

B.TECH. – INFORMATION TECHNOLOGY CURRICULUM & SYLLABI

Regulation 2012

(Applicable to candidates admitted in the academic year 2012-2013 onwards)



K.S.R. College of Engineering

(Autonomous)

K.S.R. Kalvi Nagar, Tiruchengode – 637 215

Namakkal (Dt), Tamilnadu, India

Email : info@ksrce.ac.in

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K.S.R.COLLEGE OF ENGINEERING: TIRUCHENGODE - 637215
(Autonomous)

DEPARTMENT OF INFORMATION TECHNOLOGY
VISION AND MISSION OF THE INSTITUTION

VISION OF THE INSTITUTION

- ❖ We envision to achieve status as an excellent educational institution in the global knowledge hub, making self-learners, experts, ethical and responsible engineers, technologists, scientists, managers, administrators and entrepreneurs who will significantly contribute to research and environment friendly sustainable growth of the nation and the world.

MISSION OF THE INSTITUTION

- ❖ To inculcate in the students self-learning abilities that enable them to become competitive and considerate engineers, technologists, scientists, managers, administrators and entrepreneurs by diligently imparting the best of education, nurturing environmental and social needs.
- ❖ To foster and maintain a mutually beneficial partnership with global industries and institutions through knowledge sharing, collaborative research and innovation

VISION AND MISSION OF THE DEPARTMENT

VISION OF THE DEPARTMENT

- ❖ To produce excellent and competent software professional, researchers and responsible engineers, who can significantly contribute to environment friendly societal industry through quality education.

MISSION OF THE DEPARTMENT

- ❖ To make the students competitive and efficient in technical field through technological transformations' in Information Technology, by providing them advanced curriculum, infrastructure and nurturing human values.
- ❖ To provide an excellent forum for higher studies that leads to careers as Computer and IT professionals in the widely diversified domains of industry, government and academia.

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)


PEO1. Incorporate with necessary background in science and engineering fundamentals to analyze and solve IT problems and to prepare them for skilled manpower in the field of IT for subsequently generation.

PEO2.Enhance in various latest programming languages, technologies, software development process and communication technology.

PEO3.Attain successful career in industry through effective communication skills, team spirit, learning ethical responsibilities, attitude and adapt to emerging technologies.


K.S.R.COLLEGE OF ENGINEERING: TIRUCHENGODE - 637215**(Autonomous)****DEPARTMENT OF INFORMATION TECHNOLOGY****VISION AND MISSION OF THE INSTITUTION****PROGRAMME OUTCOMES (POs) AND PROGRAMME SPECIFIC OUTCOMES (PSOs)**

Programme Outcomes (POs)	
PO1	Engineering Graduates will be able to: Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO2	Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO3	Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO4	Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO5	Modern tool usage: Create, select, and apply appropriate techniques, resource, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
PO6	The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO7	Environmental and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO8	Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO9	Individual and team work: Function effectively as an individual, and as a member or leader diverse teams, and in multidisciplinary settings.
PO10	Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO11	Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO12	Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadcast context of technological change.
PSO1	Research Culture: Analyze a problem, design algorithm, identify and define the computing requirements appropriate to its solution and implement the same.
PSO2	Core Values: Contribute core universal values and social good in the community.
Programme Specific Outcomes (PSOs)	
Research Culture: Analyze a problem, design algorithm, identify and define the computing requirements appropriate to its solution and implement the same.	
Core Values: Contribute core universal values and social good in the community.	


		K.S.R. COLLEGE OF ENGINEERING (Autonomous) (Approved by AICTE & Affiliated to Anna University) K.S.R. Kalvi Nagar, Tiruchengode – 637 215				CURRICULUM UG R - 2012	
Department		Information Technology					
Programme		B. TECH. - Information Technology					
SEMESTER - I							
Sl. No.	Course Code	Course Name	Hours/Week			Credit	
			L	T	P		
THEORY							
1.	12HS1101	Technical English – I (Common To All Branches)	3	0	0	3	
2.	12MA1102	Engineering Mathematics – I (Common To All Branches)	3	1	0	4	
3.	12PH1103	Engineering Physics – I (Common To All Branches)	3	0	0	3	
4.	12CY1104	Engineering Chemistry (Common To All Branches)	3	0	0	3	
5.	12CS1105	Fundamentals of Computing and Programming (Common To All Branches)	3	0	0	3	
6.	12GE2106	Basics of Civil and Mechanical Engineering (Common To CS, EC, EE & IT)	4	0	0	4	
PRACTICAL							
7.		Physics and Chemistry Laboratory - I * (Common To All Branches)	-	-	3	-	
8.	12CS1110	Computer Practices Laboratory – I (Common To All Branches)	0	0	3	2	
9.	12GE1111	Engineering Practices Laboratory (Common To CE, CS, EC, EE & IT)	0	0	3	2	
10.	12HR1112	Career Development Skills – I (Common To All Branches)	0	2	0	1	
Total Credits						25	

* Laboratory Examination only in the II Semester


SEMESTER - II							
Sl. No.	Course Code	Course Name	Hours/Week			Credit	
			L	T	P	C	
THEORY							
1.	12HS1201	Technical English – II (Common To All Branches)	3	0	0	3	
2.	12MA1202	Engineering Mathematics – II (Common To All Branches)	3	1	0	4	
3.	12PH1203	Engineering Physics - II (Common To All Branches)	3	0	0	3	
4.	12CY1204	Environmental Science and Engineering (Common To All Branches)	3	0	0	3	
5.	12AU2205	Engineering Graphics (Common To CS, EC, EE & IT)	1	3	0	4	
6.	12IT3206	Programming and Data Structures	4	0	0	4	
PRACTICAL							
7.	12GE1210	Physics and Chemistry Laboratory – II (Common To All Branches)	0	0	3	2	
8.	12CS1211	Computer Practices Laboratory – II (Common To All Branches)	0	0	3	2	
9.	12IT3212	Programming and Data Structures Laboratory	0	0	3	2	
10.	12HR1213	Career Development Skills – II (Common To All Branches)	0	2	0	1	
Total Credits						28	

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Department		Information Technology					
Programme		B. TECH. - Information Technology					
SEMESTER - III							
Sl. No.	Course Code	Course Name	Hours/Week			Credit	
			L	T	P		
THEORY							
1.	12MA2301	Engineering Mathematics – III (Common To AU,CE, EC,EE,IT & ME)	3	1	0	4	
2.	12EC2322	Electric Circuits and Electron Devices (Common to CS & IT)	3	1	0	4	
3.	12EC2323	Digital Principles and System Design (Common to CS & IT)	3	0	0	3	
4.	12CS2304	Computer Organization and Architecture (Common to CS & IT)	3	0	0	3	
5.	12IT3305	Database Technology	3	0	0	3	
6.	12IT3306	Object Oriented Programming	3	0	0	3	
PRACTICAL							
7.	12IT3310	Database Technology Laboratory	0	0	3	2	
8.	12EC3351	Digital Laboratory	0	0	3	2	
9.	12IT3312	Object Oriented Programming Laboratory	0	0	3	2	
10.	12HR1313	Career Development Skills – III (Common To All Branches)	0	2	0	1	
Total Credits						27	

SEMESTER - IV						
Sl. No.	Course Code	Course Name	Hours/Week			Credit
			L	T	P	C
THEORY						
1.	12IT3401	Advanced Data Structures and Algorithm	3	0	0	3
2.	12MA3402	Discrete Structure and Automata Theory	3	1	0	4
3.	12EC2423	Microprocessors and Microcontrollers (Common to CS & IT)	3	0	0	3
4.	12IT2444	Software Engineering (Common to CS, EC & IT)	3	0	0	3
5.	12CS2445	Operating Systems (Common to CS,EC & IT)	3	0	0	3
6.	12IT3406	Java Programming	3	0	0	3
PRACTICAL						
7.	12EC2410	Microprocessors and Microcontrollers Laboratory (Common to CS & IT)	0	0	3	2
8.	12CS2411	Operating System Laboratory (Common to CS & IT)	0	0	3	2
9.	12IT3412	Java Programming Laboratory	0	0	3	2
10.	12HR1413	Career Development Skills – IV (Common To All Branches)	0	2	0	1
Total Credits						26

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Department		Information Technology					
Programme		B. TECH. - Information Technology					
SEMESTER - V							
Sl. No.	Course Code	Course Name	Hours/Week			Credit	
			L	T	P	C	
THEORY							
1.	12MA2501	Probabllity and Queuing Theory (Common to CS & IT)	3	1	0	4	
2.	12IT2502	Object Oriented Analysis and Design (Common to CS & IT)	3	0	0	3	
3.	12CS2503	Computer Networks (Common to CS & IT)	3	0	0	3	
4.	12EC3524	Digital Signal Processing	3	1	0	4	
5.	12EC3525	Principles of Communication	3	0	0	3	
6.	12IT3506	Design and Analysis of Algorithms	3	1	0	4	
PRACTICAL							
7.	12CS2510	Computer Networks Laboratory (Common to CS & IT)	0	0	3	2	
8.	12IT3511	Object Oriented Analysis and Design Laboratory	0	0	3	2	
9.	12IT3512	Design and Analysis of Algorithms Laboratory	0	0	3	2	
10.	12HR1513	Career Development Skills – V (Common To All Branches)	0	2	0	1	
Total Credits						28	

SEMESTER - VI						
Sl. No.	Course Code	Course Name	Hours/Week			Credit
			L	T	P	C
THEORY						
1.	12IT3601	Web Technology	3	0	0	3
2.	12IT3602	Distributed Component and Enterprise System	3	1	0	4
3.	12IT3603	Principles of Compiler Design	3	0	0	3
4.	12IT3604	Management Information System	3	0	0	3
5.	12IT3605	Graphics and Multimedia Systems	3	0	0	3
6.		Elective I	3	0	0	3
PRACTICAL						
7.	12IT3610	Web Technology Laboratory	0	0	3	2
8.	12IT3611	Principles of Compiler Design Laboratory	0	0	3	2
9.	12IT3612	Graphics and Multimedia Systems Laboratory	0	0	3	2
10.	12IT3613	Comprehension	0	2	0	1
Total Credits						26

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Department		Information Technology					
Programme		B. TECH. - Information Technology					
SEMESTER - VII							
Sl. No.	Course Code	Course Name	Hours/Week			Credit	
			L	T	P	C	
THEORY							
1.	12HS1701	Professional Ethics (Common to All Branches)	3	0	0	3	
2.	12EC3702	Embedded System Design (Common to EC & IT)	3	0	0	3	
3.	12IT3703	Data Mining and Data Warehousing	3	0	0	3	
4.	12IT3704	Network Design and Security Management	3	0	0	3	
5.		Elective II	3	0	0	3	
6.		Elective III	3	0	0	3	
PRACTICAL							
7.	12IT3710	Data Mining and Data Warehousing Laboratory	0	0	3	2	
8.	12IT3711	Network Design Laboratory	0	0	3	2	
Total Credits						22	

SEMESTER - VIII						
Sl. No.	Course Code	Course Name	Hours/Week			Credit
			L	T	P	C
THEORY						
1.	12IT3801	Mobile Computing	3	0	0	3
2.		Elective IV	3	0	0	3
3.		Elective V	3	0	0	3
PRACTICAL						
4.	12IT3810	Project	0	0	12	6
Total Credits						15

**K.S.R. COLLEGE OF ENGINEERING (Autonomous)**(Approved by AICTE & Affiliated to Anna University)
K.S.R. Kalvi Nagar, Tiruchengode – 637 215**CURRICULUM**
UG
R - 2012


Department	Information Technology
Programme	B. TECH. - Information Technology

List of Electives**ELECTIVE – I (SEMESTER – VI)**

Sl. No.	Course Code	Course Name	Hours/Week			Credit
			L	T	P	C
THEORY						
1.	12IT4601	Cryptography and Network Security	3	0	0	3
2.	12CS4642	C# and .Net Framework (Common to CS & IT)	3	0	0	3
3.	12CS4603	Component Based Technology (Common to CS & IT)	3	0	0	3
4.	12IT4604	Visual Programming	3	0	0	3
5.	12IT4605	Free/Open Source Software	3	0	0	3
6.	12IT4606	User Interface Design	3	0	0	3
7.	12IT4607	Communication Switching Techniques	3	0	0	3

ELECTIVE – II & III (SEMESTER – VII)

Sl. No.	Course Code	Course Name	Hours/Week			Credit
			L	T	P	C
THEORY						
1.	12EC4741	Digital Image Processing (Common to CS, EC & IT)	3	0	0	3
2.	12IT4702	Enterprise Resource Planning (Common to CS & IT)	3	0	0	3
3.	12IT4703	Software Practice and Testing	3	0	0	3
4.	12CS4704	Knowledge Based Decision Support System (Common to CS & IT)	3	0	0	3
5.	12CS4705	Artificial Intelligence (Common to CS & IT)	3	0	0	3
6.	12IT4706	Electronic Commerce (Common to CS & IT)	3	0	0	3
7.	12CS4707	Grid Computing (Common to CS & IT)	3	0	0	3
8.	12CS4708	Soft Computing (Common to CS & IT)	3	0	0	3
9.	12IT4709	Advanced Database Technology (Common to CS & IT)	3	0	0	3
10.	12IT4710	Bio-Informatics	3	0	0	3
11.	12IT4711	Information Security	3	0	0	3
12.	12IT4712	Software Agent	3	0	0	3

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Department		Information Technology					
Programme		B. TECH. - Information Technology					
ELECTIVE – IV & V (SEMESTER – VIII)							
Sl. No.	Course Code	Course Name	Hours/ Week			Credit	
			L	T	P	C	
THEORY							
1.	12IT4841	Cloud Computing (Common to CS & IT)	3	0	0	3	
2.	12CS4802	Green Computing (Common to CS & IT)	3	0	0	3	
3.	12CS4803	Nano Computing (Common to CS & IT)	3	0	0	3	
4.	12IT4804	Software Quality Management	3	0	0	3	
5.	12IT4805	Indian Constitution and Society	3	0	0	3	
6.	12IT4807	Intellectual Property Rights	3	0	0	3	
7.	12CS4808	Natural Language Processing (Common to CS & IT)	3	0	0	3	
8.	12CS4809	Ethical Hacking (Common to CS & IT)	3	0	0	3	
9.	12IT4810	Distributed Systems	3	0	0	3	
10.	12IT4811	Speech Processing	3	0	0	3	
11.	12IT4812	Software Requirement Management	3	0	0	3	
12.	12IT4813	Ad hoc and Sensor Networks	3	0	0	3	
13.	12IT4814	Big Data Analytics	3	0	0	3	
14.	12HS4821	Total Quality Management (Common to AU, CE, CS, EE, IT & ME)	3	0	0	3	


Chairman (BoS)

Dr. G. Singaravel
Professor & Head
 Department of Information Technology
 K.S.R. College of Engineering (Autonomous)
 Tiruchengode - 637 215
 Namakkal (Dt), Tamilnadu, India.




PRINCIPAL,
K.S.R. COLLEGE OF ENGINEERING,
TIRUCHENGODE - 637 209

K.S.R. COLLEGE OF ENGINEERING (Autonomous)

SEMESTER – I**TECHNICAL ENGLISH – I**

(Common To All Branches)

12HS1101

L	T	P	C
3	0	0	3

Objective(s): To encourage students to actively involve in participative learning of English and to help them acquire Communication Skills through improvement of LSRW skills

UNIT – I LANGUAGE FOCUS**10 Hrs**

General and Technical Vocabulary - Parts of Speech - Changing from one form to another - Compound Nouns - Numerical Adjectives - Prefix Suffix - Tenses - British And American Vocabulary - Kinds of Sentences - Question Pattern - 'Wh' Question - Yes/No Question.

UNIT – II LANGUAGE FOCUS**10 Hrs**

Articles - Tense - Active, Passive and Impersonal Passive voice - Gerunds and Infinitives, Cause and Effect, Purpose and Function - Linking Devices (Comparison, Contrast, Additive and Sequential Relation) - Homonyms - Aux. Verbs - One Line Definition.

UNIT – III READING**07 Hrs**

Skimming - Scanning for Specific Information - Inference - Context Based Meaning - Statistical Interpretation - Graphic Forms / Flow Charts - Tabular Column - Spelling and Punctuation.

UNIT – IV WRITING**11 Hrs**

Description of Objects - Checklist - Need Based Correspondence (requisition for joining hostel, bonafide certificate, permission for Industrial Visit, to attend a program, etc), Making Complaints - Letter of Invitation - Permission Letter - Pictorial representations based on Information - Tables, Flow Chart, etc - Hints Development.

UNIT – V LISTENING**07 Hrs**

Listening to News - Understand and Present (Problems) - Critical Analysis - Implications - Listening to Dialogues - Listening to Telephonic Conversation.

Total Hours: 45**Text Book:**

1. Division of Humanities and Social Sciences Anna University, Chennai. English for Engineers and Technologists (Vols. I & II combined edition) Orient Longmans Rept. (2008).

Reference:

1. Dr. S. Sumant, Technical English I, Tata McGraw Hill. Chennai (2012).

K.S.R. COLLEGE OF ENGINEERING (Autonomous)

SEMESTER – I**ENGINEERING MATHEMATICS – I**

(Common To All Branches)

L T P C

12MA1102

3 1 0 4

Objective(s): On completion of the course, the students are expected, to apply advanced matrix knowledge to engineering problems, to expose the concept of three dimensional analytical geometry, to improve their ability in solving geometrical applications of differential calculus problems, to equip themselves familiar with the functions of several variables, to understand double and triple integrations and enable them to handle integrals of higher orders.

UNIT – I MATRICES**12 Hrs**

Characteristic equation – Eigen values and eigen vectors of a real matrix – Properties of eigen values and eigen vectors (without proof) – Cayley-Hamilton theorem (statement only) and its applications – Orthogonal transformation of a symmetric matrix to diagonal form – Nature of Quadratic form – Reduction of quadratic form to canonical form by orthogonal transformation.

UNIT – II THREE DIMENSIONAL ANALYTICAL GEOMETR**12 Hrs**

Direction cosines and ratios – Angle between two lines – Equation of a straight line – Coplanar lines – Shortest distance between skew lines – Equation of a plane – Equation of a sphere – Plane section of a sphere – Tangent Plane – Orthogonal spheres.

UNIT – III DIFFERENTIAL CALCULUS**12 Hrs**

Curvature in Cartesian co-ordinates – radius of curvature – Centre of curvature and Circle of curvature – Involute and Evolute – Envelopes – Properties of envelopes and evolutes – Evolute as envelope of normals.

UNIT – IV FUNCTIONS OF SEVERAL VARIABLES**12 Hrs**

Partial derivatives – Euler's theorem for homogenous functions – Total derivatives – differentiation of implicit functions – Jacobians – Taylor's expansion – Maxima and Minima – Method of Lagrangian multipliers

UNIT – V MULTIPLE INTEGRALS**12 Hrs**

Double integration – Cartesian and polar coordinates – Change of order of integration – Change of variables between Cartesian and polar coordinates – Triple integration in Cartesian co-ordinates – Area as double integral – Volume as triple integral.

L = 45 T = 15 Total Hours: 60

Text Book :

1. Ravish R Singh and Mukul Bhatt, Engineering Mathematics - I, Third Edition, Mcgraw Hill Publications, New Delhi (2012)

References :

1. Grewal B.S, Higher Engineering Mathematics, Tata Mcgraw Hill Publishing Company, New Delhi (2007).
2. Erwin Kreyszig, Advanced Engineering Mathematics, 7th Edition, Wiley India, (2007).
3. Bali N. P and Manish Goyal, Text book of Engineering Mathematics I & II, Third edition, Laxmi Publications(p) Ltd.(2008).

K.S.R. COLLEGE OF ENGINEERING (Autonomous)

SEMESTER – I**ENGINEERING PHYSICS – I**

(Common To All Branches)

L	T	P	C
3	0	0	3

12PH1103**Objective(s):** On completion of the course, the student will be able to:

- Understand the fundamentals of Physics that have a direct application in the field of Engineering
- Compute and analyze various problems related to Engineering Physics.
- Understand the properties, production of Ultrasonic waves and their application in non-destructive testing and Sonogram.
- Understand the basic configuration of Laser, different types of lasers and their industrial applications
- Know the principle behind the fiber optic communication and the applications of optical fiber in sensors.
- Know the basic equations of Quantum mechanics and different types of Electron microscopes.

UNIT – I ACOUSTICS**09 Hrs**

Introduction – Classification of sound – Characteristics of musical sound – Loudness – Weber – Fechner law – Decibel – Absorption coefficient – Reverberation – Reverberation time – Sabine's formula: growth & decay (derivation) – Factors affecting acoustics of buildings (reverberation time, loudness, focusing, echo, echelon effect, resonance and noise) and their remedies

UNIT – II ULTRASONICS**09 Hrs**

Introduction – Production – magnetostriction effect - magnetostriction generator - piezoelectric effect - piezoelectric generator-Detection of ultrasonic waves – properties – Cavitations - Velocity measurement – acoustic grating - Industrial applications –drilling, welding, soldering and cleaning – SONAR - Non Destructive Testing – pulse echo system through transmission and reflection modes -A,B and C –scan displays, Medical applications – Sonograms.

UNIT – III LASERS AND APPLICATIONS**09 Hrs**

Introduction – Principle of Spontaneous emission and stimulated emission- Population inversion, pumping - Einstein's A and B coefficients (derivation). Types of lasers – He - Ne, CO₂, Nd-YAG, Semiconductor lasers (homojunction & heterojunction) – Qualitative Industrial Applications - Lasers in welding, heat treatment, cutting – Medical applications - Holography (construction & reconstruction).

UNIT – IV FIBER OPTICS & APPLICATIONS**09 Hrs**

Principle and propagation of light in optical fibers – Numerical aperture and Acceptance angle (derivation) - Types of optical fibers (material, refractive index, mode) – Double crucible technique of fiber drawing - Splicing, Loss in optical fiber – attenuation, dispersion, bending –Fiber optical communication system (Block diagram) – Light sources - Detectors - Fiber optic sensors – temperature & displacement -Endoscope.

UNIT – V QUANTUM PHYSICS**09 Hrs**

Black body radiation – Planck's theory (derivation) – Deduction of Wien's displacement law and Rayleigh – Jeans' Law from Planck's theory – Compton effect - Theory and experimental verification – Matter waves – Schrödinger's wave equation – Time independent and time dependent equations – Physical significance of wave function – Particle in a one dimensional box - Electron microscope – Scanning electron microscope - Transmission electron microscope

Total Hours: 45**Text Books:**

1. Dr.G.Senthil Kumar, Engineering Physics – I VRB Publishers Pvt Ltd, (2009).
2. M.N. Avadhanulu and P.G.Kshirsagar, A Text Book of Engineering Physics, S. Chand & Co, New Delhi (2005).

References:

1. Dr. P. Mani, Engineering Physics, Dhanam Publications, Chennai (2007).
2. Brij Lal and Subramaniam, Text Book of Sound, S. Chand & Co Ltd, New Delhi (2005)
3. Dr. P. Mani, Engineering Physics – I, Dhanam Publications, Chennai, (2012).
4. S. Selladurai, Engineering Physics-I, PHI Learning Pvt, Ltd., New Delhi, (2010).
5. Dr.S.Muthukumaran, G.Balaji and S.Masilamani, Engineering Physics- I, Sri Krishna HI—Tech Publishing company Pvt. Ltd. (2010).

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**SEMESTER – I****ENGINEERING CHEMISTRY**

(Common To All Branches)

L T P C

12CY1104

3 0 0 3

Objective(s): The student should be conversant with the principles of water characterization and treatment of water for potable and industrial purposes, polymer chemistry and engineering applications of polymers, corrosion and its control, non-conventional energy sources and energy storage devices and chemistry of fuels.

