanced theories and methods for modification, analysis, detection and classification of analog and digital signals. Furthermore the objective is to give the student a broad knowledge of central issues regarding design, realization and test of analog and in particular digital signal processing systems consisting of hardware and/or software components. The specialization in signal processing makes it possible to study practical or theoretic fields, ranging from mathematics/signal theory over algorithmic design to development of instruments based on hardware and/or software for real time signal

A. OUTLINE OF THE COURSE

Unit No.	Title of the Unit	Time required for the Unit (Hours)
1.	Sampling	8
2.	Transform Analysis of LTI Systems	8
3.	Structures for Discrete-Time Systems-	8
4.	Filter Design Techniques	8
5.	Discrete Fourier Transforms (DFT)	8

B. DETAILED SYLLABUS

Unit	Unit Details
1.	Sampling <ul style="list-style-type: none"> • Introduction of Unit • Discrete time processing of Continuous-time signals • Continuous time processing of discrete-time signals • Changing the sampling rate using discrete-time Processing • Conclusion of Unit including real life applications
2.	Transform Analysis of LTI Systems <ul style="list-style-type: none"> • Introduction of Unit • Frequency response of LTI systems, • System functions for systems characterized by LCCD (Linear Constant Coefficient Difference) equations • All-pass system, Minimum-Phase systems, and linear systems with linear phase. • Conclusion of Unit
3.	Structures for Discrete-Time Systems <ul style="list-style-type: none"> • Introduction of Unit • Block diagram and signal flow graph representation of LCCD (LCCD – Linear Constant Coefficient Difference) equations • Basic structures for IIR and FIR systems • Transposed forms • Conclusion of Unit
4.	Filter Design Techniques <ul style="list-style-type: none"> • Introduction of Unit • Analog filter Design: Butterworth &Chebyshev. • IIR filter design by impulse invariance & Bilinear Transformation. • Design of FIR filters by Windowing: Rectangular, Hanning, Hamming & Kaiser • Conclusion of Unit
5.	Discrete Fourier transforms (DFT) <ul style="list-style-type: none"> • Introduction to DFT • Properties of the DFT, Linear Convolution using DFT. • Efficient computation of the DFT: Decimation-in-Time and Decimation-in frequency FFT Algorithms. • Processing of speech signals: Vocoders, linear predictive coders. • Conclusion of Unit including real life applications

C. RECOMMENDED STUDY MATERIAL:

Sr.No	Book	Author	Publication
1.	Digital Signal Processing	Sanjit K Mitra	TMH
2.	Digital Signal Processing	S.Salivahanan A Vallavaraj, C.Gnanapriya	TMH
3.	Digital Signal Processing: Principles, Algorithms And Applications	John G.Proakis, Dimitris G Manolakis	PHI
4.	Digital Signal Processing	A.V. Oppenheim And R.W. Schaffer	PHI
5.	Digital Signal Processing	Thomas J. Cavigchi	John Wiley & Sons
6.	Digital Signal Processing	Emmanuel Ifeachor, Barry Jervis	Pearson
7.	Digital Signal Processing	Engelberg, Shlomo	Springer
8.	Digital Signal Processing For Measurement	D Antona, Gabriele	New Age International

COURSE OVERVIEW AND OBJECTIVES:

To introduce students to theoretical and practical concepts relevant to the structure and design of modern digital computers. The course covers computer architecture from gate-level logic through processor design to multiprocessor and network issues. This course will make the student able to design the hardware components.

A. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time required for the Unit (Hours)
1.	Introduction, Computer Abstraction and Technology	7-8
2.	Data Representation, Manipulation and Addressing	7-8
3.	Basic Processor Design	7-8
4.	Sequential Logic Circuits and Pipelining	7-8
5.	Memory Hierarchies	7-8