UNIT – I WATER TREATMENT**09 Hrs**

Characteristics – Alkalinity – types of alkalinity and determination; Hardness – units, types and estimation by EDTA method (problems); Boiler feed water – requirements, disadvantages of using hard water in boilers, internal conditioning and external conditioning – zeolite process and demineralization process; Domestic water treatment; Desalination – Reverse Osmosis and Electrodialysis.

UNIT – II POLYMERS AND COMPOSITES**09 Hrs**

Polymers – definition; Polymerization – types – addition and condensation polymerization – free radical polymerization mechanism; Plastics – classification, preparation, properties and uses of bakelite, polycarbonate, polyurethane, nylon-6,6, PET; Compounding and Fabrication of Polymers – Compression and Injection moulding; Rubber – vulcanization of rubber, synthetic rubbers – butylrubber and SBR; Composites – definition, types, polymer matrix composites – FRP only.

UNIT – III CHEMISTRY OF CORROSION AND ITS CONTROL**09 Hrs**

Introduction – Electrochemical cells – reversible and irreversible cells; Electrochemical series – significance; Corrosion – chemical corrosion – Pilling-Bedworth rule, electrochemical corrosion – mechanism, galvanic corrosion and differential aeration corrosion; Factors influencing corrosion; Corrosion control – cathodic protection methods, corrosion inhibitors and protective coatings – preliminary treatment, Paints – constituents and functions; Metallic coatings – Electroplating (Au) and Electroless plating (Ni).

UNIT – IV NON-CONVENTIONAL ENERGY SOURCES AND STORAGE DEVICES**09 Hrs**

Energy resources – growing energy needs; Nuclear energy – fission and fusion reactions; Light water nuclear reactor for power generation and breeder reactor; Solar energy conversion – solar cells; Wind energy; Fuel cells – hydrogen – oxygen fuel cell; Batteries – alkaline batteries, lead-acid, nickel-cadmium and lithium batteries.

UNIT – V FUELS AND COMBUSTION**09 Hrs**

Fuels – calorific value, gross and net calorific values (problems); Coal – proximate and ultimate analyses; Metallurgical coke – manufacture by Otto-Hoffmann method; Petrol – fractional distillation, cracking-types; Synthetic petrol – Bergius and Fischer Tropsch process; Knocking – octane number and cetane number; Flue gas analysis – Orsat gas apparatus; Theoretical air for combustion (problems).

Total Hours: 45**Text Books:**

1. P.C. Jain and Monica Jain, Engineering Chemistry, Dhanpat Rai Pub. Co., New Delhi, 15th Edition (2009).
2. S.S.Dara, A Text book of Engineering Chemistry, S.Chand & Co.Ltd., New Delhi (2005).

References:

1. B. Sivasankar, Engineering Chemistry, Tata McGraw-Hill Pub. Co. Ltd., New Delhi (2008).
2. B.K. Sharma, Engineering Chemistry, Krishna Prakasan Media (P) Ltd., Meerut (2001).
3. N. Krishnamurthy, P. Vallinayagam and D. Madhavan, Engineering Chemistry, PHI Learning Private Ltd, New Delhi (2009).

K.S.R. COLLEGE OF ENGINEERING (Autonomous)

SEMESTER – I**FUNDAMENTALS OF COMPUTING AND PROGRAMMING**

(Common To All Branches)

L	T	P	C
3	0	0	3

12CS1105

Objective(s): To equip students with comprehensive knowledge of computer fundamentals and C programming so that they can develop programs on their own for various applications.

UNIT – I INTRODUCTION TO COMPUTERS**09 Hrs**

Introduction – Characteristics of Computers – Evolution of Computers – Generations of Computers – Classification of Computers – Application of Computers – Components of Computer System and Specifications – Number Systems: Natural Numbers – Integers – Decimal – Binary – Octal – Hexadecimal – Conversion of one number system to other number system – BCD – Excess 3 – Gray Code – Alphanumeric Codes – 1's and 2's Complements

UNIT – II COMPUTER SOFTWARE AND PROBLEM SOLVING**09 Hrs**

Computer Software – Categories of Software – Software Development Steps – Internet Evolution – Basic Internet Terms – Types of Internet Connection – Internet Services – Program Development Lifecycle – Algorithm – Flow Charts – Pseudo code – Programming Languages

UNIT – III INTRODUCTION TO C**09 Hrs**

Introduction to C – Structure of C Program – programming Rules – Executing the program – Declaration – Character Set – Delimiters – Keywords – Identifiers – Constants – Data Types – Variables : Definition – Declaration – Initialization – Type Conversion – Constant and Volatile – Operators and Expressions – Input and Output in C – Decision Making Statements - Branching and Loop Control Statements – Storage Classes

UNIT – IV ARRAYS, FUNCTIONS AND STRUCTURES**09 Hrs**

Arrays: Introduction – Definition – Types – Functions – Introduction – Declaration and Prototype – Types – Call by Value – Call by Reference – Recursive Function – Working with Strings and Standard Functions – Structures and Unions : Introduction – Features – Declaration and Initialization – Structure within Structure – Array of Structure – Structure and Function – Enumerated Data Type – Union.

UNIT – V POINTERS AND FILES**09 Hrs**

Pointers: Introduction – Features – Declaration – Arithmetic Operations – Array of Pointers – Pointers to Functions – Pointer to Structures – Pointer to Pointer – Void Pointer – Files: Introduction – Types – Steps for File Operation – File I/O – Command Line Arguments – The Preprocessor Directives.

Total Hours: 45**Text Books :**

1. Ashok.N.Kamthane, Computer Programming, Pearson Education – India, (2008).
2. B.L. Juneja and A. Seth, Computer Fundamentals and C Programming, Cengage Learning India, (2012).

References :

1. Pradip Dey, Manas Ghosh, Programming in C, Oxford University Press (2007).
2. Byron Gottfried, Programming with C, 2nd Edition, TMH publications, (2006).
3. Brian W.Kernighan and Dennis M.Ritchie, The C Programming Language, Pearson Education Inc., (2005).
4. Alexis Leon, Mathews Leon, Introduction to Computers, Leon Techworld, (2009).

K.S.R. COLLEGE OF ENGINEERING (Autonomous)

SEMESTER – I**BASICS OF CIVIL AND MECHANICAL ENGINEERING**

(Common To CS, EE, EC & IT)

L	T	P	C
4	0	0	4

12GE2106

Objective(s) Basic civil and Mechanical Engineering is a foundation for Civil and Mechanical Engineering disciplines. This course is designed to enable the students to acquire fundamental knowledge in these two disciplines

UNIT – I SURVEYING AND CIVIL ENGINEERING MATERIALS 15 Hrs

Surveying: Objects – Types – Classification – Principles – Measurements of Distances – Angles – Leveling – Determination of Areas – Illustrative Examples. Civil Engineering Materials: Bricks – Stones – Sand – Cement – Concrete – Steel Sections.

UNIT – II BUILDING COMPONENTS AND STRUCTURES 15 Hrs

Foundations: Types, Bearing Capacity – Requirement of Good Foundations- Superstructure – Types of Bridges and Dams - Brick Masonry – Stone Masonry – Beams – Columns – Lintels – Roofing – Flooring – Plastering – Mechanics – Internal and External Forces – Stress – Strain – Elasticity.

UNIT – III POWER PLANT ENGINEERING 10 Hrs

Introduction, Classification of Power Plants – Working principle of steam, Gas, Diesel, Hydro-electric and Nuclear Power plants – Merits and Demerits – Pumps and turbines – working principle of Reciprocating pumps (single acting and double acting) – Centrifugal Pump.

UNIT – IV I C ENGINES 10 Hrs

Internal combustion engines as automobile power plant – Working principle of Petrol and Diesel Engines – Four stroke and two stroke cycles – Comparison of four stroke and two stroke engines.

UNIT – V REFRIGERATION AND AIR CONDITIONING SYSTEM 10 Hrs

Terminology of Refrigeration and Air Conditioning. Principle of vapour compression and absorption system – Layout of typical domestic refrigerator – Window and Split type room Air conditioner.

Total Hours: 60**Text Books:**

1. Ramesh Babu, Basic Civil and Mechanical Engineering, VRB Publishers (2011).
2. G.Shanmugam and M.S.Palanichamy, Basic Civil and Mechanical Engineering, TMH Publishing Co., New Delhi (1996).

References:

1. S.Seetharaman, Basic Civil Engineering, Anuradha Agencies (2005).
2. S.Ramamrutham, Basic Civil Engineering, Dhanpat Rai Publishing Co. (P) Ltd. (1999).
3. K. Venugopal and V. Prahu Raja, Basic Mechanical Engineering, Anuradha Publishers, Kumbakonam, (2000).
4. S.R.J. Shantha Kumar, Basic Mechanical Engineering, Hi-tech Publications, Mayiladuthurai, (2000).

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**SEMESTER – I****ENGINEERING DRAWING**

(Common To AU, CE & ME)

L T P C

1 3 0 4

12ME2106

Objective(s): To develop students' graphic skill for communication of concepts, ideas and design of engineering products and expose them to existing national standards related to technical drawings.

UNIT – I PLANE CURVES AND ORTHOGRAPHIC PROJECTION 15 Hrs

Introduction on drafting instruments, BIS conventions and specifications, Lettering and Dimensions – Conics – Construction of ellipse, Parabola and hyperbola by eccentricity method – Construction of cycloid – construction of involutes– Drawing of tangents and normal to the above curves. Representation of Three Dimensional objects – General principles of orthographic projection – First angle projection.

UNIT – II PROJECTION OF POINTS, LINES AND PLANE SURFACES 15 Hrs

Projection of points and straight lines located in the first quadrant – Determination of true lengths and true inclinations – Projection of polygonal surface and circular lamina inclined to any one reference plane.

UNIT – III PROJECTION OF SOLIDS 15 Hrs

Projection of simple solids like prisms, pyramids, cylinder and cone when the axis is inclined to one reference plane by change of position method.

UNIT – IV SECTION OF SOLIDS AND DEVELOPMENT OF SURFACES 15 Hrs

Sectioning of above solids in simple vertical position by cutting planes inclined to one reference plane and perpendicular to the other – Obtaining true shape of section. Development of lateral surfaces of simple and truncated solids – Prisms, pyramids, cylinders and cones.

UNIT – V ISOMETRIC AND PERSPECTIVE PROJECTIONS 15 Hrs

Principles of isometric projection – isometric scale – isometric projections of simple solids, truncated prisms, pyramids, cylinders and cones. Perspective projection of prisms, pyramids and cylinders by visual ray method.

Total Hours: 75**Text Books:**

1. K. V. Natarajan, A text book of Engineering Graphics, Dhanalakshmi Publishers, Chennai (2006).
2. M.S. Kumar, Engineering Graphics, D.D. Publications, (2007).

References:

1. Venugopal & V. Prabhu Raja, Engineering Graphics, New Age International (P)Limited (2008).
2. N.D. Bhatt, Engineering Drawing, Charotar Publishing House, 46th Edition, (2003).
3. B. Shah and B.C. Rana, Engineering Drawing, Pearson Education (2005).
4. K. R. Gopalakrishna, Engineering Drawing, (Vol.I & II), Subhas Publications (1998).
5. Basant Agarwal and C.M. Agarwal, Engineering Drawing, Tata McGraw Hill Publishing Company Limited, New Delhi, (2008).

K.S.R. COLLEGE OF ENGINEERING (Autonomous)

SEMESTER – I

PHYSICS AND CHEMISTRY LABORATORY

(Common To All Branches)

12GE1210

L	T	P	C
0	0	3	-

Objective(s): To gain practical knowledge in the following experiments

List of Experiments in Physics Laboratory

1. Determination of wavelength of laser using grating and angle of divergence of the laser beam
2. Determination of acceptance angle and numerical aperture of an optical fiber
3. Determination of thickness of the material by air – wedge method
4. Determination of velocity of Ultrasonic waves and compressibility using ultrasonic interferometer
5. Determination of wavelength of mercury spectrum by Spectrometer grating
6. Determination of thermal conductivity of a bad conductor by Lee's disc method

List of Experiments in Chemistry Laboratory

1. Estimation of Hardness in Water by EDTA Method
2. Estimation of Copper in Brass by EDTA Method
3. Estimation of Dissolved Oxygen (DO) in Water by Winkler's Method
4. Estimation of Chloride in Water Sample by Argentometry
5. Estimation of Alkalinity of Water Sample
6. Determination of Molecular Weight and Degree of Polymerization using Viscometry

Total Hours: 45

References:

1. Dr.G.Senthilkumar, Physics Lab manual, VRB Publications Pvt. Ltd.,(2006).
2. J.B. Yadav , Advanced Practical Physical Chemistry, GOEL Publishing House.
3. Gurdeep Raj, Advanced Practical Inorganic Chemistry, GOEL Publishing House.

Note: A Minimum of FIVE experiments shall be offered in each Laboratory
Laboratory classes on alternate weeks for Physics and Chemistry

K.S.R. COLLEGE OF ENGINEERING (Autonomous)

SEMESTER – I

COMPUTER PRACTICES LABORATORY - I

(Common To All Branches)

12CS1110

L	T	P	C
0	0	3	2

Objective(s): To gain practical knowledge in the following experiments.

LIST OF EXPERIMENTS

1. Study Experiment

- Hardware Specification and PC Assembly
- Getting connected to Internet

2. Word processing

- Documentation Creation, Text Manipulation with Scientific Notation
- Table Creation, Table Formatting and Conversion
- Mail Merge
- Flow Chart Preparation.

3. Spread Sheet

- Charts – Bar Chart, Pie Chart, Line Chart, X,Y – Chart
- Object Inclusion, Picture and graphics
- Protecting the Document

4. Power Point Presentation and Access

- Creation of Presentation
- Generation of Report using Access

5. C Programming

- Simple C Program with Data Types, Expressions and Comment Lines
- Programming with Conditional Statements
- Programming with Branching and Looping Statements
- Programming with Arrays and Structures
- Programming with Functions and Pointers

Total Hours: 45

K.S.R. COLLEGE OF ENGINEERING (Autonomous)

SEMESTER – I

COMPUTER AIDED DRAWING LABORATORY

(Common To AU & ME)

12AU2111

L	T	P	C
0	0	3	2

Objective(s): To gain practical knowledge in the following experiments

LIST OF EXPERIMENTS

1. Study of capabilities of software for Drafting and Modeling – Coordinate systems (absolute, relative, polar, etc.) – Creation of simple figures like polygon and general multi-line figures.
2. Drawing of a Title Block with necessary text and projection symbol.
3. Drawing of curves like parabola, spiral, involute using B spline or cubic spline
4. Drawing of front view and top view of simple solids like prism, pyramid, cylinder, cone, etc, and dimensioning.
5. Drawing front view, top view and side view of objects from the given pictorial views (e. g. V-block, Base of a mixer, Simple stool, Objects with hole and curves)
6. Drawing of a plan of residential building (Two bed rooms, kitchen, hall, etc.)
7. Drawing of a simple steel truss.
8. Drawing sectional views of prism, pyramid, cylinder, cone, etc
9. Drawing isometric projection of simple objects.
10. Creation of 3-D models of simple objects and obtaining 2-D multi-view drawings from 3-D model.

Note:

Plotting of drawings must be made for each exercise and attached to the records written by students

Total Hours: 45

K.S.R. COLLEGE OF ENGINEERING (Autonomous)

SEMESTER – I**ENGINEERING PRACTICES LABORATORY**

(Common To CE, CS, EC, EE & IT)

L T P C

0 0 3 2

12GE1111

Objective(s): To provide exposure to the students with hands on experience on various basic engineering practices in Civil, Mechanical, Electrical and Electronics Engineering.

GROUP A (CIVIL & MECHANICAL)**Plumbing:****4 Hrs**

- Study of Plumbing tools and accessories.
- Preparation of plumbing line sketches for water supply and sewage works.
- Hands-on-exercise - Basic pipe connections – Mixed pipe material connection.

Carpentry:**5 Hrs**

- Study of Carpentry tools.
- Hands-on-exercise - Wood work, joints by sawing, planning and cutting.

Welding:**4 Hrs**

- Preparation of arc welding of butt joints, lap joints and tee joints.
- Gas welding practice.

Basic Machining:**4 Hrs**

- Simple Turning and Taper turning.
- Drilling Practice.

Sheet Metal Work:**4 Hrs**

- Model making – Trays, funnel and Cone.

Demonstration on:**4 Hrs**

- Smithy operations, upsetting, swaging, setting down and bending.
- Foundry operations like mould preparation for gear and step cone pulley.
- Fitting – Exercises – Preparation of square fitting and vee – fitting models.
- Centrifugal pump and Window Air Conditioner

LIST OF EXPERIMENTS:

- Study of Carpentry tools, Welding tools, Sheet metal tools, Plumbing tools and Basic Machining tools.
- To make a Tee joint from the given wooden piece.
- To make a Lap joint/dovetail joint from the given wooden piece.
- To make a butt joint using arc welding.
- To make a Lap joint/Tee joint using arc welding.
- To prepare a tray (square/rectangular) from the given tin sheet metal.
- To prepare cone/funnel from the given tin sheet metal.
- To prepare the mixed pipe (GI&PVC) connections for shower set from the main water supply.
- To make a thread on given (GI&PVC) pipe and prepare the connections for wash basin from the main water supply.
- To make plain/step turning on a given MS rod by using Lathe.
- Make drilling and tapping operation on a given MS plate by using drilling machine.
- Demonstration – Draw a neat sketch and explain the working principle of
 - Smithy Operation
 - Mould Preparation
 - Square and Vee fitting Operation
 - Centrifugal Pump
 - Window Air Conditioner

(contd..)

GROUP B (ELECTRICAL and ELECTRONICS)

LIST OF EXPERIMENTS

ELECTRICAL ENGINEERING:	10 Hrs
<ol style="list-style-type: none">1. Residential House Wiring using switches, fuse, indicator, lamp and energy meter.2. Fluorescent Lamp Wiring.3. Stair-Case Wiring4. Measurement of Electrical Quantities – Voltage, Current, Power & Power Factor in RLC circuit.5. Measurement of Energy using Single Phase Energy Meter.6. Study of Ceiling Fan, Iron Box and Emergency Lamp	
ELECTRONICS ENGINEERING:	10 Hrs
<ol style="list-style-type: none">1. Study of Electronic Components and Equipments – Resistor Colour Coding2. Measurement of AC Signal Parameters (peak-peak, rms value, time period, frequency) using CRO.3. Study of logic gates AND, OR, ExOR and NOT.4. Soldering Practice – Components Devices and Circuits – Using general purpose PCB.5. Construction of Half Wave and Full Wave Rectifier	
Total Hours: 45	

References:

1. K.Jeyachandran, S.Natarajan and S. Balasubramanian, A Primer on Engineering Practices laboratory, Anuradha Publications, (2007).
2. T.Jeyapoovan, M.Saravanapandian & S.Pranitha, Engineering Practices Lab Manual, Vikas Publishing House Pvt.Ltd, (2006)
3. H.S. Bawa, Workshop Practice, Tata McGraw – Hill Publishing Company Limited, (2007).
4. Rajendra Prasad & P.M.M.S. Sarma, Workshop Practice, Sree Sai Publication, (2002).
5. P.Kannaiah & K.L.Narayana, Manual on Workshop Practice, Scitech Publications, (1999).

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**SEMESTER – I****CAREER DEVELOPMENT SKILLS – I**

(Common To All Branches)

12HR1112

L	T	P	C
0	2	0	1

Objective(s): To make the students aware about their career and expose them to the concepts of communication and practice through interactive soft ware and to enable them understand about themselves and provide them with Experiential Learning.

UNIT – I CAREER AWARENESS**3 Hrs**

Career Planning – Career Options – Importance of Career Planning – General Awareness about the Course and Opportunities (Engineering Dept) – Basic Life Skills – Self introduction (Activity on Self Introduction).

UNIT – II STORY TELLING AND ROLE PLAY**7 Hrs**

Listening to Stories and Contextual Conversations – Narrative Techniques & Developing Situations – Summarizing Abilities – Tenses for Storytelling – Specific Vocabulary – Body Language. (Activity on Story Telling and Role Play).

UNIT – III SELF ESTEEM AND ATTITUDE**7 Hrs**

Term Self Esteem – Signs of Self Esteem – Advantages – Do's and Don'ts to Develop Positive Self esteem – Low Self-esteem – Symptoms – Positive and Negative Self-esteem. Building Positive Attitude – Importance – Measures of Attitude – Confidence Building Techniques.

UNIT – IV BASIC ETIQUETTES**3 Hrs**

Dress Code – Behavioral Skills – Personal Etiquette (Cleanliness, Dining / Table Manners, Dressing / Grooming, etc.) – Social Etiquette (Polite Talk, Manners).

UNIT – V COMMUNICATION ESSENTIALS**10 Hrs**

Listening Skills (Active Listening) – Voice and Accent – Body language (Non-Verbal Communication) – Pronunciation Practice (Activity – Using Interactive Software for Communication Skills in the Language Laboratory).

Total Hours: 30**Text Book(s):**

1. Jeff Butterfield, Soft Skills for Everyone, Cengage Learning India pvt ltd, New Delhi, (2011).

References:

1. Bhatnagar Nitin, Communicative English for Engineers and Professionals, ISBN 9788131732045, Pearson Publication, New Delhi (2010).
2. V.Sasikumar, P.Kiranmai Dutt & Geetha Rajeevan, Listening & Speaking, ISBN 9788175963344, Pearson Education, New Delhi, (2007).
3. V.Sasikumar Spoken English: A Self-Learning Guide to Conversation Practice, Tata McGraw Hill Publishing Company Limited, New Delhi. (2011).

K.S.R. COLLEGE OF ENGINEERING (Autonomous)

SEMESTER – II

TECHNICAL ENGLISH - II

(Common To All Branches)

L T P C

12HS1201

3 0 0 3

Objective(s): To encourage students to actively involve in participative learning of English and to help them acquire Communication Skills through improvement of LSRW skills

UNIT – I LANGUAGE FOCUS

10 Hrs

Technical Vocabulary – Adjectives (Comparatives) – Conjunction, Preposition- Clauses (Simple, Compound Complex) – SI Units – Abbreviation & Acronyms – Homophones- Idioms – Foreign Words and Phrases – Phrasal Verbs

UNIT – II LANGUAGE FOCUS

10 Hrs

Relative Clauses – Imperative – Adverbial Clauses of Time, Place and Manner – Intensifiers – Basic Patterns of Sentences – One Word Substitution – 'If' Conditionals – Correction of Errors – Concord – Reported Speech

UNIT – III READING

7 Hrs

Intensive Reading – Predicting Content – Interpretation – Inference from the Text (Implication) – Inferential Information – Implication – Critical Interpretation – Reading Brief Notices, Notices – Advertisement and The Implication

UNIT – IV WRITING

11 Hrs

Paragraph Writing – Letter Writing – Job Application and Resume, Business Correspondence – Instructions – E-mail Writing – Process Description – Transcoding of Information from Pie Chart, Bar Chart, etc.

UNIT – V SPEAKING

7 Hrs

Stress and Intonation – Introducing oneself – Introducing others – Oral Instructions

Total Hours: 45

Text Book:

1. Division of Humanities and Social Sciences Anna University, Chennai, English for Engineers and Technologists (Vols. I & II combined edition) Orient Longmans Rept.(2008).