B. DETAILED SYLLABUS

Unit	Unit Details
1.	Pc Hardware Overview <ul style="list-style-type: none"> Introduction to Unit Basic Parts of PC: Functional block diagram – system board – Microprocessor – Interrupts – DMA – SMPS – BIOS – POST sequence - System configuration – Memory – Mass storage – I/O interface standards. Bus Standards and Networking : ISA – PCI – SCSI – IDE – USB – comparative study and characteristics – Network Interface Cards – Cables and connectors - MODEM – AT command set. Conclusion of Unit
2.	Peripheral Devices & Storage Devices <ul style="list-style-type: none"> Introduction to Unit Peripheral Devices & Display Adapters: Functional descriptions of keyboard – mouse – printers – joystick – scanners – CGA – SVGA. Mass Storage Devices :Floppy disk and drive – Hard disk and drive – MFM and RLL recording standards – CD technology – DVD technology – pen drives – tape drives Conclusion of Unit
3.	Introduction to Computer Hardware Design <ul style="list-style-type: none"> Introduction to Unit Introduction to Computer Hardware Design Methodology: System design ,The Register Level,The Processor Level Architecture of a representative 32 bit processor: Levels of description ,Registers and Memory , Single Address Instructions ,Two Address Instructions ,Branch Instructions, Stacks and Subroutines , Shift and Miscellaneous Instructions System building blocks :Logic Elements ,Speed, Delay and Fanout in Logic Circuits ,Flip-flops and Register Memory ,Random Access Memory ,Direct Access Storage ,Sequential Access Storage , Read Only Memory Design Conventions: Register transfers ,Busing ,Inter System Busing ,Sequencing of control ,Electronic Realization of control unit ,The conditional transfer Conclusion of Unit
4.	Introduction to a Hardware Programming Language <ul style="list-style-type: none"> Introduction to Unit Introduction to a Hardware Programming Language (AHPL) :Operand Conventions ,AHPL Operators ,AHPL Modules ,AHPL Statements ,Using Combinational Logic Units ,Combinational Logic Unit Descriptions, Handling of Memory Arrays in AHPL ,A Timing refinement Machine Organization and hardware programs :Basic Organization Of RIC ,Register Transfers, Fetch and Address Cycles, Execute Cycles for Addressed Instructions, Register Only Instructions Branch commands, Special Purpose Instructions Hardware realizations Starting, Stopping And Resetting, Hardware Compilers Conclusion of Unit

5.	Micro Programmed Control Microprogramming
	<ul style="list-style-type: none"> • Introduction to Unit • Micro Programmed Control Microprogramming :Controlling the Micro program, A Micro programmable RIC ,Flags And Special Bits ,Micro coding ,An Assembly Language for Micro programs • High speed addition: Ripple- Carry Adder ,The Minimum Delay Adder ,The Carry Look-Ahead Principle ,Group Carry Look-Ahead, Section Carry Look-Ahead ,CL Unit Description of Look-Ahead , • Multiplication and division :Signed Multiplication ,Division • Floating Point arithmetic: Notation and Format ,Floating Point Addition and Subtraction ,Floating Point Multiplication and Division ,Hardware Organization Floating Point Arithmetic • Conclusion of Unit

C. RECOMMENDED STUDY MATERIAL:

Sr.No	Reference Book	Author	Edition	Publication
1	Indispensable PC Hardware Book	Hans Peter Messmer	Latest	Pearson Education
2	IBM PC and Clones	Govindarajulu	Latest	Tata McGraw Hill
3	Digital Systems Hardware Organization and Design	Hill and Peterson	Latest	John Wiley & Sons
Websites				
<ul style="list-style-type: none"> • opencourseware.kfupm.edu.sa/colleges/ccse/ics/ics233/files/2_Unit9.ppt • https://www.cis.upenn.edu/~milom/cis371-Spring13/ • http://search.4shared.com/q/1/computer%20hardware%20design?view=ls&suggested • ww2.it.nuigalway.ie/staff/.../CT213_ProcessorDesign_InstructionSet.ppt 				

COURSE OVERVIEW AND OBJECTIVES:

The participants will learn the basic concepts of information theory and coding including information, source coding, channel model, channel capacity, channel coding and so on. The main purpose of this course is to help students to complete the understanding of the wireless communication system with other advanced course in wireless communication.

A. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time required for the Unit (Hours)
1.	Introduction	10
2.	Data Coding	10
3.	Data Compression	8
4.	Linear Block Code	10
5.	Convolution Codes	10

B. DETAILED SYLLABUS

Unit	Unit Details
1.	Introduction <ul style="list-style-type: none"> Introduction to Unit Information entropy fundamentals: Information – entropy - properties of information and entropy - relation between information and probability - mutual and self-information - coding theory- code efficiency and redundancy - Shannon's theorem - construction of basic codes-Shannon and Fanon coding, Huffman coding – arithmetic coding. Conclusion of Unit
2.	Data Coding <ul style="list-style-type: none"> Introduction to Unit Data and Voice Coding: Lossless predictive - Run-length - Ziv-Lempel coding - voice coding - modulation - linear predictive coding - silence coding and sub-band coding. Conclusion of Unit
3.	Data Compression <ul style="list-style-type: none"> Introduction to Unit Image and video compression: Quantization - JPEG standards - motion compensation - MPEG-1 - MPEG-2 - MPEG-4 standards. Conclusion of Unit
4.	Linear Block Code <ul style="list-style-type: none"> Introduction to Unit Error Control Coding: Linear Block Codes for Error Correction - Cyclic Codes - Bose-Chaudhuri Hocquenghem codes Conclusion of Unit
5.	Convolution Codes <ul style="list-style-type: none"> Introduction to Unit Convolutional encoders of different rates Code Tree Trillis and state diagram Maximum Likelihood decoding of convolutional code Conclusion of Unit

C. RECOMMENDED STUDY MATERIAL:

Sr.No	Reference Book	Author	Edition	Publication
1	Information Theory and Coding	Nitin Mittal	Latest	
2	Information Coding Techniques	J. S. Chitode	Latest	Technical Publications
3	Information theory, coding and cryptography	Ranjan Bose	Latest	TMH

COURSE OVERVIEW AND OBJECTIVES:

Mobile and wireless computing technologies have opened up new possibilities in terms of where, when, and how information technology is used. The application domains of mobile computing span individual, organizational and societal contexts. The aim of this subject is to expose students to mobile computing from the perspectives of underlying technology, wireless environments, application design, and evaluation of the derived business benefits.

A. OUTLINE OF THE COURSE

Unit No.	Title of the unit	Time required for the Unit (Hours)
1.	Introduction	10
2.	Medium Access Control & Telecommunication Systems	10
3.	Mobile Network Layer & Transport Layer	10
4.	Wireless LAN	10
5.	Satellite System	8

B. DETAILED SYLLABUS

Unit	Unit Details
1.	Introduction <ul style="list-style-type: none"> • Introduction to Unit • A Simplifies Reference Model • Frequencies for Radio Transmission • Signals • Antennas • Signal Propagation • Multiplexing • Modulation • Spread Spectrum • Cellular System • Conclusion of Unit
2.	Medium Access Control & Telecommunication Systems <ul style="list-style-type: none"> • Introduction to Unit • Motivation for a Specialized MAC • SDMA • FDMA • TDMA • CDMA • Comparison of S/T/F CDMA • GSM • DECT • Conclusion of Unit
3.	Mobile Network Layer & Transport Layer <ul style="list-style-type: none"> • Introduction to Unit • Mobile IP • Dynamic Host Configuration Protocol • Mobile Adhoc Networks • Traditional TCP • Classical TCP Improvements • TCP over 2.5/3G wireless Networks • Conclusion of Unit
4.	Wireless LAN <ul style="list-style-type: none"> • Introduction to Unit • Bluetooth

	<ul style="list-style-type: none"> • Wireless Application Protocol(Version 1.x) • Conclusion of Unit
5.	Satellite System <ul style="list-style-type: none"> • Introduction to Unit • Applications • GEO • LEO • MEO • Routing • Localization • Handoff • Conclusion of Unit

C. RECOMMENDED STUDY MATERIAL:

Sr.No	Reference Book	Author	Edition	Publication
1	Mobile communications	Jochen Schiller	Latest	Pearson
2	Fundamentals of Mobile and Pervasive Computing	Frank Adelstein, Sandeep Gupta	Latest	TMH
3	Principles of mobile computing	Hansmann & Merk	Latest	Springer
4	Mobile IP	Charles Perkins	Latest	Addison Wesley
Websites				
<ul style="list-style-type: none"> • http://search.4shared.com/q/CCAD/1/mobile%20computing • www.slideshare.net/gauravkoriya1989/mobile-computing • www.cise.ufl.edu/~helal/classes/f10/notes/intro_to_mobile.ppt • http://forum.jntuworld.com/showthread.php?6087-Mobile-Computing-Notes-All-units-(Including-exercises) 				

PRACTICALS

Code: BCE06209

Advance Java Lab

1Credit [LTP: 0-0-2]

LIST OF EXPERIMENTS:

1.	Create a GUI based application which can demonstrate the use of JDBC for Database Connectivity.
2.	Write Java programs to demonstrate the use of various Layouts like Flow Layout, Border Layout, Grid layout, Grid bag layout and card layout
3.	Write a java program to simulate a scientific calculator.
4.	Write a java program to create simple chat application with Datagram Sockets and Datagram Packets.
5.	Write programs in Java using Servlets: <ul style="list-style-type: none">• To invoke servlets from HTML forms• To invoke servlets from Applets
6.	Write programs in Java to create three-tier applications using servlets <ul style="list-style-type: none">• for conducting on-line examination.• for displaying student mark list. Assume that student information is available in a database which has been stored in a database server.
7.	Create a web page with the following using HTML <ul style="list-style-type: none">i) To embed a map in a web pageii) To fix the hot spots in that mapiii) Show all the related information when the hot spots are clicked.
8.	Create a web page with the following. <ul style="list-style-type: none">i) Cascading style sheets.ii) Embedded style sheets.iii) Inline style sheets.iv) Use our college information for the web pages.
9.	Create a RMI based client-server application.
10.	Create user registration functionality for student using Servlet.
11.	Write a program that demonstrates the use of session management.
12.	Write a web application which demonstrates custom tag handling.
13.	Write a web application which create and use CMP entity bean.
14.	Develop a java mail application.