Reference:

1. Dr. S. Sumant, Technical English I, Tata McGraw Hill, Chennai (2012).

K.S.R. COLLEGE OF ENGINEERING (Autonomous)

SEMESTER – II**ENGINEERING MATHEMATICS - II**

(Common To All Branches)

12MA1202

L	T	P	C
3	1	0	4

Objective(s): On completion of the course, the students are expected

- To familiarize with the applications of differential equations.
- To know the basics of vector calculus comprising of gradient, divergence, curl and line, surface & volume integrals along with classical theorems involving them.
- To understand the concept of analytic functions and conformal mappings.
- To grasp the basics of complex integration and the concept of contour integration which is important for evaluation of certain integrals encountered in practice.
- To study the Laplace transform techniques, then apply to solve second order linear differential equations with constant coefficients.

UNIT – I ORDINARY DIFFERENTIAL EQUATIONS**12 Hrs**

Linear differential equations of second and higher order with constant coefficients – Method of variation of parameters – Differential equations with variable coefficients – Cauchy's and Legendre's linear equations – Simultaneous first order linear differential equations with constant coefficients.

UNIT – II VECTOR CALCULUS**12 Hrs**

Gradient Divergence and Curl – Directional derivative – Irrotational and solenoidal vector fields – Vector integration – Green's theorem in a plane, Gauss divergence theorem and Stokes' theorem (excluding proof) – Simple applications involving cubes and rectangular parallelepipeds.

UNIT – III ANALYTIC FUNCTIONS**12 Hrs**

Functions of a complex variable – Analytic functions – Necessary conditions, Cauchy – Riemann equation and Sufficient conditions (excluding proof) – Harmonic and orthogonal properties of analytic function – Harmonic conjugate – Construction of analytic functions – Conformal mapping : $w = z+c$, cz , $1/z$, and bilinear transformations

UNIT – IV COMPLEX INTEGRATION**12 Hrs**

Complex integration – Statement and applications of Cauchy's integral theorem and Cauchy's integral formula – Taylor and Laurent expansions – Singular points – Residues – Residue theorem – Application of residue theorem to evaluate real integrals – Unit circle and semi-circular contour.

UNIT – V LAPLACE TRANSFORMATION**12 Hrs**

Laplace transforms – Conditions for existence – Transform of elementary functions – Basic properties – Transform of derivatives and integrals – Transform of unit step function and impulse functions – Initial and final value theorems – Transform of periodic functions. Inverse Laplace transforms – Convolution theorem (excluding proof) – Solution of linear ordinary differential equations of second order with constant coefficients

Text Book:

L:45 T:15 Total Hours:60

1. Ravish R Singh and Mukul Bhatt, Engineering Mathematics - II, Third Edition, Mcgraw Hill Publications, New Delhi, (2012).

References:

1. B.S.Grewal, Higher Engineering Mathematics, Tata Mcgraw Hill Publishing Company, New Delhi, (2007).
2. Erwin Kreyszig, Advanced Engineering Mathematics, 7th Edition, Wiley India, (2007).
3. N.P.Bali and Manish Goyal, Text book of Engineering Mathematics I & II, Third edition, Laxmi Publications(p) Ltd.,(2008).

K.S.R. COLLEGE OF ENGINEERING (Autonomous)

SEMESTER – II**ENGINEERING PHYSICS - II**

(Common To All Branches)

L	T	P	C
3	0	0	3

12PH1203**Objective(s):** To enable the student to

- Describe the theory of conducting and semiconducting materials.
- Explain the properties of magnetic and dielectric materials.
- Discuss about the various moduli of elasticity and their relations.
- Understand some exciting prospects of modern engineering materials.

UNIT – I CONDUCTING MATERIALS**09 Hrs**

Conductors – classical free electron theory of metals – Electrical and thermal conductivity – Wiedemann – Franz law – Lorentz number – Draw backs of classical theory – Quantum theory – Fermi distribution function – Effect of temperature on Fermi Function – Density of energy states – carrier concentration in metals.

UNIT – II SEMICONDUCTING MATERIALS**09 Hrs**

Elemental & Compound semiconductors - Intrinsic semiconductor – Carrier concentration (derivation) - Fermi energy level – Variation of Fermi level with temperature - Electrical conductivity - Band gap determination - Extrinsic semiconductors – Carrier concentration in n - type and p - type semiconductors (Qualitative) - Hall effect - Determination of Hall effect - Determination of Hall coefficient – Applications.

UNIT – III MAGNETIC AND DIELECTRIC MATERIALS**09 Hrs**

Origin of magnetic moment – Bohr magneton – Dia, Para, Ferro and Anti ferromagnetism and its properties - Domain theory– Hysteresis – soft and hard magnetic materials – applications. Dielectrics - Dielectric constant – Polarization in dielectrics – Electronic, Ionic, Orientational and Space charge polarizations (Derivation for polarizability) – Internal or local field- Clausius – Mosotti equation – Dielectric loss – Dielectric breakdown – Types of dielectric breakdowns - Applications

UNIT – IV ELASTICITY AND HYDRODYNAMICS**09 Hrs**

Elasticity-Stress – Strain – Hooke's Law – Types of moduli of elasticity – Torsional pendulum –Determination of Rigidity modulus of a wire – Bending of beams – Expression for bending moment – Measurement of Young's modulus by uniform and non-uniform bending – Shaped girders Stream line flow – Turbulent flow- Poiseuille's equation for the flow of liquid through a tube.

UNIT – V MODERN ENGINEERING MATERIALS**09 Hrs**

Metallic glasses: Preparation, properties and applications. Shape memory alloys (SMA): Characteristics, properties of NiTi alloy, application, advantages and disadvantages of SMA Nanomaterials: synthesis – solgels – electro deposition - properties of nanoparticles and applications Carbon nanotubes: fabrication – pulsed laser deposition – chemical vapour deposition - structure – properties and applications.

Total Hours: 45**Text Books:**

1. Dr.G.Senthil Kumar, Engineering Physics – II, VRB Publishers Pvt. Ltd.(2011).
2. William F. Smith, Foundations of Materials Science and Engineering, McGraw-Hill,(2003).

References:

1. G.Senthilkumar and N.Iyandurai, Engineering Physics – I,VRB Publications Ltd, Chennai,(2003).
2. T. Sivanesan & Ranjani, Engineering Physics – II, D.D. Publications, Chennai,(2011).
3. R. Murugesan, Properties of matter, S. Chand & Co, Delhi (2007).
4. Subramaniam & Brij Lal, Properties of Matter, S. Chand & Co, New Delhi (2005).
5. Dr.S.Muthukumaran, S.Masilamani and G.Balaji, Engineering Physics - II, Sri Krishna HI—Tech Publishing company Pvt. Ltd. (2011).

K.S.R. COLLEGE OF ENGINEERING (Autonomous)

SEMESTER – II

ENVIRONMENTAL SCIENCE AND ENGINEERING

(Common To All Branches)

12CY1204

L T P C

3 0 0 3

Objective(s):

- To make students understand the concepts of natural resources, ecosystem and biodiversity
- To create awareness on pollution, value education, population growth and social issues
- Students will be made aware of the concepts of the environment, its issues and possible solutions at the end of the semester

UNIT – I INTRODUCTION TO ENVIRONMENTAL STUDIES AND NATURAL RESOURCES 09 Hrs

Environment – definition, scope and importance, need for public awareness, Forest resources – use, over exploitation, deforestation, case studies, mining, dams and their effects on forests and tribal people, Water resources – use, over- utilization of surface and ground water, floods, drought, conflicts over water, Mineral resources – use, exploitation, environmental effects of extracting and using mineral resources and case studies, Food resources – world food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity and case studies, Land resources – land as a resource, land degradation, man induced landslides, soil erosion and desertification, Role of an individual in conservation of natural resources.

UNIT – II ECOSYSTEMS AND BIODIVERSITY 09 Hrs

Concept of an ecosystem – structure and function of an ecosystem – producers, consumers and decomposers, Energy flow in the ecosystem, Ecological succession, Food chains, food webs and ecological pyramids, Types of ecosystem – introduction, characteristic features, structure and function of the Forest ecosystem and Aquatic ecosystems; Biodiversity – introduction, definition of genetic, species and ecosystem diversity, Value of biodiversity, Hot-spots of biodiversity; Threats to biodiversity; Endangered and Endemic Species of India; Conservation of biodiversity – *In-situ* and *Ex-situ* conservation of biodiversity.

UNIT – III ENVIRONMENTAL POLLUTION 09 Hrs

Pollution – introduction and different types of pollution; Causes, effects and control measures of Air pollution, Water pollution – BOD and COD (definition and significance), DO and its determination by Winkler's method, Soil pollution and Noise pollution; Solid waste management – causes, effects and control measures of urban and industrial waste; Hazardous waste – nuclear and medical wastes.

UNIT – IV SOCIAL ISSUES AND ENVIRONMENT 09 Hrs

Urban problems related to energy; Water conservation – rain water harvesting and watershed management, Resettlement and rehabilitation of people – its problems and concerns; Environmental ethics – issues and possible solutions, Climate change – global warming and its effects on flora and fauna, acid rain, ozone layer depletion, nuclear accidents and nuclear holocaust; Wasteland reclamation; Consumerism and waste products, Environment Protection Act – Air (Prevention and Control of Pollution) Act, Water (Prevention and control of Pollution) Act, Wildlife Protection Act and Forest Conservation Act; Issues involved in enforcement of environmental legislation

UNIT – V HUMAN POPULATION AND ENVIRONMENT 09 Hrs

Human population – population growth and variation among nations; Population explosion; Family welfare programme and family planning, Environment and human health; Human rights; Value education – HIV / AIDS, Women and child welfare; Role of information technology in environment and human health; Sustainable development – from Unsustainable to Sustainable development – Green Chemistry.

Total Hours: 45**Text Books:**

1. T. G. Jr. Miller, Environmental Science, Wadsworth Publishing Co. (2004).
2. Anubha Kaushik and C. P. Kaushik, *Environmental Science and Engineering*, New Age International Publishers, New Delhi (2006).

References:

1. Bharucha Erach, The Biodiversity of India, Mapin Publishing Pvt. Ltd., Ahmedabad, India (2004).
2. Benny Joseph, Environmental Science and Engineering, Tata McGraw-Hill (2006).
3. S.S.Dara, A Text Book of Environmental Chemistry and Pollution Control, S. Chand & Co., New Delhi (2006).
4. Raman Sivakumar, Introduction to Environmental Science and Engineering, Tata McGraw Hill Education Private Limited, New Delhi (2011).
5. W. P. Cunningham, Environmental Encyclopedia, Jaico Publishing House, Mumbai (2004).

K.S.R. COLLEGE OF ENGINEERING (Autonomous)

SEMESTER – II**BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING**

(Common To AU, CE & ME)

12EE2205

L	T	P	C
3	1	0	4

Objective(s):

- To study the basic concepts of electric circuits.
- To study the various measuring instruments and need for control system
- To familiarize the constructional details and operation of the electrical machines
- To study the characteristics of semiconductor devices and its application
- To study the simplification of mathematical expression, flip flops and converters

UNIT – I ELECTRICAL CIRCUITS**12 Hrs**

Basic Definitions – Ohm's Law – Kirchhoff's Laws – Faraday's Law – Lenz's Law – Introduction to AC Circuits – Waveforms, Average and RMS Value – Power and Power factor – Three Phase Balanced Circuits. Star and Delta Connections.

UNIT – II MEASURING INSTRUMENTS AND CONTROL SYSTEM**12 Hrs**

Basic Methods of Measurements: Direct and Indirect – Analog and Digital Instruments – Basic Principle of Indicating Instruments – Moving Coil and Moving Iron Ammeter and Voltmeter – Dynamometer type Wattmeter – Induction type Energy Meter – Cathode Ray Oscilloscope.

Fundamentals of Control Systems: Basic Definitions – Open Loop Systems – Closed Loop Systems – Effect of Feed Back

UNIT – III ELECTRICAL MACHINES**12 Hrs**

DC Generators: Construction – Operation – EMF Equation – Types -Applications. DC Motors: Operation – Types – Applications. Single Phase Transformer: Construction – Operation – EMF Equation – Applications. Single Phase Induction Motor: Construction – Operation – Split Phase Induction Motor and Capacitor Start Induction Run Motor – Applications, Three Phase Induction Motor : Types - Applications.

UNIT – IV SEMICONDUCTOR DEVICES AND APPLICATIONS**12 Hrs**

Characteristics of PN Junction Diode – Avalanche and Zener break down – Zener diode – Zener diode Characteristics – Construction and Operation of Half wave and Full wave Rectifiers. Bipolar Junction Transistor – CB, CE, CC Configurations and Characteristics – Applications.

UNIT – V DIGITAL ELECTRONICS**12 Hrs**

Logic Gates – Boolean Algebra – Boolean Laws – Half and Full Adders – RS and JK Flip-Flops –Registers – Asynchronous and Synchronous Counters – Digital to Analog converter: successive Approximation method – Analog to Digital Converter: Binary Weighted Resistor and R-2R ladder method.

L = 45 T = 15 Total Hours: 60

Text Books:

1. Smarajit Ghosh, Fundamentals of Electrical and Electronics Engineering, PHI Learning Private Limited, Second Edition (2009).
2. V.Jegathesan, K.VinothKumar and R.Saravanakumar, Basic Electrical and Electronics Engineering, Wiley India, (2011).

References:

1. R. Muthusubramanian, S. Salivahanan and K.A.Muraleedharan, Basic Electrical, Electronics and Computer Engineering, Tata McGraw Hill, Second Edition, (2006).
2. T.K. Nagsarkar and M.S.Sukhija, Basics of Electrical Engineering, Oxford press (2005).
3. V.K Mehta and Rohit Mehta, Principle of Electrical Engineering, S Chand & Company, (2008).
4. Mahmood Nahvi and Joseph A. Edminister, Electric Circuits, Schaum' Outline Series, McGraw Hill (2002).

K.S.R. COLLEGE OF ENGINEERING (Autonomous)

SEMESTER – II**ENGINEERING GRAPHICS**

(Common To CS, EE, EC & IT)

12AU2205

L	T	P	C
1	3	0	4

Objective(s): To develop in student's graphic skill for communication of concepts, ideas and design of engineering products and expose them to existing national standards related to technical drawings.

CONCEPTS AND CONVENTIONS (Not for Examination)

1 Hr

Importance of graphics in engineering applications – Use of drafting instruments – BIS conventions and specifications – Size, layout and folding of drawing sheets – Lettering and dimensioning.

UNIT – I CONSTRUCTION OF PLANE CURVES AND FREE HAND SKETCHING

15 Hrs

Curves Used In Engineering Practices:

Conics - Construction of ellipse, Parabola and hyperbola by eccentricity method - Construction of cycloid - Construction of involutes of square and Circle - Drawing of tangents and normal to the above curves.

Free Hand Sketching:

Representation of Three Dimensional objects – General principles of orthographic projection – Need for importance of multiple views and their placement – First angle projection – layout views developing visualization skills through free hand sketching of multiple views from pictorial views of objects.

UNIT – II PROJECTION OF POINTS, LINES AND PLANE SURFACES

15 Hrs

Projection of points and straight lines located in the first quadrant – Determination of true lengths and true inclinations – Projection of polygonal surface and circular lamina inclined to both reference planes.

UNIT – III PROJECTION OF SOLIDS AND SECTION OF SOLIDS

15 Hrs

Projection of simple solids like prisms, pyramids, cylinder and cone when the axis is inclined to one reference plane by change of position method.- Sectioning of above solids in simple vertical position by cutting planes inclined to one reference plane and perpendicular to the other –Obtaining true shape of section.

UNIT – IV DEVELOPMENT OF SURFACES

14 Hrs

Development of lateral surfaces of simple and truncated solids – Prisms, pyramids, cylinders and cones – Development of lateral surfaces of solids with cylindrical cutouts, perpendicular to the axis.

UNIT – V ISOMETRIC PROJECTIONS

15 Hrs

Principles of isometric projection – isometric scale – isometric projections of simple solids, truncated prisms, pyramids, cylinders and cones.

Total Hours: 75**Text Books:**

1. K. Venugopal and V. Prabhu Raja, Engineering Graphics, New Age International (P) Ltd. (2008)
2. K. V. Natrajan, Text book of Engineering Graphics, Dhanalakshmi Publishers, Chennai. (2006).

References:

1. N.D. Bhatt, Engineering Drawing, Charotar Publishing House, 46th Edition, (2003).
2. Dhananjay A.Jolhe, Engineering Drawing with an introduction to Auto CAD, Tata McGraw Hill Publishing Company Limited (2008).
3. M.S. Kumar, Engineering Graphics, D.D. Publications, (2007).
4. K. R. Gopalakrishnana, Engineering Drawing, (Vol.I & II), Subhas Publications (1998).

K.S.R. COLLEGE OF ENGINEERING (Autonomous)

SEMESTER – II**ENGINEERING MECHANICS**

(Common To AU, CE & ME)

L	T	P	C
3	1	0	4

12CE2206

Objective(s): At the end of this course the student should be able to understand the vectorial and scalar representation of forces and moments, static equilibrium of particles and rigid bodies both in two dimensions and also in three dimensions. Further, he should understand the principle of work and energy. He should be able to comprehend the effect of friction on equilibrium. He should be able to understand the laws of motion, the kinematics of motion and the interrelationship. He should also be able to write the dynamic equilibrium equation. All these should be achieved both conceptually and through solved examples

12 Hrs**UNIT – I BASICS & STATICS OF PARTICLES**

Introduction – Units and Dimensions – Laws of Mechanics – Lame's theorem, Parallelogram and triangular Law of forces – Vectors – Coplanar Forces – Resolution and Composition of forces – Equilibrium of a particle – Forces in space – Equilibrium of a particle in space – Equivalent systems of forces – Principle of transmissibility – Single equivalent force.

12 Hrs**UNIT – II EQUILIBRIUM OF RIGID BODIES**

Free body diagram – Types of supports and their reactions – requirements of stable equilibrium – Moments and Couples – Moment of a force about a point and about an axis – Vectorial representation of moments and couples – Scalar components of a moment – Varignon's theorem – Equilibrium of Rigid bodies in two dimensions – Equilibrium of Rigid bodies in three dimensions – Examples

12 Hrs**UNIT – III PROPERTIES OF SURFACES AND SOLIDS**

Determination of Areas and Volumes – First moment of area and the Centroid of sections – simple and compound sections by using standard formula – second and product moments of plane area – simple and compound sections by using standard formula – Parallel axis theorem and perpendicular axis theorem – Polar moment of inertia – Principal moments of inertia of plane areas – Principal axes of inertia – Mass moment of inertia

12 Hrs**UNIT – IV DYNAMICS OF PARTICLES**

Displacements, Velocity and acceleration, their relationship – Rectilinear motion – Determination of motion of a particle – freely falling objects – relative motion- Curvilinear motion – projectile motion - Newton's law – D'Alembert's principle – Work Energy Equation of particles – Conservative forces and principle of conservation of energy - Impulse and Momentum – Impact – Direct central impact and oblique central impact

12 Hrs**UNIT – V FRICTION AND ELEMENTS OF RIGID BODY DYNAMICS**

Frictional force – Types of friction- Laws of Coulomb friction – Angle of repose – Simple Contact friction - Wedge friction, Screw friction, Rolling resistance, Ladder friction, Belt friction. Translation and Rotation of Rigid Bodies – Velocity and acceleration – Plane motion, Absolute motion - Relative motion.

L = 45 T = 15 Total Hours: 60

Text Books:

1. M.S.Palanichamy, S.Nagan, Engineering Mechanics-Statics and Dynamics, Tata McGraw-Hill, (2001).
2. S.C. Natesan, Engineering Mechanics Statics and Dynamics, Umesh Publications, Naisarak, Delhi (2005).

References:

1. Rajasekaran, S, Sankarasubramanian.G, Fundamentals of Engineering Mechanics, Vikas Publishing House Pvt. Ltd., (2005).
2. R.C.Hibbelle, Engineering Mechanics, Vol.1 Statics, Vol.2 Dynamics, Pearson Education Asia Pvt. Ltd., (2000).
3. Irving H. Shames, Engineering Mechanics – Statics and Dynamics, IV Edition – Pearson Education Asia Pvt. Ltd., (2003).
4. Ashok Gupta, interactive Engineering Mechanics – Statics – A Virtual Tutor (CDROM), Pearson Education Asia Pvt., Ltd., (2002).

K.S.R. COLLEGE OF ENGINEERING (Autonomous)

SEMESTER – II**ADVANCED C PROGRAMMING****12CS3206**

(For CS branch only)

L T P C

4 0 0 4

Objective(s): To equip students with comprehensive knowledge of Advanced C programming Language so that they can develop programs on their own for various applications

UNIT – I FUNDAMENTALS OF C PROGRAMMING**12 Hrs**

Overview of C Programming – Expressions: Variables – Type qualifiers – Storage class specifiers – Constants – Operators – Order of evaluation – Type conversion in expressions – Casts – Statements: Selection – Iteration – Jump – Block statements – Arrays and Strings

UNIT – II FUNCTIONS, STRUCTURES AND UNIONS**12 Hrs**

Introduction – Functions: The general form of functions – Function arguments – The return statement – Recursion – Prototypes – The inline keyword – Structures – Definition – Initialization – Array of Structures – Passing Structures to Functions – Structure Pointers – Arrays and Structures within Structures – Structures and Functions – Union – Enumerations – Typedef

UNIT – III POINTERS**12 Hrs**

Introduction – Fundamentals – Memory and Addresses – Address vs Contents – Indirection Operator – Null Pointer – Pointer Constants – Pointer Arithmetic – Array Pointer – Character String Pointer and Functions – Pointers and Functions – Pointers and Structures – Programs

UNIT – IV PREPROCESSORS AND FILE MANIPULATION**12 Hrs**

Preprocessor and Multiple-file Compilation: C Preprocessor and the #include – #error – #undef – #line and #define – Conditional Compilation Directives – File System Basics: Program Organization and Multi-file Compilation – Command line arguments – File Input and Output – fread() and fwrite() – fseek() and Random Access I/O – Standard Streams – Combining Command-line Arguments and File I/O – Dynamic Memory Allocation

UNIT – V INTRODUCTION TO C++**12 Hrs**

Introduction – Need for object oriented programming – Procedural Languages Vs Object oriented approach – Characteristics of Object oriented programming – C++ Programming Basics: Basic Program Construction – Output Using cout – Input with cin – Data types – Variables and Constants – Operators – Control Statements – Manipulators – Type conversion.

Total Hours: 60**Text Books:**

1. Herbert Schildt, The Complete Reference C, Tata McGraw Hill, Fourth Edition, (2010)
2. Robert Lafore, Object Oriented Programming in C++, Galgotia Publication, (2009)

References:

1. K. Kenneth A. Reek, Pointers on C, Pearson Education, (2007).
2. Byron Gottfried, Programming with C, 2nd Edition, (Indian Adapted Edition), Tata McGraw Hill publications, (2006).
3. E. Balagurusamy, Computing fundamentals and C Programming, Tata McGraw-Hill Publishing Company Limited, (2008).
4. Stephen G. Kochan, Programming in C, Third Edition, Pearson Education India, (2005).
5. Ashok N. Kamthane, Computer Programming, Pearson Education India, (2008).