LIST OF EXPERIMENTS:

1.	N-queens problem using backtracking
2.	Optimal binary search tree
3.	Implement Knapsack using branch and bound
4.	Implement TSP using dynamic programming
5.	Prim's algorithm and Kruskal's algorithm
6.	Merge sort using divide and conquer
7.	Implement Quick sort using divide and conquer
8.	Find Minimum Cost Spanning Tree of a given undirected graph using Prim's algorithm. Find Minimum Cost Spanning Tree of a given undirected graph using Kruskal's algorithm
9.	Implement Horspool algorithm for String Matching and find the number of key comparisons in successful search and unsuccessful search.
10.	Construct the Open hash table. Find the number of key comparisons in successful search and unsuccessful search.
11.	Implement Travelling Salesperson Problem
12.	Implement N Queen's problem using Back Tracking.
13.	Implement Graph coloring using backtracking.
14.	Hamilton Cycle using backtracking.

LIST OF EXPERIMENTS:

1.	WAP to implement date and time display from local host to server using TCP WAP to write a client-server application for chat using TCP
2.	WAP to develop a DNS client server to resolve the given hostname
3.	WAP to write a client-server application for chat using UDP
4.	WAP to perform sliding window
5.	WAP to get the MAC or Physical address of the system using Address Resolution Protocol
6.	WAP to simulate the Implementing Routing Protocols using border gateway protocol(BGP)
7.	WAP to Implementation of Link state and distance vector routing algorithm.
8.	WAP to Implementation and study of stop and wait protocol
9.	WAP to Implementation and study of Go back-N and selective repeat protocols
10.	Study and installation of Qualnet with two Experiments.
11.	Study and installation of NS-3/Omnet++ with two Experiments.
12.	Study of Wireless Sensor Network with its applications.

OBJECTIVES:

- To develop different human skills among students.
- To enhance quality behavior.
- To increase Emotional Quotient by learning values.

Note: Practical sessions to be conducted for each Unit.

A. DETAILED SYLLABUS

Unit	Unit Details
1.	Understanding Self and Human Nature <ul style="list-style-type: none"> • Understanding self and others through Johari Window • Journey of self discovery • Analysis of strength and weakness • Goal settings to overcome weakness • Learning – Concepts, Principles of learning, learning through reinforcement, learning through feedbacks, learning by observations, learning through experience • Basics of Human Nature • Influence of Environment and Heredity • Concept of Attitude
2.	Communication and Individual Interaction Skills <ul style="list-style-type: none"> • Meaning- Four functions of communication - control, Motivation, Emotional expression, Information • Characteristics of communication • Written communication- preparation of Resume • Oral communication- Facing an Interview • Basic Interaction Skills- personal and interpersonal intrapersonal skills, • Concept, definition, meaning of skill- types of skills; conceptual, supervisory, technical, managerial and decision making skills • Group influence on Interaction skills
3.	New Skills in Management <ul style="list-style-type: none"> • Creative style – Emotional Intelligence (E.Q.) – Leadership skills, • work style- sales competencies, sports mental skills, conflict management, stress management, Team role skills critical thinking skills, computing skills
4.	Personality <ul style="list-style-type: none"> • Meaning- Aspects of personality, Development of personality: Erikson's eight life stages, Jung's Personality Theory, Traits influencing organizational behavior. • Locus of control • Problem solving styles
5.	Skills Development <ul style="list-style-type: none"> • Decision making skills, Methods used to develop decision making skills- In the basket, Business games, case studies • Interpersonal skills - Meaning, Methods Used to develop interpersonal skills - role playing, Behavior modeling, sensitivity Training, Transactions Analysis – structural • Insight

B. REFERENCE BOOKS

Sr. No	Book	Author	Publication
1.	Basic Managerial Skills For All	E.H. McGrath	Prentice Hall of India Ltd.
2.	Human Values for Managers	Chakraborty M.N. Mishra	
3.	Organizational Behavior through Indian Philosophy		Himalaya Publishing House
4.	Total Quality Management	S.D. Bagade	Himalaya Publishing House
5.	Organizational Behavior	Luthans Fred	
6.	Education to Human Values	Tilak Raj Bhardwaj	A Mittal Publication
7.	Personnel Management	Edwin Flippo	
8.	Industrial Psychology	Gosh P. & K & Ghorpade M.B	Himalaya, Mumbai 1999
9.	Organizational Behaviour	Newstrom J.Keith D	Tata McGraw Hill. New Delhi