K.S.R. COLLEGE OF ENGINEERING (Autonomous)

SEMESTER – II**ELECTRIC CIRCUIT ANALYSIS**

12EE3206

(For EE branch only)

L	T	P	C
3	1	0	4

Objective(s):

- To analyze the direct current and alternating current linear electric circuits; laws and concepts that characterizes their behavior.
- To simplify the electrical circuits using various network reduction techniques, including network theorems.
- To study the circuit responses to sinusoidal source and Steady State response as a function of Frequency
- To study the transient response of the circuits subjected to step and sinusoidal excitations using Laplace transformations.
- To introduce the basic concepts of coupled and three phase circuits

UNIT – I BASIC CIRCUITS CONCEPTS

12 Hrs

Network Terminologies - Classification of Electrical Circuits - Energy Sources (independent and dependent), Circuit Elements (R, L and C), V-I Relationship of Circuit Elements, open circuit and short circuit, Ohm's Law and its limitations – Kirchhoffs laws - series and parallel combination of Circuit Elements - voltage and current division, source transformation, star and delta transformation

UNIT – II SINUSOIDAL STEADY STATE ANALYSIS

12 Hrs

Characteristics of sinusoids – phasor representation - concept of impedance and admittance, analysis of A.C. circuits. : Phasor diagram, impedance triangle, active power, reactive power, apparent power and power factor, power triangle. Series and parallel resonance circuits – Q factor, half-power frequencies, selectivity and bandwidth of resonant circuits - Comparison of Series and parallel resonance circuits.

UNIT – III CIRCUIT ANALYSIS AND NETWORK THEOREMS

12 Hrs

Mesh current and node voltage method of analysis for D.C and A.C. circuits - Thevenins Theorem - Norton Theorem – Superposition Theorem – Reciprocity Theorem - Maximum power transfer theorem for variable resistance load, variable impedance load and variable resistance and fixed reactance load

UNIT – IV TRANSIENT ANALYSIS

12 Hrs

Initial condition in circuit elements - Source free response of RL, RC and RLC circuits – forced (step and sinusoidal) response of RL, RC and RLC circuits using Laplace transform technique.

UNIT – V COUPLED CIRCUITS AND THREE PHASE CIRCUITS

12 Hrs

Coupled Circuits: self and mutual inductance – coefficient of coupling – modeling of coupled circuits - dot convention – analysis of simple coupled circuits.

Three phase circuits : Generation of three phase voltages – phase sequence – interconnection of three phase windings - analysis of three phase 3-wire and 4-wire circuits with star and delta connected loads(balanced and unbalanced) – phasor diagram of voltages and currents – power and power factor measurements in three phase circuits.

L: 45 T:15 Total Hours: 60

Text Books:

1. William H. Hayt Jr, Jack E. Kemmerly and Steven M. Durbin, Engineering Circuits Analysis, Tata McGraw Hill publishers, 6th edition, New Delhi, (2007).
2. Joseph A. Edminister, Mahmood Nahri, Electric circuits, Schaum's series, 4th edition, Tata McGraw-Hill, New Delhi (2007).

References:

1. K Chakrabarti A, Circuits Theory (Analysis and Synthesis), Dhanpath Rai & Sons, New Delhi, (1999).
2. Charles K. Alexander, Matthew N.O. Sadiku, Fundamentals of Electric Circuits, 4th Edition, McGraw-Hill Science Engineering, (2008).
3. Edward Hughes, Dr John Hiley, Electrical and Electronic Technology, Pearson education limited, tenth edition, (2008).
4. A.Sudhakar and S.P.Shyam Mohan, Circuits and Network Analysis and Synthesis, Tata McGraw Hill, (2007).

K.S.R. COLLEGE OF ENGINEERING (Autonomous)

SEMESTER – II**ELECTRIC CIRCUIT THEORY****12EC3206**

(For EC branch only)

L	T	P	C
3	1	0	4

Objective(s): *The students are expected*

- To understand Basic laws and theorems for electric circuits.
- To know the steady state and transient response of RLC circuits.
- To understand the basic concepts of coupled networks and three phase networks.

UNIT – I DC NETWORK ANALYSIS**12 Hrs**

Basic Components and Electric Networks, Charge, Current, Voltage and Power. Voltage and Current Sources, Ohms Law, Kirchoff's Laws, Analysis of Series and Parallel Networks, Voltage and Current Division, Networks Reduction, Nodal and Mesh Analysis for Linear Resistive Networks, An Introduction to Network Topology

UNIT – II NETWORK THEOREMS AND DUALITY**12 Hrs**

Linearity and Non Linearity, Superposition Theorem, Thevenin's Theorem, Norton's Theorem, Maximum Power Transfer Theorem, Tellegen's Theorem, Star - Delta Transformation, Duals, Dual Networks

UNIT – III SINUSOIDAL STEADY STATE ANALYSIS**12 Hrs**

Sinusoidal Steady State analysis, Characteristics of Sinusoids, AC Network Power Analysis, Instantaneous Power, Average Power, Apparent Power and Power Factor. Phase Relationship for R, L, and C, Analysis of Simple Series and Parallel AC Networks with Phasor Diagram

UNIT – IV TRANSIENTS AND RESONANCE IN RLC NETWORKS**12 Hrs**

Transient Response of RL, RC and RLC Networks for DC Input and Sinusoidal Inputs, Series and Parallel Resonance, Frequency Response, Quality Factor, Bandwidth, Half Power Frequencies.

UNIT – V COUPLED NETWORKS AND THREE PHASE SYSTEMS**12 Hrs**

Magnetically Coupled Networks, Self Inductance, Mutual Inductance, Co-efficient of Coupling, Single and Double Tuned Networks, Analysis and Applications, Analysis of 3 Phase 3 Wire and 4 Wire Systems with Star and Delta Connected Loads (balanced & Unbalanced), 3 Phase Power Measurement by Two Watt Meter Method

L:45 T:15 Total Hours:60

Text Books:

1. Joseph A. Edminister, Mahmood Nahvi, Electric Circuits, Schaum's Series, 4th edition Tata McGraw-Hill, New Delhi, (2002).
2. David A. Bell, Electric Circuits, PHI, (2006)

References:

1. K. Jack E. Kemmerly, William Hart Hayt, Engineering Circuit Analysis-6th Edition, McGraw- Hill, New Delhi, (2002).
2. William H. Kayt, Jr. Jack E. Kemmerly, Steven M. Durbin, Engineering Network Analysis, 6th Edition, Tata McGraw-Hill Edition, (2006).
3. Charles K. Alexander & Mathew N. O. Sadiku, Fundamentals of Electric Networks, 2nd Edition, McGraw- Hill (2003).
4. A. Sudhakar and S. P. Shyam Mohan, Circuits and Network Analysis and Synthesis, Tata McGraw Hill, 3rd Edition (2007).

K.S.R. COLLEGE OF ENGINEERING (Autonomous)

SEMESTER – II**PROGRAMMING AND DATA STRUCTURES**

12IT3206

(For IT branch only)

L	T	P	C
4	0	0	4

Objective(s):

- Assess how the choice of data structures and algorithm design methods impacts the performance of programs.
- Choose the appropriate data structure and algorithm design method for a specified application using C.
- Solve problems using data structures such as linear and non-linear lists
- To understand memory management and file management concepts in C

UNIT – I INTRODUCTION TO DATA STRUCTURES**12 Hrs**

Introduction to data structures – linear and Non Linear Data Structures – List – The List ADT – Singly linked list, Doubly Linked List, circular linked list– implementation – using array and linked list – Applications of list

UNIT – II STACK AND QUEUES**12 Hrs**

Stack – Definitions and concepts – Operations on stacks- Stack implementation – using array, linked list – Applications of Stacks- Recursion – Conversion of expressions- Queues – Definitions- Queue implementations – Applications of Queues – Circular queue – Priority Queues

UNIT – III STRING HANDLING FUNCTIONS**12 Hrs**

Strings Concepts – Declaring and Initializing string variables - String input/output functions – Array of Strings – Storage Representation of Strings - String Manipulation functions –String / Data Conversion –String Applications

UNIT – IV POINTERS**12 Hrs**

Pointers – Declaration - Accessing address of a variable- Initialization of pointer variable- Pointer to Pointer – Pointer Expressions - character strings, pointers to functions and structures –Array of pointers –Pointer to Functions –Passing Pointer as Arguments -Pointer to Structures – Dynamic Memory Allocation

UNIT – V FILE MANAGEMENT**12 Hrs**

Introduction to File Concepts – File Structures – File Handling Functions- File Types –Streams – Text – Binary – The FILE pointer – Opening & Closing a file – Reading and writing from/to a file – File copying – Getting file name as Command line arguments – Preprocessors.

Total Hours: 60**Text Books:**

1. R. F. Gilberg, B. A. Forouzan, Data Structures: A Pseudocode approach with C, Second Edition, Thomson India Edition (2005).
2. Pradip Dey, Ghosh Manas, Programming in C, Oxford University Press (2009).

References:

1. M. A. Weiss, Data Structures and Algorithm Analysis in C, Pearson Education Asia, (2002).
2. V. Aho, J. E. Hopcroft, and J. D. Ullman, Data Structures and Algorithms, Pearson Education, (1983).
3. Byron.S.Gottfried, Schaum's Outline of Programming with C, 2nd Edition,(1996).

K.S.R. COLLEGE OF ENGINEERING (Autonomous)

SEMESTER – II**PHYSICS AND CHEMISTRY LABORATORY**

(Common To All Branches)

L	T	P	C
0	0	3	2

12GE1210**Objective(s):** To gain practical knowledge in the following experiments**LIST OF EXPERIMENTS PHYSICS LABORATORY:**

1. Determination of Young's modulus of the material of a uniform bar by non – uniform bending method.
2. Determination of Young's modulus of the material of a uniform bar by uniform bending method
3. Determination of Band gap energy of a semiconductor
4. Determination of Viscosity of liquid by Poiseuille's method.
5. Determination of rigidity modulus of a wire by torsional pendulum.
6. Determination of dispersive power of the given prism using spectrometer.

LIST OF EXPERIMENTS CHEMISTRY LABORATORY:

1. Conductometric Titration – Strong Acid vs. Strong Base
2. Conductometric Titration – Mixture of Weak and Strong Acids.
3. Conductometric Titration – Precipitation, BaCl_2 vs. Na_2SO_4
4. Estimation of Ferrous ion by Potentiometry – Fe^{2+} vs $\text{K}_2\text{Cr}_2\text{O}_7$
5. Estimation of Hydrochloric Acid by pH metry.
6. Estimation of Iron by Spectrophotometry
7. Estimation of water of crystallization of Copper Sulphate.

Total Hours: 45**Reference Books:**

1. Dr.G.Senthilkumar, Physics Lab manual, VRB Publications Pvt. Ltd.,(2006).
2. J.B. Yadav, Advanced Practical Physical Chemistry, GOEL Publishing House.
3. Gurdeep Raj, Advanced Practical Inorganic Chemistry, GOEL Publishing House.

Note:

A Minimum of FIVE experiments shall be offered.
Laboratory classes on alternate weeks for Physics and Chemistry.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)

SEMESTER - II

COMPUTER PRACTICES LABORATORY - II

(Common To All Branches)

12CS1211

L T P C

0 0 3 2

Objective(s): To gain practical knowledge in the following experiments.

LIST OF EXPERIMENTS

1. UNIX COMMANDS

- Study of Unix Operating Systems
- Unix Commands
- Unix Editor
- Basic Shell Commands

2. SHELL PROGRAMMING

- Simple Shell Program
- Conditional Statements
- Testing and Loops

3. C PROGRAMMING ON UNIX

- Dynamic Storage Allocation
- Pointers
- Functions
- File Handling

Hardware / Software Requirements for a Batch of 30 Students

Hardware

- 1 UNIX Clone Server
- 33 Nodes (Thin Client or PCs)
- Printer - 3 Nos

Software

- Operating System - UNIX Clone (33 User License or License Free Linux)
- Compiler - C

Total Hours: 45

K.S.R. COLLEGE OF ENGINEERING (Autonomous)

SEMESTER – II**ENGINEERING PRACTICES LABORATORY**

(Common To AU & ME)

L T P C

0 0 3 2

12GE1212

Objective(s): To provide exposure to the students with hands on experience on various basic engineering practices in Civil, Mechanical, Electrical and Electronics Engineering

GROUP A (CIVIL & MECHANICAL)**Plumbing:**

4 Hrs

- Study of Plumbing tools and accessories.
- Preparation of plumbing line sketches for water supply and sewage works.
- Hands-on-exercise - Basic pipe connections – Mixed pipe material connection.

Carpentry:

5 Hrs

- Study of Carpentry tools.
- Hands-on-exercise - Wood work, joints by sawing, planning and cutting.

Welding:

4 Hrs

- Preparation of arc welding of butt joints, lap joints and tee joints.
- Gas welding practice.

Basic Machining:

4 Hrs

- Simple Turning and Taper turning.
- Drilling Practice.

Sheet Metal Work:

4 Hrs

- Model making – Trays, funnel and Cone.

Demonstration on:

4 Hrs

- Smithy operations, upsetting, swaging, setting down and bending.
- Foundry operations like mould preparation for gear and step cone pulley.
- Fitting – Exercises – Preparation of square fitting and vee – fitting models.
- Centrifugal pump and Window Air Conditioner.

LIST OF EXPERIMENTS:

- Study of Carpentry tools, Welding tools, Sheet metal tools, Plumbing tools and Basic Machining tools.
- To make a Tee joint from the given wooden piece.
- To make a Lap joint/dovetail joint from the given wooden piece.
- To make a butt joint using arc welding.
- To make a Lap joint/Tee joint using arc welding.
- To prepare a tray (square/rectangular) from the given tin sheet metal.
- To prepare cone/funnel from the given tin sheet metal.
- To prepare the mixed pipe (GI&PVC) connections for shower set from the main water supply.
- To make a thread on given (GI&PVC) pipe and prepare the connections for wash basin from the main water supply.
- To make plain/step turning on a given MS rod by using Lathe.
- Make drilling and tapping operation on a given MS plate by using drilling machine.
- Demonstration – Draw a neat sketch and explain the working principle of
 - Smithy Operation
 - Mould Preparation
 - Square and Vee fitting Operation
 - Centrifugal Pump
 - Window Air Conditioner

(contd...)

GROUP B (ELECTRICAL AND ELECTRONICS)

LIST OF EXPERIMENTS

ELECTRICAL ENGINEERING:

10 Hrs

1. Residential House Wiring using switches, fuse, indicator, lamp and energy meter.
2. Fluorescent Lamp Wiring.
3. Stair-Case Wiring
4. Measurement of Electrical Quantities – Voltage, Current, Power & Power Factor in RLC circuit.
5. Measurement of Energy using Single Phase Energy Meter.
6. Study of Ceiling Fan, Iron Box and Emergency Lamp

ELECTRONICS ENGINEERING:

10 Hrs

1. Study of Electronic Components and Equipments – Resistor Colour Coding
2. Measurement of AC Signal Parameters (peak-peak, rms value, time period, frequency) using CRO.
3. Study of logic gates AND, OR, EXOR and NOT.
4. Soldering Practice – Components Devices and Circuits – Using general purpose PCB.
5. Construction of Half Wave and Full Wave Rectifier

Total Hours: 45

References:

1. K.Jeyachandran, S.Natarajan & S. Balasubramanian, A Primer on Engineering Practices laboratory, Anuradha Publications, (2007).
2. T.Jeyapoovan, M.Saravanapandian & S.Pranitha, Engineering Practices Lab Manual, Vikas Publishing House Pvt.Ltd, (2006).
3. H.S. Bawa, Workshop Practice, Tata McGraw – Hill Publishing Company Limited, (2007).
4. Rajendra Prasad & P.M.M.S. Sarma, Workshop Practice, Sree Sai Publication, (2002).
5. P.Kannaiah & K.L.Narayana, Manual on Workshop Practice, Scitech Publications, (1999).

K.S.R. COLLEGE OF ENGINEERING (Autonomous)

SEMESTER – II**COMPUTER AIDED DRAWING LABORATORY**

(For CE branch only)

12AU2212

L	T	P	C
0	0	3	2

Objective(s) To gain practical knowledge in the following experiments**LIST OF EXPERIMENTS**

1. Study of capabilities of software for Drafting and Modeling – Coordinate systems (absolute, relative, polar, etc.) – Creation of simple figures like polygon and general multi-line figures.
2. Drawing of a Title Block with necessary text and projection symbol.
3. Drawing of curves like parabola, spiral, involute using B spline or cubic spline
4. Drawing of front view and top view of simple solids like prism, pyramid, cylinder, cone, etc, and dimensioning
5. Drawing front view, top view and side view of objects from the given pictorial views (eg. V-block, Base of a mixie, Simple stool, Objects with hole and curves).
6. Drawing of a plan of residential building (Two bed rooms, kitchen, hall, etc.)
7. Drawing of a simple steel truss.
8. Drawing sectional views of prism, pyramid, cylinder, cone, etc,
9. Drawing isometric projection of simple objects
10. Creation of 3-D models of simple objects and obtaining 2-D multi-view drawings from 3-D model

Note:

Plotting of drawings must be made for each exercise and attached to the records written by students.

Total Hours: 45

K.S.R. COLLEGE OF ENGINEERING (Autonomous)

SEMESTER – II

ADVANCED C PROGRAMMING LABORATORY

(For CS branch only)

L T P C
0 0 3 2

12CS3212

Objective(s) To gain practical knowledge in the following experiments

LIST OF EXPERIMENTS

- I. C Programming with Arrays
 - a. One Dimensional and Two Dimensional array
 - b. Passing Two Dimensional array to function
 - c. Operations with array
- II. C Programming with Functions
 - a. Simple Library Functions
 - b. Recursive Function
 - c. User Defined Functions (Call by Value and Call by Reference)
- III. C Programming with Structures
 - a. Array of Structures
 - b. Structures within Structures
 - c. Passing structures to Functions
 - d. Unions
- IV. C Programming with Pointers
 - a. Pointer Arithmetic
 - b. Array of Pointers
 - c. Structure Pointers
 - d. Pointers to Functions
 - e. Pointers to Pointers
- V. C Programming with File Manipulations and Preprocessor
 - a. #include and #define Directives
 - b. Conditional Compilation Directives
 - c. Global Variables and Variable Storage Classes
 - d. Command line arguments
 - e. File Input and Output
 - f. Combining Command-line Arguments and File I/O

Note:

Out of 100,

- Part – A (from I - III) carries 50 Marks
- Part – B (from IV - V) carries 50 Marks

Total Hours: 45

K.S.R. COLLEGE OF ENGINEERING (Autonomous)

SEMESTER – II**ELECTRIC CIRCUITS ANALYSIS LABORATORY**

(For EE branch only)

12EE3212

L	T	P	C
0	0	3	2

Objective(s) This course will provide students with hands-on experience in verification of circuit laws and theorems, measurement of circuit parameters, study of frequency response of resonant circuits, study of transient response and three phase circuits

LIST OF EXPERIMENTS

1. Simulation and real time verification of Kirchhoff's Voltage and current laws.
2. Simulation and real time verification of Thevenin's and Norton's Theorem
3. Simulation and real time verification of Superposition Theorem
4. Simulation and real time verification of Maximum Power Transfer Theorem
5. Simulation and real time verification of Reciprocity Theorem
6. Simulation and real time verification of Mesh and Nodal Analysis
7. Simulation of Transient Response of RL and RC Circuits.
8. Simulation and real time frequency response of series and parallel resonant Circuits
9. Measurement of Self Inductance of a Coil.
10. Measurement of power and power factor of a balanced three phase load

Total Hours: 45

K.S.R. COLLEGE OF ENGINEERING (Autonomous)

SEMESTER – II

ELECTRIC CIRCUITS LABORATORY

(For EC branch only)

12EC3212

L	T	P	C
0	0	3	2

Objective(s) This course will provide students with hands-on experience in verification of circuit laws and theorems, measurement of circuit parameters, study of frequency response of resonant circuits, study of transient response and three phase circuits.

LIST OF EXPERIMENTS

1. Verification of ohm's laws and Kirchhoff's laws
2. Verification of Thevenin's and Norton's Theorem
3. Verification of superposition Theorem
4. Verification of maximum power transfer theorem
5. Verification of reciprocity theorem.
6. Measurement of self inductance of a coil.
7. Verification of mesh and nodal analysis.
8. Study of CRO and measurement of Voltage, frequency and Power factor for various inputs.
9. Transient response of RL and RC circuits for DC & AC inputs.
10. Frequency response of series and parallel resonance circuits
11. Study of frequency response of single tuned coupled circuits.

Total Hours: 45

K.S.R. COLLEGE OF ENGINEERING (Autonomous)

SEMESTER – II**PROGRAMMING AND DATA STRUCTURES LABORATORY**

(For IT branch only)

12IT3212

L	T	P	C
0	0	3	2

Objective(s): To gain practical knowledge in the following experiments**LIST OF EXPERIMENTS**

1. Write a program to perform the list operation using Array.
2. Program that uses the function to perform following operations on singly linked list
 - i. Creation
 - ii. Insertion (at beginning , middle & End)
 - iii. Deletion
 - iv. Display
3. Program that uses the function to perform following operations on singly linked list
 - i. Creation
 - ii. Insertion (at beginning , middle & End)
 - iii. Deletion
 - iv. Display
4. Program that implements stack and its operation using the arrays.
5. Program that implements stack and its operation using the linked list
6. Program that implements Queue and its operation using the arrays.
7. Program that implements Queue and its operation using the linked list
8. Program that uses the stack operations to Perform the following
 - i. Converting infix expression to postfix expression;
 - ii. Evaluating the postfix expression
9. Program that implements Circular Queue and its operation using the arrays.
10. Program that implements the string handling functions.
11. Program for dynamic memory allocation functions : Malloc , Calloc, and Free.
12. Program to prepare salary bill of a company using files
13. Program to merge two files
14. Program that implements the File handling functions

Total Hours: 45

K.S.R. COLLEGE OF ENGINEERING (Autonomous)

SEMESTER -II**CARRER DEVELOPMENT SKILLS - II**

(Common To All Branches)

L T P C

0 2 0 1

12HR1213

Objective(s): To make the students aware the need of Communication and expose them to the concepts of communication skills. Also, enable them to have creativity and problem solving skills.

UNIT – I COMMUNICATION SKILLS**04 Hrs**

Tools of Communication (Oral, Written, One Way, Two Way, Vertical and Horizontal / Lateral) – Assertive Communication – Introduction on Public Speech – (Activity on Written/Oral Communication).

UNIT – II SELF INTRODUCTION**05 Hrs**

Introductory Greetings – Essentials of Self Introduction – Needs of Self Introduction (Activity on Self Introduction).

UNIT – III PRESENTATION SKILLS**06 Hrs**

Preparing and Structuring the Presentation – Using Visual Aids – Voice Culture – Body Language and the Art of Presentation – Audience Awareness – Question and Interruption Handling – Building and Maintaining Interest – Dealing with the Unexpected – (Activity on Presentation Skills).

UNIT – IV QUANTITATIVE APTITUDE**07 Hrs**

Speed Maths – HCF and LCM – Ratio and Proportions – Simplifications and Approximations – Number System.

UNIT – V NON-VERBAL REASONING**08 Hrs**

Odd Man Out – Coding and Decoding – Mathematical Operations – Arithmetic Reasoning – Direction Sense Test.

Total Hours: 30**Text Book(s):**

1. Jeff Butterfield, Soft Skills for Everyone, Cengage Learning India Pvt. Ltd., New Delhi- (2011).
2. Abhijit Guha, Quantitative Aptitude for Competitive Examinations, 4th edition, TMH.