10.	Organizational Behaviour	P.G. Aquinas	Excel Books. Delhi
11.	Applied Industrial/Organizational Psychology	Aamodt. M.G.	Wadsworth / Thomson Learning
12.	Organizational Behaviour	Hellriegel.D. & Slocum J.W	South Western / Thomson Learning
13.	Understanding Organizational Behaviour	Pareek. U.,	Oxford University Press. New Delhi
14.	Concepts, Controversies and Applications	Robbins S.P., (11th Edition)	Prentice Hall of India Ltd.

Code: BCE06413

INDUSTRIAL TRAINING SEMINAR - II

1 Credit [LTP : 0-0-2]

OBJECTIVE: To expose engineering students to technology development at workplaces and appraise them regarding shop-floor problems. To provide practical experience in solving open ended problems in real work setting so as to cause transfer of college based knowledge and skills to solve practical problems and thereby develop confidence in the students in the analysis, synthesis and evaluation of practical problems leading to creative thinking.

- At the end of the Fifth semester each student would undergo Industrial Training in an industry/ Professional organization / Research Laboratory with the prior approval of the Head of Department and Training & Placement Officer,
- Students shall be required to submit a **written typed report** along with a certificate from the organization and present a PPT based on the training.
- Students shall be required to give the presentations in the allotted period about the training attended after 5th Semester.
- The presentation and report of the Training shall be evaluated during this period (=2 hrs per week) by Board of Examiners to be appointed by the Faculty Coordinator-Training Seminar who will award the grades.

CODE: BCE06614

Discipline and Talent Enrichment Programme (TEP)-VI

2 CREDIT

OVERVIEW AND OBJECTIVES: The objective of Discipline and TEP is to provide students with the opportunities to enhance job fetching skills and at the same time to cultivate the student's personal interests and hobbies while maintaining the good disciplinary environment in the University. TEP is integrated into the curriculum for holistic development of students through active participation in various activities falling in Technical and non-technical categories.

Discipline and Talent Enrichment Programme (TEP)-VI shall be evaluated on the basis of its sub constituent programmes, as a complete **Two credit** course. It shall be counted in calculation of SGPA but it is not a backlog subject. However, the attendance of these classes shall be recorded and accounted in the total attendance.

Activities included in this category in the SIXTH Semester are as follows:

Code	Activity	Hours	Credits
BCE06614.1	Online Eligibility Exam(OLE)	1	2
BCE03614.2/14.3	Library / Internet	1	
BCE03614.4	Aptitude / Campus Recruitment Training	2	
BCE03614.5	Extra-Curricular Activities	-	

PROFESSIONAL CERTIFICATE COURSE (PCC)

COURSE OVERVIEW AND OBJECTIVES: The student of one particular class/section will get an opportunity to pursue one Certificate course from the basket of technical certificate courses offered as per the scheme of curriculum. The selection of course will be done on the basis of market requirements and decided by the HOD of the concern Department.

The Objectives of the course are:

- To impart training of latest trends and technology commonly employed in current scenario.
- To certify the students as expert after successful completion of the training.

After successful completion of PCC course a certificate may be issued to all the students at the end of the semester along with the grade sheet with marking their performance in the 5 point scale as excellent (5 point), very good (4 point), Good (3 point), average (2 point) and below average (1 point). This course may be considered as a non credit course and therefore will not be the part of mark sheet/grade sheet. However, the attendance of these classes shall be recorded and accounted in the total attendance. The evaluation of this course shall be made two times i.e. After Mid-Term exam and End Term Exam.

Areas for Professional Certificate Course (PCC)

1.	Training on Android platform for application development
2.	Training on iOS platform for application development
3.	Training on MATLAB, may be one, two, three phases covering Simulink, Neural Networks, Fuzzy Systems, Digital Image Processing toolboxes.
4.	Training on Network Simulator tools
5.	Training on CloudSim tools
6.	Training on GridSim tools
7.	Training on Hadoop
8.	Training on IBM tools may be in different phases including z/ OS, DB2, Rational Rose, Mainframe data management, Monitoring & Diagnostics tools for JAVA etc.
9.	Training on Data Storage System- Data Center
10.	Training on design and development of hardware software co-design applications
11.	Training on Wireless Network design and implementation using Zigbee.
12.	Training on API design and Development using JAVA.
13.	Conduction of CCNA, MCSE etc. Cisco Technology based courses.