Reference(s):

1. Bhatnagar Nitin, Communicative English for Engineers and Professionals, ISBN 9788131732045, Pearson Publication, New Delhi (2010).
2. V.Sasikumar, P.Kiranmai Dutt & Geetha Rajeevan, Listening & Speaking, ISBN 9788175963344, Pearson Education, New Delhi (2007).
3. R.V.Praveen, Quantitative Aptitude and Reasoning, PHI
4. R.S.Agarwal, Quantitative Aptitude, 3rd Edition, TMH.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**SEMESTER – III****12MA2301****ENGINEERING MATHEMATICS III**

(Common to AU, CE, EC, EE, IT & ME)

L	T	P	C
3	1	0	4

Objective(s): *The course objective is to develop the skills of the students in the areas of Transforms and Partial Differential Equations. This will be necessary for their effective studies in a large number of engineering subjects like heat conduction, Communication Systems, Electro-Optics and Electromagnetic Theory. The course will also serve as a prerequisite for post graduate and specialized studies and research.*

UNIT – I FOURIER SERIES**12 Hrs**

Dirichlet's conditions – General Fourier series – Odd and even functions – Half range sine series – Half range cosine series – Parseval's identity – Harmonic Analysis.

UNIT – II FOURIER TRANSFORMS**12 Hrs**

Fourier integral theorem (without proof) – Fourier transform pair – Sine and Cosine transforms – Properties – Transforms of simple functions – Convolution theorem – Parseval's identity.

UNIT - III PARTIAL DIFFERENTIAL EQUATIONS**12 Hrs**

Formation of partial differential equations – Lagrange's linear equation – Solutions of standard types of first order partial differential equations – Linear partial differential equations of second and higher order with constant coefficients.

UNIT – IV APPLICATIONS OF PARTIAL DIFFERENTIAL EQUATIONS**12 Hrs**

Solutions of one dimensional wave equation – One dimensional equation of heat conduction – Steady state solution of two-dimensional equation of heat conduction (Insulated edges excluded).

UNIT – V Z-TRANSFORMS AND DIFFERENCE EQUATIONS**12 Hrs**

Z-transforms - Elementary properties – Inverse Z-transform – Convolution theorem – Formation of difference equations – Solution of difference equations using Z-transform.

L: 45, T: 15, Total Hours: 60

Text Books:

1. Grewal, B.S., „Higher Engineering Mathematics“ 40th Edition, Khanna publishers, Delhi, 2007.
2. Veerarjan, T „Transforms and Partial Differential Equations“, 11th Reprint, Tata McGraw-Hill Publishing.Co.Ltd.

References:

1. Bali.N.P and Manish Goyal „A Textbook of Engineering Mathematics“, Seventh Edition, Laxmi Publications (P) Ltd.
2. Ramana.B.V. „Higher Engineering Mathematics“ Tata Mc-GrawHill Publishing Company limited, New Delhi 2007.
3. Glyn James, „Advanced Modern Engineering Mathematics“, Third edition-Pearson Education 2007.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**SEMESTER – III****12EC2322****ELECTRIC CIRCUITS AND ELECTRON DEVICES**

L	T	P	C
3	1	0	4

(Common To CS and IT)

Objective(s): *Make the Students to Understand**The concepts of Basic laws and theorems related to DC & AC Electric circuits. The concept of RL, RC and RLC circuits and their responses.**The principle of operation and construction of semiconductor diodes, transistor and special semiconductor devices.***UNIT - I CIRCUIT ANALYSIS TECHNIQUES****12 Hrs**

Kirchhoffs current and voltage laws – series and parallel connection of independent sources – resistors, inductors and capacitors in series and parallel combination – Network Theorems – Thevenin, Superposition, Norton, Maximum power transfer and duality – Star-delta conversion.

UNIT - II A.C. CIRCUITS**12 Hrs**

Generation of Alternating Voltage and Current – Sine Wave – Instantaneous, Peak, Average and RMS (Effective) values of sine waves – Form factor – Peak factor – Alternating current and voltage in a Pure resistance, Pure Inductance and Pure Capacitance circuits – Analysis of series combination of RL, RC and RLC circuits (Parameters to be considered: Impedance, Phasor diagram, Impedance Triangle, Instantaneous power, Average power, True power, Reactive power, Apparent power, Power Factor) – Analysis of parallel combination of RLC circuits.

UNIT - III SEMICONDUCTOR DIODES**12 Hrs**

Structure of semiconductor materials (Si and Ge) – covalent bond in semiconductor materials (Si and Ge) – energy band structure in insulators, semiconductors and conductors – Classification of semiconductors – Conductivity of N and P-type semiconductors – Mass-Action law – semiconductor parameters : intrinsic concentration (n_i), Mobility (μ), conductivity (σ) and energy gap (EG) – Drift and Diffusion currents – Operation and V-I characteristics of PN junction diode – space charge and diffusion capacitances – Energy band structure of an open circuited PN junction – diode current equation – effect of temperature on PN junction diode – Operation and V-I characteristics of zener diode – Breakdown mechanisms in zener diode : Avalanche Breakdown – zener Breakdown.

UNIT - IV TRANSISTORS**12 Hrs**

Constructional details of transistors – Types of transistors – transistor biasing – Principle of operation of PNP and NPN transistors – study of CE, CB and CC configurations and comparison of their input and output characteristics – Breakdown in transistors – Types of JFET – Constructional details of N-Channel and P-Channel JFET and their operation – Drain and Transfer characteristics of JFET – comparison of N-Channel and P-Channel JFET – Types of MOSFET : Enhancement and depletion types – Constructional details of MOSFET and their operation – Drain and Transfer characteristics of MOSFET – Comparison of BJT with MOSFET – thermal effect on MOSFET.

UNIT - V SPECIAL SEMICONDUCTOR DEVICES (Qualitative Treatment only)**12 Hrs**

Constructional details, operation, applications and characteristics: Tunnel diode – PIN diode, varactor diode – SCR and its two transistor equivalent model – UJT – Diac and Triac – Laser, Photodiode, Phototransistor, Photoconductive and Photovoltaic cells – LED, LCD.

L: 45, T: 15, Total Hours: 60

TEXT BOOKS:

1. David A. Bell, "Electronic Devices and Circuits", Oxford University Press, 5th Edition, 2008.
2. Joseph A. Edminister, Mahmood, Nahri, "Electric Circuits" – Schaum Series TMH, 2001.

REFERENCES:

1. S. Salivahanan, N. Suresh kumar and A. Vallavanraj, "Electronic Devices and Circuits", 2nd Edition, 2008.
2. William H. Hayt, J.V. Jack, E. Kemmely and Steven M. Durbin, "Engineering Circuit Analysis", TMH, 6th Edition, 2002.
3. J. Millman & Halkins, Satyabranta Jit, "Electronic Devices & Circuits", TMH, 2nd Edition, 2008.
4. David A. Bell, "Electric Circuits" – Prentice Hall of India Private Limited, Sixth Edition, 2003.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)

SEMESTER – III

12EC2323

DIGITAL PRINCIPLES AND SYSTEM DESIGN

L	T	P	C
3	0	0	3

(Common to CS & IT)

Objective(s): The students are expected

*To understand different methods used for the simplification of Boolean functions
To design and implement Combinational circuits
To design and implement Synchronous sequential circuits
To design and implement Asynchronous sequential circuits
To study the fundamentals of VHDL / Verilog HDL*

UNIT - I BOOLEAN ALGEBRA AND LOGIC GATES

09 Hrs

Review of binary number systems - Binary arithmetic - Binary codes - Boolean algebra and theorems - Boolean functions - Simplifications of Boolean functions using Karnaugh map and Tabulation methods - Implementation of Boolean functions using logic gates.

UNIT - II COMBINATIONAL LOGIC

09 Hrs

Combinational circuits - Analysis and design procedures - Circuits for arithmetic operations - Code conversion - Introduction to Hardware Description Language (HDL).

UNIT - III DESIGN WITH MSI DEVICES

09 Hrs

Decoders and Encoders - Multiplexers and Demultiplexers - Memory and Programmable Logic Devices - HDL for Combinational circuits.

UNIT - IV SYNCHRONOUS SEQUENTIAL LOGIC

09 Hrs

Latches and Flip-flops - Sequential circuits - Analysis and design procedures - State reduction and state assignment - Shift registers - Counters - HDL for Sequential Circuits - ASM Chart.

UNIT - V ASYNCHRONOUS SEQUENTIAL LOGIC

09 Hrs

Analysis and design of Asynchronous sequential circuits - Reduction of state and flow tables - Race-free state assignment - Hazards.

Total Hours: 45

Text Books :

1. M. Morris Mano, "Digital Design", 4th Edition, Pearson Education, 2009.
2. Digital Fundamentals, by Thomas L. Floyd, Eighth Edition, PHI 2003.

References :

1. Charles H. Roth, "Fundamentals of Logic Design", 5th Edition Thomson Learning, 2011.
2. John M. Yarbrough, "Digital Logic Applications and Design", Thomson Learning, 2011.
3. Donald D. Givone, "Digital Principles and Design", TMH, 2011.
4. Donald P. Leach and Albert Paul Malvino, "Digital Principles and Applications", 7th Edition, TMH, 2011.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**SEMESTER – III****COMPUTER ORGANIZATION AND ARCHITECTURE**

(Common to CS & IT)

L T P C

3 0 0 3

12CS2304

Objective(s): To learn the basic structure of computers, basic processing unit, concepts of pipelining, memory system and I/O organization.

UNIT – I BASIC STRUCTURE OF COMPUTERS**09 Hrs**

Functional units – Basic operational concepts – Bus structures – Performance and metrics – Instructions and instruction sequencing – Instruction set architecture – Addressing modes – RISC – CISC – ALU Design – Fixed and Floating point operations.

UNIT – II BASIC PROCESSING UNIT**09 Hrs**

Fundamental concepts – Execution of a complete instruction – Multiple bus organization – Hardwired control – Micro programmed control – Nano programming.

UNIT - III PIPELINING**09 Hrs**

Basic concepts – Pipelining performance – Types of hazards- Data hazards – Instruction hazards (prediction) – Influence on instruction sets – Data path and control considerations – Performance considerations – superscalar operation.

UNIT – IV MEMORY SYSTEM**09 Hrs**

Basic concepts – Semiconductor RAM – ROM – Speed – Size and cost – Cache Memories – Improving cache performance – Virtual memory – Memory management requirements – Secondary storage devices.

UNIT – V I/O ORGANIZATION**09 Hrs**

Accessing I/O devices – Programmed Input / Output – Interrupts – Direct Memory Access – Buses – Interface circuits – Standard I/O Interfaces (PCI, SCSI, USB).

Total Hours: 45**Text Books:**

1. Carl Hamacher, Zvonko Vranesic and Safwat Zaky, "Computer Organization", Fifth Edition, Tata McGraw Hill, 2011.
2. David A. Patterson and John L. Hennessy, "Computer Organization and Design: The Hardware / Software interface", Elsevier, 2012.

References:

1. John P. Hayes, "Computer Architecture and Organization", Third Edition, Tata McGraw Hill, 2012.
2. William Stallings, "Computer Organization and Architecture – Designing for Performance", Ninth Edition, Pearson Education, 2012.
3. M. Morris Mano, "Computer System Architecture", Third Edition, Pearson Education, 2007.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)

SEMESTER III

12IT3305

DATABASE TECHNOLOGY

L	T	P	C
3	0	0	3

Objective(s):

- To comprehend the fundamentals of data models and to conceptualize and depict a database system using ER diagram.*
- To design SQL and relational database.*
- To understand the internal storage structures using different file and indexing techniques which will help in physical DB design.*
- To know the fundamental concepts of transaction processing, concurrency control techniques and recovery procedure.*
- To know about the storage and query processing Techniques.*

UNIT I INTRODUCTION

09 Hrs

Purpose of Database System – Views of data – Data Models – Database Languages – Database System Architecture – Database users and Administrator – Entity-Relationship model (E-R model) – E-R Diagrams – Introduction to relational databases – Structure of relational model – Types – Keys.

UNIT II RELATIONAL MODEL

09 Hrs

Relational Algebra – Fundamental operations – Additional Operations – SQL fundamentals – Integrity – Triggers – Security – Advanced SQL features – Embedded SQL – Dynamic SQL – Missing Information – Views

UNIT III DATABASE DESIGN

09 Hrs

Functional Dependencies – Non-loss Decomposition – Functional Dependencies – First, Second and Third Normal Forms – Dependency Preservation – Boyce-Codd Normal Form – Multi-valued Dependencies and Fourth Normal Form – Join Dependencies and Fifth Normal Form.

UNIT IV TRANSACTIONS

09 Hrs

Transaction Concepts – Transaction Recovery – ACID Properties – System and Media Recovery – Two Phase Commit – Save Points – SQL Facilities for recovery – Concurrency – Need for Concurrency – Locking Protocols – Two Phase Locking – Intent Locking – Deadlock – Serializability – Recovery Isolation Levels – SQL Facilities for Concurrency.

UNIT V DATA STORAGE AND QUERY PROCESSING

09 Hrs

Overview of Physical Storage Media – Magnetic Disks – RAID – Tertiary storage – File Organization – Organization of Records in Files – Indexing and Hashing – Ordered Indices – B+ tree Index Files – B tree Index Files – Static Hashing – Dynamic Hashing – Query Processing Overview – Selection Operation – Sorting – Join Operation – Database Tuning.

Total Hours: 45

Text books:

1. Abraham Silberschatz, Henry F. Korth, S. Sudharshan, "Database System Concepts", Sixth Edition, Tata McGraw Hill, 2012.
2. C.J.Date, A.Kannan, S.Swamynathan, "An Introduction to Database Systems", Eighth Edition, Pearson Education, 2012.

References:

1. Ramez Elmasri, Shamkant B. Navathe, "Fundamentals of Database Systems", Fourth Edition, Pearson / Addison Wesley, 2007.
2. Raghu Ramakrishnan, "Database Management Systems", Third Edition, McGraw Hill, 2003.
3. S.K.Singh, "Database Systems Concepts, Design and Applications", First Edition, Pearson Education, 2006.
4. Hector Garcia-Molina, Jeffrey D. Ullman and Jennifer Widom, "Database Systems – The Complete Book", Second Edition, Prentice Hall, 2002.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)

SEMESTER III

L	T	P	C
3	0	0	3

12IT3306

OBJECT ORIENTED PROGRAMMING**Objective(s):** *To learn basics of object-oriented programming**To learn the concepts of constructors and operator overloading**To understand the concepts of templates and inheritance**To understand files and streams in object oriented programming***UNIT I PRINCIPLES OF OOP****09 Hrs**

Object oriented programming – Basic concepts – Objects – Classes – Methods and Messages – Abstraction and Encapsulation – Inheritance – Abstract classes – Polymorphism. Introduction to C++ – Classes – Access Specifiers – Function and Data Members – Default Arguments – Function Overloading – Friend Functions – Const and Volatile Functions – Static Members – Pointers and Objects – Nested Classes – Local Classes.

UNIT II CONSTRUCTORS**09 Hrs**

Constructors – Default Constructor – Parameterized Constructors – Constructor with Dynamic Allocation – Copy Constructor – Destructors – Defining Operator Overloading – Unary Operator Overloading – Binary Operator Overloading – Overloading through Friend Functions – Overloading the Assignment Operator – Type Conversion.

UNIT III INHERITANCE AND POLYMORPHISM**09 Hrs**

Inheritance – Public, Private, and Protected Derivations – Multiple Inheritance – Virtual Base Class – Abstract Class – Composite Objects – Runtime Polymorphism – Virtual Functions – Pure Virtual Functions – RTTI – Type id – Dynamic Casting – RTTI and Templates – Cross Casting – Down Casting.

UNIT IV FILES AND STREAMS**09 Hrs**

Stream Classes – Formatted and Unformatted I/O – Manipulators – File handling – Sequential and random file access – Namespaces – std Namespace – ANSI String Objects – Standard Template Library.

UNIT V TEMPLATES AND EXCEPTION HANDLING**09 Hrs**

Template Function – Template class – Exception handling – try-catch-throw paradigm – Exception specification – Multiple Catch – Nested try-re throwing Exception.

Total Hours: 45**Text books:**

1. E. Balagurusamy, "Object Oriented Programming with C++", The McGraw – Hill, Fourth Edition 2011
2. B. Trivedi, "Programming with ANSI C++", Oxford University Press, 2007.

References:

1. Robert Lafore, "Object Oriented Programming in C++", Sams Publishing, 2007.
2. Ira Pohl, "Object Oriented Programming using C++", Pearson Education, Second Edition Reprint 2004.
3. S. B. Lippman, Josee Lajole, Barbara E. Moo, "C++ Primer", Fourth Edition, Pearson Education, 2005.
4. B. Stroustrup, "The C++ Programming language", Third edition, Pearson Education, 2004.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)

SEMESTER III

DATABASE TECHNOLOGY LABORATORY

L	T	P	C
0	0	3	2

12IT3310

Objective(s): To get hands on experience regarding the application of theoretical concepts learnt in this semester.

LIST OF EXPERIMENTS

1. Implementation of Data Definition, Table Creation, Constraints. ✓
2. Implementation of Insert, Select, Update & Delete Commands. ✓
3. Implementing High level programming language extensions. ✓
4. Programming with Database Connectivity (With a front end) ✓
5. Forms. ✓
6. Triggers. ✓
7. Designing Menu. ✓
8. Importing/ Exporting Data. ✓
9. Report Generation in visual basic. ✓
10. Database Design and implementation (Application Development). ✓

Total Hours: 45

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**SEMESTER – III**

		L	T	P	C
12EC3351	DIGITAL LABORATORY	0	0	3	2

Objective(s): *This course will provide students with hands-on experience to design and implement combinational logic circuits, sequential logic circuits and simulate the same using HDL.*

LIST OF EXPERIMENTS

1. Verification of Boolean theorems using digital logic gates.
2. Design and implementation of Combinational circuits using basic gates for arbitrary functions and Code Converters.
3. Design and implementation of 4-bit Binary adder / subtractor using basic gates and MSI devices.
4. Design and implementation of Parity generator / checker using basic gates and MSI devices.
5. Design and implementation of Magnitude comparator.
6. Design and implementation of application using Multiplexers / Demultiplexers.
7. Design and implementation of Shift registers.
8. Design and implementation of Synchronous and Asynchronous counters.
9. Simulation of Combinational circuits using Hardware Description Language (VHDL / Verilog HDL software required).
10. Simulation of Sequential circuits using Hardware Description Language.(VHDL / Verilog HDL software required).

Total Hours: 45

K.S.R. COLLEGE OF ENGINEERING (Autonomous)

SEMESTER III

12IT3312 OBJECT ORIENTED PROGRAMMING LABORATORY

L	T	P	C
0	0	3	2

Objective(s): *To develop object oriented programming skills using C++
To know the implementation concepts of inheritance and operator overloading To
make the students to solve the problems using object oriented concepts.*

LIST OF EXPERIMENTS

Implementation of the following concepts:

1. Class and Objects
2. Friend function
3. Function and Function overloading
4. Constructors and destructors
5. Inheritance
6. Polymorphism
7. Operator overloading
8. Type conversion
9. Templates
10. Exception Handling

Total Hours: 45

K.S.R. COLLEGE OF ENGINEERING (Autonomous)

SEMESTER – III

12HR1313

CAREER DEVELOPMENT SKILLS – III

(Common to all branches)

L T P C

0 2 0 1

Objective(s): To improve reading, writing skills and personality development.
To enhance arithmetical & logical ability.

UNIT – I READING AND WRITING**05 Hrs**Reading Comprehension and Essay Writing (*Activity on Reading & Writing*)**UNIT – II CREATIVE THINKING****05 Hrs**

Motivation - Creativity – Innovation –Learning Creativity – Presence of Mind –Brainstorming –
Strategies for Developing Creativity –Overcoming myths about creativity - **Activity (Extempore)**

UNIT – III TIME MANAGEMENT AND GOAL SETTING**06 Hrs**

Importance of time – Managing time – Time Wasters – The art of Prioritizing and Scheduling –
Activity - Concept of goal-setting - Importance of goals - Dream Vs Goal – Reason for failure of
Goals - SMART (Specific, Measurable, Achievable, Realistic, Time-bound) goals.

UNIT – IV QUANTITATIVE APTITUDE III**07 Hrs**

Chain Rule -Logarithms – Areas – Volumes - Partnerships and shares - Profit and loss.

UNIT – V LOGICAL REASONING II**07 Hrs**

Alphabet test & Series– Venn Diagrams-Series Completion -Number series.

Total Hours: 30**References:**

1. R.V.Praveen, "Quantitative Aptitude and Reasoning", PHI 2nd Edition, 2013.
2. Abhijit Guha, "Quantitative Aptitude for Competitive Examinations", 4th edition, TMH, 2011.
3. Jeff Butterfield, "Soft Skills for Everyone", Cengage Learning India pvt ltd, 2011, New Delhi.
4. R.S.Agarwal, "Quantitative Aptitude", 3rd edition, TMH, 2011.
5. Edgar Thorpe, "Test of reasoning", 4th edition, TMH, 2011.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)

SEMESTER IV

12IT3401	ADVANCED DATA STRUCTURES AND ALGORITHM	L T P C
		3 0 0 3

Objective(s): *To understand the different methods of organizing large amounts of data.
To know about different data structures.
To find a solution to the specific problem.*

UNIT I FUNDAMENTALS OF DATA STRUCTURES 09 Hrs

Abstract Data Type (ADT) – The List ADT – Doubly-Linked Lists – The Stack ADT – The Queue ADT – Cursor Based Linked List – Circular Queue Implementation – Applications of Lists – Applications of Stack and Queue.

UNIT II TREE STRUCTURES 09 Hrs

Preliminaries – Binary Trees – The Search Tree ADT – Binary Search Trees – AVL Trees – Tree Traversals – Representing Lists as Binary Trees – Expression Trees – Applications of Trees.

UNIT III SORTING AND HASHING 09 Hrs

Preliminaries – Insertion Sort – Shell Sort – Heap Sort – Merge Sort – Quick Sort – External Sorting. General Idea – Hash Function – Separate Chaining – Open Addressing – Linear Probing – Rehashing – Extendible Hashing.

UNIT IV GRAPH 09 Hrs

Topological Sort – Shortest Path Algorithms – Unweighted Shortest Paths – Dijkstra's Algorithm – Minimum Spanning Tree – Prim's Algorithm – Kruskal Algorithm Applications of Depth-First Search – Breadth First Search – Undirected Graphs – Biconnectivity.

UNIT V ALGORITHM DESIGN AND ANALYSIS 09 Hrs

Introduction to algorithm design techniques: Greedy algorithms – Divide and Conquer – Dynamic Programming – Backtracking – Branch and Bound – Randomized Algorithms – Introduction to Algorithm Analysis: Asymptotic Notations – Recurrences.

Total Hours: 45

Text Books:

1. M. A. Weiss, "Data Structures and Algorithm Analysis in C", Second Edition, Pearson Education, 2010.
2. A. V. Aho, J. E. Hopcroft, and J. D. Ullman, "Data Structures and Algorithms", Pearson Education, 2002.

References:

1. R. F. Gilberg, B. A. Forouzan, "Data Structures", Second Edition, Thomson India Edition, 2005.
2. Sara Baase and A. Van Gelder, "Computer Algorithms", Third Edition, Pearson Education, 2000.
3. T. H. Cormen, C. E. Leiserson, R. L. Rivest, and C. Stein, "Introduction to algorithms", Second Edition, Prentice Hall of India Ltd, 2001.
4. Horowitz Sahni, Rajasekaran, "Computer Algorithms", Galgotia, 2002.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**SEMESTER – IV**

12MA3402	DISCRETE STRUCTURE AND AUTOMATA THEORY	L	T	P	C
		3	1	0	4

Objective(s): *To know about Mathematical Logic, Basic Set Theory, Graph Theory, Formal languages and Finite Automata.*

UNIT – I MATHEMATICAL LOGIC 12 Hrs

Propositions and logical operators - Truth table - Propositions generated by a set. Equivalence and implication - Basic laws - Some more connectives - Functionally complete set of connectives - Normal forms - Proofs in Propositional calculus.

UNIT – II BASIC SET THEORY 12 Hrs

Basic Definitions – Venn Diagrams and set operations – Laws of set theory – Principle of inclusion and exclusion - partitions – Permutation and Combination – Relations – Properties of relations – Matrices of relations – Closure operations on relations – Functions – injective, surjective and bijective functions.

UNIT - III GRAPH THEORY 12 Hrs

Graphs and graph models – Graph terminology and special types of graphs – Representing graphs and graph isomorphism – connectivity – Euler and Hamilton paths – Planar Graphs.

UNIT – IV FORMAL LANGUAGES 12 Hrs

Languages and Grammars – Phrase Structure Grammar – Classification of Grammars – Pumping Lemma for Regular Languages – Context Free Languages.

UNIT – V FINITE STATE AUTOMATA 12 Hrs

Finite State Automata – Deterministic Finite State Automata (DFA), Non Deterministic Finite State Automata (NFA) – Equivalence of DFA and NFA – Equivalence of NFA and Regular Languages.

L: 45, T: 15, Total Hours: 60

Text Books:

1. Kenneth H Rosen, "Discrete Mathematics", 6th Edition, Tata McGraw Hill 2009.
2. J. P. Tremblay, R. Manohar, "Mathematical Structures with Applications to Computer Science", Tata McGraw Hill Edition 2002.
3. Hopcroft and Ullman, "Introduction to Automata Theory, Languages and Computation", Narosa Publishing House, Delhi, 2002.

References:

4. Swapan Kumar Chakraborty & Bikash Kanti Sarkar, "Discrete Mathematics" Oxford University Press, 2011.
5. Seymour Lipschutz and Mark Lipson, "Discrete Mathematics", Schaum's Outlines, Tata McGraw Hill Edition Pub. Co. Ltd., New Delhi, Second Edition 2007.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)

SEMESTER – IV

		L	T	P	C
12EC2423	MICROPROCESSORS AND MICROCONTROLLERS	3	0	0	3

(Common to CS and IT)

Objective(s): *Make the students*

To learn about 8085, 8086 processors and 8051 controller.

To gain knowledge on assembly language programming of 8085, 8086 and 8051. To learn interfacing of peripherals with 8085, 8086 and 8051.

UNIT - I 8085 MICROPROCESSOR 09 Hrs

8085 Microprocessor Architecture - Addressing Modes - Instruction Set - Programming of 8085.

UNIT - II 8086 MICROPROCESSOR 09 Hrs

8086 Microprocessor Architecture - Signals - Instruction Set - Addressing Modes - Assembler Directives - Assembly Language Programming - Procedures - Macros - Interrupts and Interrupt Service Routines - BIOS Function Calls.

UNIT - III MULTIPROCESSOR CONFIGURATIONS 09 Hrs

Coprocessor Configuration - Closely Coupled Configuration - Loosely Coupled Configuration - 8087 Numeric Data Processor Architecture and Data Types - 8089 I/O Processor Architecture - Communication between CPU and IOP.

UNIT - IV I/O INTERFACING 09 Hrs

Memory interfacing and I/O interfacing with 8085 - Parallel Communication Interface - Serial Communication Interface - Timer - Keyboard/Display Controller - Interrupt Controller - DMA Controller (8237) - Applications - Stepper Motor and Temperature Control.

UNIT - V 8051 MICROCONTROLLERS 09 Hrs

Architecture of 8051 Microcontroller - Signals - I/O Ports - Memory - Counters and Timers - Serial Data I/O - Interrupts - Interfacing - Keyboard, LCD, ADC and DAC.

Total Hours: 45

Text Books :

1. Ramesh S. Gaonkar, "Microprocessor – Architecture, Programming and Applications with 8085" Penram International Publisher, 5th Edition, 2006.
2. A.K.Ray & K. M Bhurchandi, "Advanced Microprocessor and Peripherals – Architecture, Programming and Interfacing", Tata McGrawHill, 2006.
3. Kenneth J. Ayala, "The 8051 microcontroller Architecture, Programming and Applications" Second Edition, Penram International.

References :

1. Douglas V. Hall, "Microprocessors and Interfacing: Programming and Hardware", Second Edition, Tata McGraw Hill, 2006.
2. Yn - cheng Liu, Glenn A. Gibson, "Microcomputer Systems: The 8086 / 8088 Family architecture, Programming and Design", Second Edition, Prentice Hall of India, 2006.
3. Mohamed Ali Mazidi, Janice GillispieMazidi, "The 8051 microcontroller and Embedded Systems Using Assembly and C", Second Edition, Pearson Education /Prentice Hall of India, 2007.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**SEMESTER IV****12IT2444****SOFTWARE ENGINEERING**

(Common To CS & IT)

L	T	P	C
3	0	0	3

Objective(s): This course introduces the concepts and methods required for the construction of large software intensive systems. It aims to develop a broad understanding of the discipline of software engineering.

It seeks to complement this with a detailed knowledge of techniques for the analysis and design of complex software intensive systems. It aims to set these techniques in an appropriate engineering and management context.

It provides a brief account of associated professional and legal issues.

UNIT I INTRODUCTION 09 Hrs

The Nature of software – Software Engineering – Software process – Software Engineering process – A Generic process model – Process Assessment and Improvement–Prescriptive Process models– Specialized process Model – Process Technology – Product and process – Agile Development.

UNIT II REQUIREMENT ENGINEERING 09 Hrs

Requirement Engineering – Establishing Groundwork – Eliciting Requirements – Developing Use cases – Building the Requirements Model – Requirements Analysis – Requirements Modeling Strategies – Flow Oriented Modeling – Creating a Behavioral Model.

UNIT III DESIGN CONCEPTS AND ARCHITECTURAL DESIGN 09 Hrs

Design within the Context of Software Engineering – Design process – Design concepts – Design model. Architectural design: Software architecture – Architectural Genres – Architectural styles – Architectural Design – Architecture Mapping using dataflow.

UNIT IV TESTING TECHNIQUES 09 Hrs

A strategic Approach for Software testing – Test Strategies for conventional software – Validation Testing– System Testing – The Art of Debugging. Testing Conventional Applications: Software testing Fundamentals – Internal and External Views Testing – White Box Testing – Basis Path Testing – Control Structure Testing – Black Box Testing – Control Structure testing – Black Box Testing – Model Based testing – Testing for Specialized Environments – Architectures and Applications – Patterns for Software Testing.

UNIT V QUALITY MANAGEMENT 09 Hrs

Quality Concepts: Software Quality –The Software Quality Dilemma – Achieving Software Quality. Formal Techniques Review – Software quality Assurance –Emerging Trends in Software Engineering.

Total Hours: 45**Text books:**

1. Roger. S. Pressman, "Software Engineering – A Practitioner's Approach", Seventh Edition, McGraw Hill International Edition, Singapore, 2010.
2. Ian Sommerville, "Software Engineering", Sixth Edition, Pearson Education, New Delhi, 2001.

References:

1. Jalote P., "An Integrated Approach to Software Engineering", Third edition, Narosa Publishers New Delhi, 2005.
2. Ali Behforooz, Frederick J Hudson, "Software Engineering Fundamentals", Second edition, Oxford University Press, Noida, 2003.
3. Shari Lawrence Pfleeger, "Software Engineering Theory and Practice", Second Edition, Pearson Education, New Delhi, 2001.
4. Fairley R., "Software Engineering Concepts", Second edition, Tata McGraw Hill. New Delhi, 2003.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)

SEMESTER – IV

12CS2445

OPERATING SYSTEMS

(Common to CS, EC & IT)

L T P C

3 0 0 3

Objective(s): *To learn and understand the various aspects of operating systems such as process management, memory management, and I/O management.*

UNIT – I PROCESSES AND THREADS

09 Hrs

Introduction to operating systems – operating system structures – system calls – system programs – system structure. Processes: Process concept – Process scheduling – Operations on processes – Cooperating processes – Inter-process communication – Communication in client-server systems. Case study: IPC in Linux. Threads: Multi-threading models – Threading issues.

UNIT – II PROCESS SCHEDULING AND SYNCHRONIZATION

09 Hrs

CPU Scheduling: Scheduling criteria – Scheduling algorithms – Multiple-processor scheduling – Real time scheduling – Algorithm Evaluation. Case study: Process scheduling in Linux. Process Synchronization: The critical-section problem – Synchronization hardware – Semaphores – Classic problems of synchronization – critical regions – Monitors. Deadlock: System model – Deadlock characterization – Methods for handling deadlocks – Deadlock prevention – Deadlock avoidance – Deadlock detection – Recovery from deadlock.

UNIT – III STORAGE MANAGEMENT

09 Hrs

Memory Management: Background – Swapping – Contiguous memory allocation – Paging – Segmentation – Segmentation with paging. Virtual Memory: Background – Demand paging – Process creation – Page replacement – Allocation of frames – Thrashing. Case Study: Memory management in Linux.

UNIT – IV FILE SYSTEMS

09 Hrs

File-System Interface: File concept – Access methods – Directory structure – File system mounting – Protection. File-System Implementation: Directory implementation – Allocation methods – Free-space management – efficiency and performance – recovery – log-structured file systems. Case studies: File system in Linux – file system in Windows XP.

UNIT – V I/O SYSTEMS

09 Hrs

I/O Systems – I/O Hardware – Application I/O interface – kernel I/O subsystem – streams – performance. Mass-Storage Structure: Disk scheduling – Disk management – Swap-space management – RAID – disk attachment – stable storage – tertiary storage. Case study: I/O in Linux

Total Hours: 45

Text Book:

1. Silberschatz, Galvin, and Gagne, "Operating System Concepts", Sixth Edition, Wiley India Pvt Ltd, 2012.

References:

1. Gary Nutt, "Operating Systems", Third Edition, Pearson Education, 2009.
2. Andrew S. Tanenbaum, "Modern Operating Systems", Second Edition, Pearson Education, 2007.
3. Harvey M. Deital, "Operating Systems", Third Edition, Pearson Education, 2004.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**SEMESTER IV****12IT3406****JAVA PROGRAMMING**

L	T	P	C
3	0	0	3

Objective(s): *To understand the basic concepts of Java Programming Language*
To know the fundamentals of object oriented concepts
To comprehend the core packages of java

UNIT I BASICS**09 Hrs**

The Genesis of Java – Overview of Java – Data types – Variables – Arrays – Operators – Control statements – Classes and Objects.

UNIT II LANGUAGE ESSENTIALS**09 Hrs**

Inheritance – Packages – Interface – String handling – Exception – User defined and predefined exception handling – Multithreading – Thread synchronization – Priority – Inter process communication.

UNIT III EXPLORING I/O AND LANG PACKAGES**09 Hrs**

String Handling: String Constructors – Special String operations – Character extraction – String comparison – Modifying String – String buffer – String tokenizer – Exploring java.lang: Simple type wrappers – Object, math – Exploring java.io: File – Input Stream – Output Stream – File Input Stream – File Output Stream. Object Input Stream – Object Output Stream.

UNIT IV EXPLORING APPLET AND AWT**09 Hrs**

The Applet class: Applet Initialization and Termination – Applet Skeleton – Simple Applet display method Event handling: Event handling mechanisms – Event classes – Sources of Events – Event Listener interfaces – Introducing AWT: Working with Windows – Controls – Layout managers – Menus.

UNIT V ADVANCED CONCEPTS**09 Hrs**

JDBC – Networking basics – Java network programming – Java utilities package and collections.

Total Hours: 45**Text Books:**

1. Herbert Scheldt, "The Complete Reference JAVA 2" Fifth Edition, Tata McGrawHill, 2008.
2. H. M.Deitel and P.I.Deitel, "Java - How to Program", Pearson Education, New Delhi, 2008.

References:

1. Ken Arnold, James Gosling "The Java Language", First Edition, Addison Wesley, 1998.
2. E.Balagurusamy, "Programming with JAVA", Tata McGrawHill, New Delhi, 2009.
3. R.Hubbard John, "Schaum's Outline of Theory and Problems of Programming with Java". McGraw Hill, New Delhi, 2006.
4. Cay S.Horstmann and Gary Cornell, "Core Java: Volume I – Fundamentals", Eighth Edition, Sun Microsystems Press, 2008.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)

SEMESTER – IV

12EC2410

MICROPROCESSORS AND MICROCONTROLLERS

L	T	P	C
0	0	3	2

LABORATORY

(Common to CS and IT)

Objective(s): *To implement the assembly language programming of 8085, 8086 and 8051. To study the system function calls like BIOS/DOS.
To experiment the interface concepts of various peripheral device with processor and controller.*

LIST OF EXPERIMENTS

1. Programming with 8085.
2. Programming with 8086:
Experiments Including BIOS/DOS Calls: Keyboard Control, Display, File Manipulation.
3. Interfacing 8085 with 8255/8253/8279/8251
4. Interfacing 8086 with 8255/8253/8279/8251
5. Programming with 8051.
6. 8051 Microcontroller based experiments for Control Applications.
7. Mini- Project.

Total Hours: 45

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**SEMESTER – IV****12CS2411****OPERATING SYSTEMS LABORATORY**

(Common to CS & IT)

L	T	P	C
0	0	3	2

Objective(s): *To enable students to understand and implement the following operating system concepts on LINUX or other UNIX like platform, using C for high level language implementation.*

LIST OF EXPERIMENTS

1. Write programs using the following System Calls of UNIX Operating System: fork, exec, getpid, exit, wait, close, stat, opendir, readdir.
2. Write programs using the I/O System Calls of UNIX Operating System (open, read, write, etc)
3. Write C programs to Simulate UNIX Commands
4. Given the list of Processes, their CPU burst times and arrival times, display/print the Gantt chart for FCFS and SJF. For each of the scheduling policies, compute and print the average waiting time and average turnaround time.
5. Given the list of processes, their CPU burst times and arrival times, display/print the Gantt chart for Priority and Round robin. For each of the scheduling policies, compute and print the average waiting time and average turnaround time.
6. Developing Application using Inter Process Communication (using Shared Memory, or Message Queues)
7. Implement the Producer – Consumer Problem using Semaphores (using UNIX system calls).
8. Implement some Memory Management schemes – I
9. Implement some Memory Management schemes – II
10. Implement any File Allocation Technique (Linked, Indexed or Contiguous).

Total Hours: 45**List of Equipments and software required for a batch of 30 students**

1. PC – 30 nos.
2. Processor – Pentium IV with 2.0 GHz or higher
3. RAM – 256 MB or higher
4. Hard disk – 20 GB or higher
5. OS – LINUX : Ubuntu / OpenSUSE / Fedora / Red Hat / Debian / Mint OS

Note: A single server could be loaded with Linux and connected from the individual PCs.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)

SEMESTER IV

12IT3412

JAVA PROGRAMMING LABORATORY

Objective(s): *To practice the basic structure of Java Programming Language.
To practice the core packages of java.*

L T P C
0 0 3 2

LIST OF EXPERIMENTS

Implementation of the following concepts:

1. Object Oriented Concepts.
2. Interface and Package
3. String and Stream Handling
4. Built-in and User-defined Exception
5. Multithreading
6. Applet with AWT Controls.
7. Network Programming
8. Implementation of JDBC

Total Hours: 45

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**SEMESTER – IV**

		L	T	P	C
12HR1413	CAREER DEVELOPMENT SKILLS – IV	0	2	0	1

Objective(s): To inculcate people skills, time management and to enhance personality.
To enhance arithmetical & analytical ability.

UNIT – I INTERPERSONAL SKILLS & SWOT ANALYSIS 04 Hrs

Assertiveness – conflict – Conversation starters –Influence – Negotiation – Networking – Relationships –Teamwork – Trust - Introduction to SWOT Analysis – SWOT Worksheet
(Activity).

UNIT – II STRESS MANAGEMENT 04 Hrs

Introduction to Stress – What are Stressors –Stress Prevention –Coping Skills –Stress at Home/ Outside –Overcoming Monetary Stress and Unhealthy Worry –Dealing With Frustration and Anger.

UNIT – III VOCABULARY PRACTICE 07 Hrs

Synonyms – Antonyms – Confusing Words/Homonyms– Prepositions - Conjunctions – Jumbled Sentences/Words – (Activity on all topics)

UNIT – IV QUANTITATIVE APTITUDE IV 09 Hrs

Simple interest & Compound interest - Allegation & Mixtures - Time and Work & Pipes and cisterns-Heights and Distances.

UNIT – V REASONING (VERBAL & NON VERBAL) 06 Hrs

Blood Relations – Grammar (Tenses, Subject, and verb agreement) – Sentence formation and Correction.

Total Hours: 30

References:

1. R.V.Praveen, "Quantitative Aptitude and Reasoning", PHI 2nd Edition, 2013.
2. Abhijit Guha, "Quantitative Aptitude for Competitive Examinations", 4th edition, TMH, 2011
3. Bhatnagar Nitin, "Communicative English for Engineers and Professionals", ISBN 9788131732045, Pearson Publication, New Delhi, 2010.
4. Jeff Butterfield, "Soft Skills for Everyone", Cengage Learning India pvt ltd, New Delhi, 2011.
5. R.S.Agarwal "Quantitative Aptitude", 3rd edition, TMH, 2011.
6. Edgar Thorpe, "Test of reasoning", 4th edition, TMH, 2011.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)

SEMESTER – V

L T P C
3 1 0 4

12MA2501

PROBABILITY AND QUEUEING THEORY
(Common to CS & IT)

Objective(s):

- To provide the required mathematical support in real life problems and develop probabilistic models which can be used in several areas of Science and Engineering.
- To gain the fundamental knowledge of the probability concepts and to acquire skills in analyzing queueing models.

UNIT - I ONE DIMENSIONAL RANDOM VARIABLE 12 Hrs

Discrete and Continuous Random Variables – Moments – Moment Generating Functions and their Properties – Standard Distributions: Binomial, Poisson, Uniform, Exponential and Normal Distribution.

UNIT - II TWO DIMENSIONAL RANDOM VARIABLES 12 Hrs

Joint Distributions – Marginal and Conditional Distributions – Covariance – Correlation and Regression - Central Limit Theorem (for Independent and Identically Distributed Random Variables).

UNIT - III RANDOM PROCESSES 12 Hrs

Classification – Stationary Process – Ergodic Process - Markov Process – Markov Chain – Transition Probabilities – Limiting Distributions - Poisson Process.

UNIT - IV QUEUEING THEORY 12 Hrs

Markovian Queues – Little's formula – Single Server Models : (M/M/1):(∞/FIFO) and (M/M/1):(N/FIFO) – Multi Server Models : (M/M/C):(∞/FIFO) and (M/M/C):(N/FIFO).

UNIT - V NON-MARKOVIAN QUEUES AND QUEUEING NETWORKS 12 Hrs

M/G/1 Queues : Single-Server Queues with Poisson Input and General Service - Pollaczek-Khintchin Formula – Series Queues : Open and Closed Jackson Networks.

L: 45 T: 15 Total hours: 60

Text Books:

1. P.Kandasamy, K.Thilagavathi and K.Gunavathi, "Probability and Queueing Theory", S.Chand Publishers, 1st Edition Reprint, 2013.
2. M.B.K.Moorthy, K.Subramani and A. Santha, "Probability and Queueing Theory", Scitech Publishers, 3rd Edition, 2011.

References:

1. Oliver C. Ibe, "Fundamentals of Applied Probability and Random Processes", Elsevier, 1st Indian Reprint, 2012.
2. Hamdy A.Taha, "Operations Research", Pearson Education, 9th Edition, 2013.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**SEMESTER – V****12IT2502****OBJECT ORIENTED ANALYSIS AND DESIGN**
(Common to CS & IT)

L	T	P	C
3	0	0	3

Objective(s):

- *To understand the object oriented life cycle*
- *To know how to identify objects, relationships, services and attributes through UML*
- *To understand the UML diagrams.*
- *To know the Object Oriented Design process.*
- *To know about software quality and usability*

UNIT-I INTRODUCTION**9 Hrs**

An overview of object oriented systems development - Object basics – Object oriented systems development Life cycle - The software development process- Building high quality software.

UNIT-II OBJECT ORIENTED METHODOLOGIES AND MODELLING**9 Hrs**

Rumbaugh methodology - Booch methodology - Jacobson methodology - Patterns – Frameworks – Unified approach – Unified modeling language – Use case diagram - Class diagram - Interactive diagram - Package diagram - Collaboration diagram - State diagram - Activity diagram.

UNIT-III OBJECT ORIENTED ANALYSIS**9 Hrs**

Identifying use cases - Use case model - Classification – Approaches for Identifying classes: Noun phrase approach – Common class patterns approach – Use case driven approach – Classes, Responsibilities and Collaborators - Identifying object relationships, attributes and methods.

UNIT-IV OBJECT ORIENTED DESIGN**9 Hrs**

Object oriented design axioms - Designing classes – Redefining attributes – Designing methods and protocols - Access layer - Object storage and Object interoperability.

UNIT-V SOFTWARE QUALITY AND USABILITY**9 Hrs**

Designing interface objects - Software quality assurance - System usability - Measuring user satisfaction.

Total hours: 45**Text Books:**

1. Ali Bahrami, "Object Oriented Systems Development", Tata McGraw Hill, Ninth Reprint 2011.
2. Mahesh P. Matha, "Object Oriented Analysis and Design Using UML", PHI, 2008.

References:

1. Martin Fowler, "UML Distilled", PHI/Pearson Education, Third Edition, 2004.
2. Stephen R. Schach, "Introduction to Object Oriented Analysis and Design", Tata McGraw-Hill, 2004.
3. Hans-Erik Eriksson, Magnus Penker, Brian Lyons and David Fado, "UML Toolkit", OMG Press Wiley Publishing Inc., 2004.
4. Timothy C. Lethbridge and Robert Laganier, "Object Oriented Software Engineering", Tata McGraw-Hill, Reprint 2011.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**SEMESTER – V****12CS2503****COMPUTER NETWORKS**
(Common to CS & IT)

L	T	P	C
3	0	0	3

Objective(s):

- To learn the basics of computer networks.
- To gain knowledge about the data link layer, network layer, transport layer and Application layer.
- To understand the advanced network concepts.

UNIT – I BASICS OF NETWORKS**9 Hrs**

Networks Components and Categories – Types of Connections – Topologies – Layers – Physical Links – Channel Access on Links – Hybrid Multiple Access Techniques – Medium Access – CSMA – Ethernet – Token Ring – FDDI – Wireless LAN.

UNIT – II DATA LINK LAYER**9 Hrs**

Issues in the Data Link Layer – Framing – Error Correction and Detection – Link-level Flow Control – Bridges and Switches – Circuit Switching vs. Packet Switching – Packet Switched Networks.

UNIT – III NETWORK LAYER**9 Hrs**

IP – IPV4 – IPV6 – Subnetting – DHCP – CIDR – ARP – RARP – ICMP – Routing Algorithms – RIP – OSPF – Inter Domain Routing – BGP – Multicasting.

UNIT – IV TRANSPORT AND APPLICATION LAYER**9 Hrs**

Transport Layer: Duties of Transport Layer – Multiplexing and Demultiplexing – Sockets – UDP – TCP – Congestion Control Techniques: Leaky bucket algorithm – Token Bucket Algorithm – Congestion Avoidance – Application Layer: DNS – SMTP – POP3 – FTP – HTTP.

UNIT – V ADVANCED NETWORKS**9 Hrs**

Security – PGP – SSH – Storage Area Network – Peer to Peer network – Overlay Network – Wireless Network: Adhoc – Sensor Network – Optical Network.

Total hours: 45**Text Books:**

1. Behrouz A. Forouzan, "Data Communications and Networks", 5th Edition, Tata McGraw Hill Publication, 2013.
2. Larry L. Peterson and Bruce S. Davie, "Computer Networks: A Systems Approach", 5th Edition, Morgan Kauffmann Publishers, 2012.

References:

1. Andrew S. Tanenbaum, "Computer Networks", 5th Edition, Prentice – Hall Indian, 2011.
2. William Stallings, "Data and Computer Communication", 8th Edition, Pearson Education, 2012.
3. C. Siva Ram Murthy and B. S. Manoj, "Adhoc Wireless Networks – Architectures and Protocols", Pearson Education, 2013.
4. Douglas E Comer and M.S. Narayanan, "Computer Networks and Internets: With Internet Applications", Volume 1, 4th Edition, Pearson Education, 2008.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**SEMESTER – V****12EC3524****DIGITAL SIGNAL PROCESSING**

L	T	P	C
3	1	0	4

Objective(s):

- To learn basic concepts of signals and systems
- To understand DFT and its computation
- To learn the design techniques for digital filters
- To understand the finite word length effects in signal processing & Applications of DSP

UNIT – I SIGNALS AND SYSTEMS**12 Hrs**

Basic elements of DSP – Concepts of frequency in Analog and Digital Signals – Sampling theorem – Discrete time signals, systems – Analysis of discrete time LTI systems – Z transform – Convolution (linear and circular) – Correlation.

UNIT – II FREQUENCY TRANSFORMATIONS**12 Hrs**

Introduction to DFT – Properties of DFT – Filtering methods based on DFT – FFT Algorithms Decimation in time Algorithms, Decimation in frequency Algorithms – Use of FFT in Linear Filtering – DCT.

UNIT - III FIR FILTER DESIGN**12 Hrs**

Symmetric and Antisymmetric FIR filters – Linear phase FIR filters – Design using Rectangular, Hamming, Hanning and Blackmann Windows – Frequency sampling method –Realization of FIR filters – Transversal, Linear phase and Polyphase structures.

UNIT – IV IIR FILTER DESIGN**12 Hrs**

Review of design of analogue Butterworth and Chebyshev Filters, Frequency transformation in analogue domain – Design of IIR digital filters using impulse invariance technique – Design of digital filters using bilinear transform – pre warping – Realization using direct, cascade and parallel forms.

UNIT – V FINITE WORD LENGTH EFFECTS & APPLICATIONS of DSP**12 Hrs**

Quantization noise – derivation for quantization noise power – coefficient quantization error – Product quantization error – Overflow error – Roundoff noise power – limit cycle oscillations Multirate signal processing: Interpolation, Decimation – Speech compression – Adaptive filter.

L: 45 T: 15 Total hours: 60**Text Books:**

1. John G Proakis and Manolakis, "Digital Signal Processing Principles, Algorithms and Applications" Pearson, 4th Edition, 2011.
2. S.Salivahanan, A. Vallavaraj, C. Gnanapriya, "Digital Signal Processing" TMH/McGraw Hill International, 2007

References:

1. S.K. Mitra, "Digital Signal Processing, A Computer Based approach", Tata McGraw Hill, 2008.
2. P.P.Vaidyanathan, "Multirate Systems & Filter Banks", Prentice Hall, Englewood cliffs, NJ. 2006
3. Johnny R. Johnson, "Introduction to Digital Signal Processing", PHI, 2006.
4. Alan V. Oppenheim, Ronald W. Schaffer, "Digital Signal Processing". Prentice Hall, 2008.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**SEMESTER – V****12EC3525****PRINCIPLES OF COMMUNICATION**

L	T	P	C
3	0	0	3

Objective(s):

- To understand different types of analog and digital communication techniques
- To gain knowledge of spread spectrum modulation and multiple access techniques
- To learn the concept of satellite and optical communication

UNIT- I FUNDAMENTALS OF ANALOG COMMUNICATION**9 Hrs**

Introduction - Types of analog modulation -Amplitude modulation: Modulation and demodulation, AM envelope, Calculation of modulation index and percentage of modulation, AM frequency spectrum and bandwidth, AM voltage distribution, AM power distribution. Angle modulation:FM and PM waveforms, phase deviation and frequency deviation, modulation index, Frequency analysis and Bandwidth requirements of angle modulated waves.

UNIT- II DIGITAL COMMUNICATION**9 Hrs**

Introduction - Shannon's information capacity theorem - Amplitude Shift Keying -Frequency Shift Keying-Phase Shift Keying-Binary Phase Shift Keying-Differential BPSK - QPSK-Bandwidth Efficiency-Carrier recovery methods - Squaring loop and Costas loop.

UNIT- III DIGITAL TRANSMISSION**9 Hrs**

Quantization Noise Ratio-Companding: Analog and Digital-Percentage Error - Delta modulation-Adaptive delta modulation - DPCM- Inter symbol interference and eye patterns.

UNIT-IV SPREAD SPECTRUM AND MULTIPLE ACCESS TECHNIQUES**9 Hrs**

Introduction-Pseudo-noise sequences- PN sequence generation- DS spread spectrum with coherent binary PSK -Processing gain - FH spread spectrum- Multiple access techniques -Wireless communication -TDMA and CDMA in wireless communication systems.

UNIT-V SATELLITE AND OPTICAL COMMUNICATION**9 Hrs**

Satellite communication systems - Kepler's laws - Satellite Orbits: LEO, MEO, GEO Orbits, Footprints and Link model - Optical communication systems: Types of optical cable, Elements of an optical fiber transmission link, Losses in optical fiber cables-Optical source: ILD- Optical detector: APD. (Qualitative Treatment only).

Total hours: 45**Text Books:**

1. Wayne Tomasi, "Advanced Electronic Communication Systems", Pearson Education, 5th Edition, Reprint 2013.
2. Simon Haykin, "Communication Systems", John Wiley & Sons, 4th Edition, Reprint 2012.

References:

1. H.Taub, D.L.Schilling, G.Saha, "Principles of Communication", Tata McGraw Hill, 3rd Edition, 2007.
2. B.P.Lathi, Zhi Ding, "Modern Digital and Analog Communication systems", Oxford University Press, 4th Edition 2010.
3. Blake, "Electronic Communication Systems", Thomson Delmar Publications, 2002.
4. Martin S.Roden, "Analog and Digital Communication System", PHI, 3rd Edition, 2002.
5. Bernard.Sklar, Pabitra kumar Ray, "Digital Communication Fundamentals and Applications", Pearson Education, 2nd Edition 2009.
6. Jeffrey S.Beasley, Gray M.Miller, "Modern Electronic Communication", PHI, 9th Edition, 2008.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**SEMESTER –V****12IT3506****DESIGN AND ANALYSIS OF ALGORITHMS**

L	T	P	C
3	1	0	4

Objective(s):

- To understand the basic concepts of algorithms.
- To analyze the mathematical aspects of algorithms.
- To understand and analyze sorting and searching algorithms.
- To apply algorithm design techniques.

UNIT– I INTRODUCTION**12 Hrs**

Definition and properties of an algorithm - Analysis of algorithms- Divide and Conquer: The general method- Binary search- Finding maximum and minimum element- Analysis of merge sort- Analysis of quick sort- Analysis of Selection sort- Analysis of heap sort

UNIT - II GREEDY METHOD**12 Hrs**

The general method- Optimal storage on tapes- Knapsack problem- Minimum spanning tree- Single source shortest path method

UNIT - III DYNAMIC PROGRAMMING**12 Hrs**

The general method- All pairs shortest path- Optimal binary tree- Multistage graphs

UNIT - IV BACKTRACKING**12 Hrs**

The general method- Solution space and tree organization- The eight queens problem- Sum of subset problem- Graph coloring- Knapsack problem

UNIT - V BRANCH AND BOUND**12 Hrs**

The general method- 0/1 Knapsack problem- Traveling sales person problem-Efficiency consideration -NP Hard and NP Complete problems - Basic concepts.

L: 45 T: 15 Total hours: 60**Text Books:**

1. Ellis Horowitz, Sartaj Sahni, Sanguthevar Rajasekaran, "Fundamentals of Computer Algorithms", Second Edition, Galgotia Publications, New Delhi, 2003.
2. Anany Levitin, "Introduction to the Design and Analysis of Algorithms", Second Edition, Pearson Education, 2007.

References:

1. R C T Lee, S S Tseng, R C Chang, Y T Tsai, "Introduction to Design and Analysis of Algorithms", Tata McGraw Hill Education, 2005.
2. Aho A V., J E Hopcroft, J D Ullman, "Design and Analysis of Algorithms", Third Edition, Pearson Education, Singapore, 2000.
3. Donald E. Knuth., "Fundamental Algorithms- The Art of Computer Programming 'Vol- I'", Second Edition, Narosa Publishing House, Bombay, 2002.
4. Cormen T.H. Leiserson C.E, Rivest R.L. and Stein.C, "Introduction to Algorithms", Third Edition, MIT Press, 2009.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**SEMESTER – V****12CS2510****COMPUTER NETWORKS LABORATORY**
(Common to CS & IT)

L	T	P	C
0	0	3	2

Objective(s):

- To gain knowledge about Switch/Hubs, error detection and Error correction.
- To learn practical knowledge about Sockets, Routing Protocols and RPC.
- To gain Knowledge about Simulator.

LIST OF EXPERIMENTS

1. Study of Network topology configuration with hubs/ switches. ✓
2. Program for implementing error detection and correction using hamming code.
3. Simulation of sliding window protocols.
4. Simulation of Routing protocols (OSPF,BGP).
5. Programs using TCP Sockets (like date and time server & client, echo server & client).
6. Programs using UDP Sockets (like simple DNS). ✓
7. Programs using UDP Sockets (echo server & client).
8. Programs using RPC. ✓
9. Implementation of any two congestion control algorithms.
10. Experiments using NS2 simulator. ✓

Total hours: 45**List of Equipment and Software required for a batch of 30 students**

1. SOFTWARE REQUIRED – JDK 1.7, Turbo C, NS2.35.
2. OPERATING SYSTEM – Windows / LINUX (FEDORA/UBUNDU/CENT OS).
3. COMPUTERS REQUIRED – 30 Nos. (Minimum Requirements: Pentium III or Pentium IV with 256 RAM and 40 GB HardDisk).

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**SEMESTER – V****12IT3511****OBJECT ORIENTED ANALYSIS AND DESIGN LABORATORY**

L	T	P	C
0	0	3	2

Objective(s):

- To create an analysis model of the project.
- To identify the analysis elements of the project and define the association between them.
- To analyze and design the project.

LIST OF EXPERIMENTS

1. Prepare the following documents for two or three of the experiments listed below and develop the software engineering methodology.
2. Program Analysis and Project Planning.
Thorough study of the problem – Identify project scope, Objectives, Infrastructure.
3. Software requirement Analysis
Describe the individual Phases / Modules of the project, Identify deliverables.
4. Data Modeling
Use work products – Data dictionary, Use case diagrams and activity diagrams, build and test class diagrams, Sequence diagrams and add interface to class diagrams.
5. Software Development and Debugging
6. Software Testing
Prepare test plan, perform validation testing, Coverage analysis, memory leaks, develop test case hierarchy, Site check and Site monitor.

SUGGESTED LIST OF APPLICATIONS

1. Student Marks Analyzing System
2. Quiz System
3. Online Ticket Reservation System
4. Payroll System
5. Course Registration System
6. Expert Systems
7. ATM Systems
8. Stock Maintenance
9. Real-Time Scheduler
10. Remote Procedure Call Implementation
11. Passport Automation System
12. Recruitment System
13. Identify the business activity and develop UML Activity diagram

Total hours: 45

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**SEMESTER – V****12IT3512****DESIGN AND ANALYSIS OF ALGORITHMS LABORATORY**

L	T	P	C
0	0	3	2

Objective(s):

- *To analyze a problem and design the solution for the problem*
- *To implement the sorting algorithms*
- *To create program for real time applications using Data Structures*

LIST OF EXPERIMENTS

1. Implementation of Merge Sort Algorithm
2. Implementation of Quick Sort Algorithm
3. Implementation of Selection Sort Algorithm
4. Implementation of Heap Sort Algorithm
5. Implementation of Binary Search Algorithm
6. Implementation of Minimum Spanning Tree Algorithm
7. Implementation of Knapsack Algorithm
8. Implementation of Multistage Graphs
9. Implementation of All pair shortest Path Algorithm
10. Implementation of Eight Queens Problem
11. Implementation of Graph Coloring
12. Implementation of Traveling Salesman Problem

Total hours: 45

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**SEMESTER – V****12HR1513****CAREER DEVELOPMENT SKILLS – V**
(Common to All Branches)

L	T	P	C
0	2	0	1

Objective(s):

- To inculcate the skills to build resumes, prepare for and take part in group discussion and interviews.
- To enhance arithmetical & logical ability.

UNIT- I RESUME WRITING**5 Hrs**

Introduction to Resume Writing -Purpose – Types of Resumes – Resume Writing Strategies & Techniques – Tips & Techniques for Resume Formatting & Designing –The Power of Words, Structure & Positioning – Covering Letter Writing Strategies & Techniques.

(Activity: Preparation of Resume and Covering letter)

UNIT- II GROUP DISCUSSION**6 Hrs**

Concept – Methodology – Components – Role Players – How to Generate Ideas – Evaluation Techniques – Dos and Don'ts of GD. (Activity: GD).

UNIT- III INTERVIEW SKILLS**4 Hrs**

Types of Interviews – Interpersonal Skills – Preparing for an Interview – Dress code for Interview – Overcoming Nervousness/Shyness – Body Language – Interview Tips – FAQs. (Activity: Mock Interview).

UNIT-IV QUANTITATIVE APTITUDE V**9 Hrs**

Averages and ages - Time Speed and Distance - Problems on trains - Boats and streams - Clocks and calendars.

UNIT-V NON-VERBAL REASONING V**6 Hrs**

Syllogisms – Analogies - Cubes and Dice - Seating arrangement.

Total hours: 30**References:**

1. Jeff Butterfield, "Soft Skills for Everyone" Cengage Learning India pvt. Ltd., 2011, New Delhi.
2. Hari Mohan Prasad & Rajinish Mohan, "How to Prepare for Group Discussion and Interview" Third Edition, TMH, 2012
3. AbhijitGuha, "Quantitative Aptitude for Competitive Examinations", 4th edition, TMH, 2011.
4. R.S.Agarwal, "Quantitative Aptitude", 3rd edition, TMH, 2011
5. R.V.Praveen, "Quantitative Aptitude and Reasoning", 2nd Edition, PHI, 2013

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**SEMESTER – VI**

12IT3601

WEB TECHNOLOGY

L	T	P	C
3	0	0	3

Objective(s):

- To develop the student knowledge in fundamentals, designing a website, Client side and Server side programming, representing web data and building web applications.

UNIT – I WEB ESSENTIALS AND MARKUP LANGUAGES**9 Hrs**

Client - Server communication - Basic internet protocols - The World Wide Web - HTTP request message - response message - Web client and Web server. An Introduction to HTML- Basic XHTML syntax and semantics - Fundamental HTML elements - URLs – Lists – Tables – Frames – Forms - Creating HTML documents. Introduction to CSS - Style rule cascading and inheritance - Normal flow box layout – Beyond the normal flow.

UNIT – II CLIENT-SIDE PROGRAMMING**9 Hrs**

Introduction to JavaScript Language - History and versions - Syntax - Variables and data Types – Statements – Operators – Literals – Functions – Objects – Arrays – Built-in objects - JavaScript Debuggers. Introduction to the DOM - Event handling.

UNIT-III SERVER-SIDE PROGRAMMING**9 Hrs**

Java servlets – Servlet Architecture - Generating dynamic content – Servlet life cycle - Parameter data – URL rewriting - JDBC and its components- Servlets and concurrency. Introduction to java server pages - JSP and servlets - Running JSP applications - JavaBeans classes and JSP- ASP - J2EE - J2ME.

UNIT –IV XML**9 Hrs**

XML Documents and vocabularies - Versions and declaration – Namespaces- Java script and XML: Ajax - DOM based XML processing- Event-oriented parsing: SAX - Transforming XML documents- Selecting XML Data: XPath- Template based transformation: XSLT Tag Libraries and Files.

UNIT –V WEB SERVICES**9 Hrs**

Web service concepts - Writing a Java web service - Writing a Java web service client - Describing web services: WSDL - Representing data types: XML Schema - Communicating object data: SOAP- Multimedia, e-commerce-business, online payment security.

Total hours: 45**Text Books:**

- Jeffrey C. Jackson, "Web Technologies - A Computer Science Perspective", Pearson Education, 2007.
- Robert. W. Sebesta, "Programming the World Wide Web", Fourth Edition, Pearson Education, 2007.

References:

- Deitel, Deitel, Goldberg, "Internet & World Wide Web How to Program", Third Edition, Pearson Education, 2006.
- Marty Hall and Larry Brown, "Core Web Programming" Second Edition, Volume I and II, Pearson Education, 2001.
- Deitel, "XML How to Program", First edition, Pearson Education, 2002.
- Bates, "Developing Web Applications", Wiley, 2006.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**SEMESTER – VI****12IT3602****DISTRIBUTED COMPONENT AND ENTERPRISE SYSTEM**

L	T	P	C
3	1	0	4

Objectives:

- *To understand the basics of Component and Enterprise System*
- *To know the Enterprise foundations with models.*
- *To become aware of various standard Components available in the market*
- *To know the technological aspects of Distributed Component and Enterprise System.*

UNIT – I ENTERPRISE FOUNDATIONS**12 Hrs**

Enterprise architectural overview– Object oriented software's importance for enterprise –Component based development for the enterprise development – Java enterprise system architecture with J2EE

UNIT – II CORBA**12 Hrs**

CORBA overview – Object management architecture – ORB – GIOP and IIOP – CORBA services – IDL – CORBA interfaces – CORBA servers and skeletons – Object adapters

UNIT – III COM/DCOM**12 Hrs**

DCOM architecture – DCOM interfaces– Type Libraries – COM / DCOM services– Interface definition language –DCOM development process –DCOM servers and skeletons –DCOM server registration – DCOM clients and stubs.

UNIT – IV SERVICES FOR DISTRIBUTED ENTERPRISE SYSTEMS**12 Hrs**

Naming services– Directory and trading services– Activation services – Message services – Transaction services.

UNIT – V ENTERPRISE APPLICATIONS ENABLING**12 Hrs**

Enterprise application platforms –JavaBeans –Enterprise JavaBeans: EJB Overview – EJB configuration and deployment basics – Session bean – EJB and JDBC – Enterprise application integration.

L: 45 T: 15 Total hours: 60**Text Books:**

1. Paul J Perrone, Venkata S.R. Krishna, Chayanti.R, "Building Java Enterprise Systems with J2EE", Techmedia, New Delhi, 2000.
2. Ed Roman, "Mastering Enterprise JavaBeans", John Wiley & Sons, 2004.

References:

1. Guy Eddon and Henry Eddon, "Inside Distributed COM", Microsoft Press, New Delhi, 2001.
2. Norbert Bieberstein, Sanjay Bose, Marc Fiammante, Keith Jones, Rawn Shah, "Service Oriented Architecture (SOA) Compass" IBM press, 2005.
3. Ash Rofail, Yasser Shohoud, "Mastering COM and COM+", BPB Publications, New Delhi 2000.
4. Dale Rogerson, "Inside COM", Microsoft Press, New Delhi, 2003.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**SEMESTER – VI****12IT3603****PRINCIPLES OF COMPILER DESIGN**

L	T	P	C
3	0	0	3

Objectives:

- To study the concepts of Assembler, Macro Processor, Loader and Linker
- To understand, design and implement a lexical analyzer.
- To understand, design and implement a parser.
- To understand, design code generation schemes.

UNIT – I ASSEMBLER, LOADER AND LINKER**9 Hrs**

Assembler: Overview of the assembly process - Design of two pass assembler- Single pass assembler - Macros : Macro definition and usage- schematics for macro expansion - Design of a Macro pre-processor - Design of a Macro assembler - Introduction to Loaders and Linkers.

UNIT - II INTRODUCTION TO COMPILER**9 Hrs**

Compiler: Introduction - Analysis of the source program - phases of a compiler - Compiler construction tools- Lexical analysis - Role of the lexical analyzer – Input buffering –Specification of tokens –Recognition of tokens - Design aspects of Lexical Analyzer

UNIT – III SYNTAX ANALYSIS**9 Hrs**

Syntax Analysis: Role of the parser - Context free grammars - Top-down parsing: shift reduce- predictive parsing; Bottom-up parsing: Operator precedence - LR parsers (SLR, Canonical LR, LALR) - Parser generators - Design aspects of Parser.

UNIT - IV SYNTAX DIRECTED TRANSLATION**9 Hrs**

Syntax-directed definitions - S-attributed definition - L-attributed definition –Top down and bottom-up translation- Type checking – Run time environment -Source language issues -Storage organization –Storage allocation strategies - Parameter passing - Design aspects of Syntax Directed Translation

UNIT - V CODE GENERATION AND OPTIMIZATION**9 Hrs**

Intermediate code generation: Intermediate languages - Declaration - Assignment Statement – Boolean expression - Procedure calls - Code optimization: Introduction - Sources of optimization - Introduction to data flow analysis - Code generator: Issues in the design of a code generator - A simple code generator- Peephole Optimization -Design aspects of Code optimizer.

Total hours: 45**Text Books:**

1. D.M.Dhamdhere, "Systems Programming", McGraw Hill Education, Fifth Reprint 2013.
2. Alfred Aho, Ravi Sethi and Jeffrey D Ullman, "Compilers Principles, Techniques and Tools", Pearson Education, Third Edition, 2007.

References:

1. Leland L. Beck, "System Software – An Introduction to Systems Programming", 3rd Edition, Pearson Education Asia, 2006.
2. Raghavan V, "Principles of Compiler Design", Tata McGraw-Hill, New Delhi, 2009.
3. Allen I. Holub, "Compiler Design in C", Prentice Hall of India, 2008.
4. C. N. Fischer and R. J. LeBlanc, "Crafting a compiler with C", Benjamin Cummings, 2003.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**SEMESTER – VI****12IT3604****MANAGEMENT INFORMATION SYSTEM**

L	T	P	C
3	0	0	3

Objective(s):

- To obtain knowledge of MIS and its types
- To apply the MIS concepts in real time applications
- To understand social and managerial issues of MIS.

UNIT – I INTRODUCTION**9 Hrs**

Information Systems - Role of Information Systems in business - Types of Information System - Components of an Information System - Competing with Information Technology.

UNIT - II INFORMATION TECHNOLOGY AND INFRASTRUCTURE**9 Hrs**

MIS Infrastructure and Architectures - Computer Hardware - Computer Software: Application Software - System Software - Data Resource Management - Telecommunication and Networks

UNIT- III BUSINESS APPLICATIONS**9 Hrs**

E-Business Systems - Functional Business Systems - Electronic Commerce Systems - Decision Support Systems - Artificial Intelligence Techniques in Business - Applications of Budgeting and Planning - E-Mail

UNIT – IV INFORMATION SYSTEMS DEVELOPMENT PROCESS**9 Hrs**

System Analysis and Design-System Development Life Cycle – Starting the Systems Development Process – Systems Analysis- Systems Design and Development Phase - Implementing Business Systems

UNIT- V SOCIAL AND MANAGERIAL ISSUES OF INFORMATION SYSTEMS**9 Hrs**

MIS Security and Ethical Challenges - Computer Crime: Hacking- Cyber Theft - Software Privacy- Computer Viruses and Worms - Cultural Factors and Global MIS.

Total hours: 45**Text Books:**

1. James A O'Brien, George M Marakas, "Management Information Systems", Tata McGraw-Hill, Tenth Edition, 2011.
2. S.Sadagopan, "Management Information Systems", PHI Learning Pvt. Ltd., 2004.

References:

1. Shubhalakshmi Joshi, Smita Vaze "Management Information Systems", Dreamtech Press, 2011
2. Stephen Haag, Maeve Cummings "Management Information Systems", Seventh Edition McGraw-Hill, 2007.
3. Gordon B. Davis, Margrethe H. Olson "Management Information Systems: Conceptual foundations, Structure and development", Second Edition, Tata-McGrawHill, 2000.
4. Lauzon Kenneth & Landon Jane, "Management Information Systems: Managing the Digital firm". Eighth edition, PHI, 2004.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**SEMESTER – VI****12IT3605****GRAPHICS AND MULTIMEDIA SYSTEMS**

L	T	P	C
3	0	0	3

Objective(s):

- To understand the basics of graphics systems.
- To know various output primitives.
- To become aware of 2D and 3D concepts.
- To know the basic concept of multimedia system design

UNIT – I OUTPUT PRIMITIVES AND ATTRIBUTES**9 Hrs**

Introduction - Points and Lines – Line drawing Algorithms – Loading the frame buffer – Line function – Circle generating algorithms – Ellipse generating algorithms – Filled area primitives – Line attributes – Curve Attributes – Color and Grayscale Levels – Area-Fill attributes – Character Attributes – Inquiry Functions – Antialiasing.

UNIT – II TWO DIMENSIONAL GEOMETRIC TRANSFORMATIONS**9 Hrs**

Basic transformations – Matrix representations – Composite Transformations – other transformations - Affine Transformations – Transformation Functions – Raster Methods for Transformations – Viewing Pipeline – Window-to-Viewport coordinate Transformation – Two Dimensional Viewing Functions – Clipping Operations – Point Clipping – Line Clipping – Polygon Clipping – Curve Clipping – Text Clipping – Exterior Clipping.

UNIT –III THREE DIMENSIONAL CONCEPTS AND APPLICATIONS**9 Hrs**

Three dimensional Display methods –polygon, curved line, quadric surface-Cubic spline interpolation method – Projections-Clipping-Visible Surface Detection Methods-Polygon rendering methods-color models and color applications

UNIT– IV MULTIMEDIA SYSTEMS DESIGN**9 Hrs**

Multimedia elements – Multimedia Applications – Multimedia Systems Architecture – Evolving Technologies – Compression and Decompression: Types – Binary Image Compression – Video image Compression – Audio Compression.

UNIT–V MULTIMEDIA SYSTEMS AND APPLICATIONS**9 Hrs**

Data and File Format Standards: Rich Text Format – TIFF – RIFF – MIDI– JPEG–MPEG–Twain– Types of Multimedia Systems – Virtual Reality – Components of Multimedia Systems – Multimedia Databases – Distributed Application Design Issues.

Total hours: 45**Text Books:**

1. Donald Hearn, M.Pauline Baker, "Computer Graphics – C Version", Second Edition, Pearson Education, 2011.
2. Prabhat K Andleigh, KiranThakrar, "Multimedia systems design", PHI, 2010.

References:

1. James D. Foley, Andries Van Dam, Steven K.Feiner, John F. Huges, "Computer Graphics principles & practices" Second edition in C, Pearson Education, 2008.
2. F.S.Hill, "Computer Graphics using OPENGL", Second edition, Pearson Education, 2003.
3. Ralf Steinmetz and KlaraNahrstedt, "Multimedia Computing, Communications and Applications", Pearson Education, 2012.
4. Ralf Steinmetz, KlaraNahrstedt, "Multimedia Systems", Springer-Verlag, 2004.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**SEMESTER – VI****12IT3610****WEB TECHNOLOGY LABORATORY**

L	T	P	C
0	0	3	2

Objective(s):

- To provide an opportunity to practice various Scripts like HTML, JavaScript, XML.
- To be able to design the web application using CSS and built in functions.
- To enable the students to work with server side programming using JSP and Servlets.

LIST OF EXPERIMENTS

1. Create a web page with the following using HTML
 - To embed an image map in a web page
 - To fix the hot spots
 - Show all the related information when the hot spots are clicked.
2. Create a web page with all types of Cascading style sheets.
3. Client Side Scripts for Validating Web Form Controls using DHTML
4. Write programs in Java to create applets incorporating the following features.
 - Create a color palette with matrix of buttons
 - Set background and foreground of the control text area by selecting a color from color palette.
 - In order to select Foreground or background use check box control as radio buttons
 - To set background images
5. Write programs in Java using Servlets:
 - To invoke servlets from HTML forms
 - To invoke servlets from Applets
6. Write programs in Java to create three-tier applications using JSP and Databases
 - Conducting on-line examination.
 - Displaying student mark list. Assume that student information is available in a database which has been stored in a database server.
7. Programs using XML – Schema – XSLT/XSL
8. Programs using AJAX
9. Consider a case where we have two web Services- an airline service and a travel agent and the travel agent is searching for an airline. Implement this scenario using Web Services and Data base.

Total hours: 45

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**SEMESTER – VI****12IT3611****PRINCIPLES OF COMPILER DESIGN LABORATORY**

L	T	P	C
0	0	3	2

Objective(s):

- *To design system software like assembler and macro processor.*
- *To design different phases of a Compiler.*
- *To implement the different parsing techniques of compiler.*

LIST OF EXPERIMENTS

1. Implementation of a single pass assembler
2. Implementation of a two pass assembler
3. Implementation of Macro processor
4. Construction of NFA from a given regular expression.
5. Construction of minimized DFA from a given regular expression.
6. Implementation of Symbol Table.
7. Implementation of Shift Reduce Parsing Algorithm.
8. Construction of LR Parsing Table.
9. Generation of Code for a given Intermediate Code.
10. Implementation of Code Optimization techniques.

Total hours: 45

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**SEMESTER – VI****12IT3612****GRAPHICS AND MULTIMEDIA SYSTEMS LABORATORY**

L	T	P	C
0	0	3	2

Objective(s):

- *To learn the 2D and 3D algorithms.*
- *To study about the translation and rotation algorithms.*
- *To know the 3D Visualization.*
- *To implement compression and decompression algorithms.*

LIST OF EXPERIMENTS

1. Implement Bresenham's algorithms for line, circle and ellipse drawing.
2. Perform 2D Transformations such as translation, rotation, scaling, reflection and shearing.
3. Implement Cohen-Sutherland 2D clipping and window-viewport mapping.
4. Perform 3D Transformations such as translation, rotation and scaling.
5. Visualize projections of 3D images and Hidden Surface Elimination.
6. Convert between color models.
7. Implementation of text compression algorithm.
8. Implementation of image compression algorithm (Huffman Encoding).
9. Implementation of image decompression algorithm
10. Perform animation using any Animation software.
11. Perform basic operations on image using any image editing software.

Total hours: 45

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**SEMESTER – VI****12IT3613****COMPREHENSION**

L	T	P	C
0	2	0	1

Objective(s):

- To provide opportunity for the students to revise the fundamental knowledge acquired during the earlier semesters.
- To enable the students to appear for GATE, GRE, IES, IRS, UPSC and all competitive exams.

Mode of Assessment	Subject Area	Test Duration	Max. Marks
Internal Test - 1	<ul style="list-style-type: none"> • Computer Fundamentals • Programming and Data Structures • Database Management Systems • Computer Organization and Architecture • Object Oriented Programming 	1 Hour 30 Minutes	30
Internal Test - 2	<ul style="list-style-type: none"> • Advanced Data Structures • Java Programming • Design and Analysis of Algorithms • Operating Systems • Software Engineering 	1 Hour 30 Minutes	30
Internal Test - 3	<ul style="list-style-type: none"> • Computer Networks • Web Technology • Compiler Design • Graphics and Multimedia Systems • Mathematical Concepts 	2 Hours	40
Total Marks			100

References:

1. GATE 2014 Computer Science & Information Technology, GK Publications, 2014.
2. S. Jaiswal, "Computer Science Question Bank Bible", Galgotia Publications Pvt. Ltd, Reprint 2013.
3. Timothy J. Williams, "Multiple-Choice Questions in Computer Science", Tata McGraw - Hill Education, Fourth Edition, 2011.
4. Roger. S. Pressman, "Software Engineering – A Practitioner's Approach", Seventh Edition, McGraw Hill International Edition, 2010.
5. Abraham Silberschatz, Henry F. Korth, S. Sudharshan, "Database System Concepts", Sixth Edition, Tata McGraw Hill, 2012.
6. AnanyLevitin, "Introduction to the Design and Analysis of Algorithms", Second Edition, Pearson Education, 2007.

Total hours: 30

K.S.R. COLLEGE OF ENGINEERING (Autonomous)

SEMESTER – VII

12HS1701

PROFESSIONAL ETHICS (Common to All Branches)

L	T	P	C
3	0	0	3

Objective(s):

- It enables the student to apply ethical principles and practices to resolve the ethical conflict situations that arise in their professional lives.

UNIT - I ENGINEERING ETHICS

9 Hrs

Senses of 'Engineering Ethics' - Variety of Moral Issues - Types of Inquiry - Moral dilemmas - Moral autonomy - Kohlberg's theory - Gilligan's theory - Consensus and Controversy - Models of Professional roles - Professional Ideals and Virtues- Uses of Ethical Theories.

UNIT - II ENGINEERING AS SOCIAL EXPERIMENTATION

9 Hrs

Engineering as Experimentation - Engineers as responsible Experimenters - Codes of Ethics - Industrial standards- Balanced Outlook on Law - The Challenger Case Study.

UNIT - III ENGINEER'S RESPONSIBILITY FOR SAFETY

9 Hrs

Safety and Risk - Assessment of Safety and Risk - Risk Benefit Analysis - Reducing Risk - The Chernobyl and Bhopal Case Studies.

UNIT - IV RESPONSIBILITIES AND RIGHTS

9 Hrs

Collegiality and Loyalty - Respect for Authority - Collective Bargaining - Confidentiality - Conflicts of Interest - Occupational Crime - Professional Rights - Employee Rights - Intellectual Property Rights (IPR) - Discrimination.

UNIT - V GLOBAL ISSUES

9 Hrs

Multinational Corporations - Environmental Ethics - Computer Ethics - Weapons Development - Engineers as Managers-Consulting Engineers-Engineers as Expert Witnesses and Advisors - Honest- Moral Leadership- Sample Code of Conduct.

Total hours: 45

Text Books:

1. Mike Martin and Roland Schinzinger, Ethics in Engineering, McGraw-Hill, 3rd Edition, New York, 2011.
2. Govindarajan M, Natarajan S, Senthil Kumar V. S, Engineering Ethics, Prentice Hall of India, 2nd Edition, New Delhi, 2012.

Reference Books:

1. Charles D. Fieddermann, Engineering Ethics, Pearson Education / Prentice Hall, New Jersey, 4th Edition, 2009.
2. Charles E Harris, Michael S. Protchard and Michael J Rabins, Engineering Ethics - Concepts and Cases, Thompson Learning, 4th Edition, 2011.
3. John R Boatright, Ethics and the Conduct of Business, Pearson Education, 5th edition, New Delhi, 2009.
4. Edmund G Seebauer and Robert L Barry, Fundamentals of Ethics for Scientists and Engineers, Oxford University Press, Oxford, 2nd edition, 2001.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**SEMESTER – VII****12EC3702****EMBEDDED SYSTEM DESIGN**
(Common to EC & IT)

L	T	P	C
3	0	0	3

Objective(s):

- To learn the basics of embedded computing platform, its hardware and software.
- To understand the concepts of processes and operating systems, for embedded system design.
- To gain knowledge about the concepts of hardware accelerators, networks and system design techniques in embedded system.

UNIT - I INTRODUCTION TO EMBEDDED ARCHITECTURE**9 Hrs**

Complex systems and Microprocessors - Embedded system design process - Formalisms for system design - Design example: Model train controller - Instruction sets preliminaries - ARM processor - CPU: Programming input and output - Supervisor mode, Exception and traps - Co-processors - Memory system mechanism - CPU performance - CPU power consumption.

UNIT - II COMPUTING PLATFORM AND DESIGN ANALYSIS**9 Hrs**

CPU buses - Memory devices - I/O devices - Component interfacing - Design with microprocessors - Development and debugging - Components for embedded programs - Model of programs - Assembly, Linking and loading - Basic compilation techniques - Program optimization - Program validation and testing.

UNIT - III PROCESSES AND OPERATING SYSTEMS**9 Hrs**

Multiple tasks and multi processes - Preemptive real time operating systems - Priority based scheduling - Inter process communication mechanisms - Evaluating operating system performance - Power management and optimization for processes.

UNIT - IV HARDWARE ACCELERATORS & NETWORKS**9 Hrs**

CPUs and accelerators - Multiprocessor performance analysis - Consumer electronics architecture - Distributed embedded architecture - Networks for embedded systems - Network based design - Internet enabled systems - Vehicles as networks - Sensor networks.

UNIT - V SYSTEM DESIGN TECHNIQUES**9 Hrs**

Design methodologies - Requirement analysis - Specifications - System analysis and architecture design - Quality assurance - Software tools for embedded system development- Design example: Alarm clock, Software modem, Elevator controller.

Total hours: 45**Text Books:**

1. Wayne Wolf, "Computers as Components - Principles of Embedded Computing System Design", Morgan Kaufmann Publisher, 2nd Edition, 2011.
2. Raj Kamal, "Embedded Systems - Architecture, Programming and Design", Tata McGraw Hill, 2nd Edition, 2008.

References:

1. David E Simon, "An Embedded Software Primer", Pearson Education, 2007.
2. K.V.K.K.Prasad, "Embedded Real-Time Systems: Concepts, Design & Programming", Dream tech Press, 2005
3. Sriram V Iyer, Pankaj Gupta, "Embedded Real Time Systems Programming", Tata McGraw Hill, 2004.
4. Tammy Noergaard, "Embedded Systems Architecture", Elsevier, 2006.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**SEMESTER – VII****12IT3703****DATA MINING AND DATA WAREHOUSING**

L	T	P	C
3	0	0	3

Objective(s):

- To understand the concepts of various data mining techniques
- To provide efficient distribution of information and easy access to data and user friendly reporting environment.
- To understand the concepts of various data mining techniques

UNIT – I DATA WAREHOUSING**9 Hrs**

Basic concepts – Data Cube – Multidimensional data model – Schemas for multidimensional models – Online Analytical Processing (OLAP) – Data warehouse design and usage – Data warehouse implementation – Data Generalization by Attribute-Oriented Induction – Big data analysis.

UNIT - II DATA MINING**9 Hrs**

Introduction – Data – Types of Data – Data Mining Functionalities – Interestingness of Patterns – Classification of Data Mining Systems – Data Mining – Task Primitives – Integration of a Data Mining System with a Data Warehouse – Issues –Data Preprocessing.

UNIT - III ASSOCIATION RULE MINING AND CLASSIFICATION**9 Hrs**

Mining Frequent Patterns, Associations and Correlations – Mining Methods – Mining various Kinds of Association Rules – Correlation Analysis – Constraint Based Association Mining – Classification and Prediction – Basic Concepts – Decision Tree Induction – Bayesian Classification – Rule Based Classification – Classification by Back propagation – Support Vector Machines – Other Classification Methods – Prediction.

UNIT - IV CLUSTERING AND OUTLIER ANALYSIS**9 Hrs**

Cluster Analysis – Types of Data – Categorization of Major Clustering Methods – K-means– Partitioning Methods – Hierarchical Methods - Density-Based Methods –Grid Based Methods – Model-Based Clustering Methods – Clustering High Dimensional Data – Constraint – Based Cluster Analysis – Outlier Analysis – Distance based and Density based outlier detection – Data Mining Applications.

UNIT - V DATA MINING TRENDS**9 Hrs**

Multidimensional Analysis and Descriptive Mining of Complex Data Objects – Spatial Databases – Multimedia Databases – Time Series and Sequence Data – Text Databases – World Wide Web – Applications and Trends in Data Mining.

Total hours: 45**Text Books:**

1. Jiawei Han and Micheline Kamber, "Data Mining Concepts and Techniques", Third Edition, Elsevier, 2012.
2. Alex Berson and Stephen J. Smith, "Data Warehousing, Data Mining & OLAP", Tata McGraw – Hill Edition, Thirteenth Reprint 2008.

References:

1. Pang-Ning Tan, Michael Steinbach and Vipin Kumar, " Introduction To Data Mining", Person Education, 2007.
2. K.P. Soman, Shyam Diwakar and V. Ajay, "Insight into Data mining Theory and Practice". Easter Economy Edition, Prentice Hall of India, 2006.
3. G. K. Gupta, "Introduction to Data Mining with Case Studies", Easter Economy Edition, Prentice Hall of India, 2006.
4. Margaret H. Dunham, "Data Mining: Introductory and Advanced Topics", Prentice Hall of India. 2006

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**SEMESTER – VII****12IT3704****NETWORK DESIGN AND SECURITY MANAGEMENT**

L	T	P	C
3	0	0	3

Objective(s):

- To understand the basics of network design.
- To know how to design the WAN.
- To know the security issues and cryptography algorithms.
- To know how to management the network.

UNIT - I PRINCIPLES OF NETWORK AND DESIGN**9 Hrs**

Design objectives – Understanding the networking environment – Achieving the design goals – Importance of being predictable and fundamental design principles – Designing the campus LAN – campus network design goals – Understanding the campus network – Designing the LAN topology – Campus hierarchical design.

UNIT - II DESIGNING THE WAN**9 Hrs**

Designing the WAN topology – Flat versus hierarchical – Flat WAN topology – Limitations of a flat design – Hierarchical WAN topology – PVC and leased line Aggregation – Issues with hierarchical design – Hierarchical layers – WAN design parameters.

UNIT-III CHOOSING WAN TECHNOLOGY**9 Hrs**

Design consideration for Serial Links – ISDN Design Issues with IP – Designing IP over ATM. Fundamental IP Routing Design: Designing an IP Addressing Plan – Categorizing IP Routing Protocols – Choosing Routing Protocols – Routing Information Protocols.

UNIT- IV NETWORK SECURITY**9 Hrs**

Developing a security Strategy – Developing a security policy – Security Tools – Cryptography – Firewalls: Functions – Architecture – Policy – Security Design and Implementation.

UNIT- V NETWORK MANAGEMENT**9 Hrs**

Network management – Requirements and systems – Network monitoring architecture – Performance monitoring – Fault monitoring – Account monitoring – Configuration control – Security control – SNMP background and concepts – structure of management information – SNMP protocol – Basic concepts – specifications – Transport level support – Groups.

Total hours: 45**Text Books:**

1. Cormac Long, "IP network design", Tata McGraw-Hill, Seventh Reprint 2006.
2. William Stallings, "SNMP, SNMPv2, SNMPv3 and RMON1 and 2", Pearson education Asia, 2004.

References:

1. Charles P. Pfleeger. "Security in Computing", Prentice Hall, 2007.
2. BruceSchneier, "Applied Cryptography", John Wiley & Sons Inc, Second edition, 2004.
3. William Stallings, "Cryptography and Network Security", Pearson Education, Sixth Edition, 2013.
4. Mani Subramanian, "Network Management – Principles & Practice", Second Edition, Prentice Hall, 2012.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**SEMESTER – VII****12IT3710****DATA MINING AND DATA WAREHOUSING LABORATORY**

L	T	P	C
0	0	3	2

Objective(s):

- *To implement various data mining algorithms.*
- *To obtain hands-on experience with WEKA data mining tool.*
- *To implement knowledge discovery process.*

LIST OF EXPERIMENTS

1. Implement the following Multidimensional Data Models
 - i.Star Schema
 - ii.Snowflake Schema
 - iii.Fact Constellation
2. Implement Apriori and FP Growth Tree algorithm to generate frequent Item Sets
3. Implement the following clustering algorithms
 - i.K-means
 - ii.K-medoids
4. Implement the following classification algorithms
 - i.Decision Tree Induction
 - ii.KNN
5. Perform data Preprocessing using WEKA
6. Perform Discretization of data using WEKA
7. Apriori algorithm using WEKA
8. Classification and Prediction algorithms using WEKA
9. Clustering using WEKA.
10. A small case study involving all stages of KDD.

Total hours: 45

K.S.R. COLLEGE OF ENGINEERING (Autonomous)

SEMESTER – VII

12IT3711

NETWORK DESIGN LABORATORY

L	T	P	C
0	0	3	2

Objective(s):

- *To understand network management practical issues, sockets and routing protocol*

LIST OF EXPERIMENTS

1. Configuring LAN and WAN.
2. Creation of Simple Telnet Protocol.
3. File transfer using RS232C interface.
4. File transfer using TCP/IP.
5. Transfer of files from PC to PC using Windows / Unix socket processing
6. Implementation of Data encryption and decryption.
7. Simulation of network management Protocols.

Total hours: 45

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**SEMESTER – VIII****12IT3801****MOBILE COMPUTING**

L	T	P	C
3	0	0	3

Objective(s):

- To learn the basics of Mobile computing environment.
- To study the working principles of wireless LAN and its standards.
- To build knowledge on network and transport layer of Mobile Computing.
- To learn the basics of Mobile Ad hoc Networks.

UNIT – I INTRODUCTION TO MOBILE COMPUTING**9 Hrs**

Mobile and Wireless devices applications – History of wireless Communication – Frequencies for radio transmission – Signal propagation – Multiplexing – Spread spectrum – Cellular system: Operation of cellular systems – Planning a cellular system – Analog and digital cellular systems.

UNIT- II MAC AND TELECOMMUNICATION SYTEMS**9 Hrs**

Medium Access Control: Motivation for a specialized MAC - SDMA, FDMA, TDMA, CDMA and its Comparisons – Tele Communication Systems – GSM – DECT – TETRA – Satellite Systems Routing, Localization and Handover.

UNIT- III WIRELESS LAN**9 Hrs**

Infra-red vs radio transmission – Infrastructure and ad hoc network – IEEE 802.11: System and Protocol Architecture – Physical, MAC layer – MAC management – IEEE 802.11 Standards – HIPERLAN - Blue tooth.

UNIT - IV MOBILE NETWORK LAYER AND TRANSPORT LAYER**9 Hrs**

Mobile IP – Goals, assumptions – Entities and terminology – IP packet delivery – Agent discovery – Registration – Tunneling and encapsulation – Optimizations – Reverse tunneling – Dynamic Host Configuration Protocol - Traditional TCP – Classical TCP improvements .

UNIT - V MOBILE AD HOC NETWORKS**9 Hrs**

Introduction – Layered architecture – MAC layer – Routing in self organized networks – People based networks – MANET Routing protocols: Unicast Routing – Broadcast Routing – Multicast Routing – QoS Routing– Power Optimization in Routing Protocols – Securing wireless ad hoc networks.

Total hours: 45**Text Books:**

1. Jochen Schiller, "Mobile Communications", Pearson Education , Second edition, 2008.
2. Ivan Stojmenovic, "Handbook of Wireless Networks and Mobile Computing", Wiley,2002.

References:

1. Reza Behravanfar, "Mobile Computing Principles: Designing and Developing Mobile Applications with UML and XML", Cambridge University Press, 2004.
2. Adelstein, Frank, Gupta, Sandeep KS, Richard III, Golden, Schwiebert, Loren, "Fundamentals of Mobile and Pervasive Computing", McGraw-Hill Professional, 2005.
3. Hansmann, Merk, Nicklous, Stober, "Principles of Mobile Computing", Springer, Second edition, 2003.
- C.Siva Ram Murthy and B.S Manoj, "Ad hoc Wireless Networks", Pearson Education, 2007.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**SEMESTER – VI****12IT4601****CRYPTOGRAPHY AND NETWORK SECURITY (ELECTIVE)**

L	T	P	C
3	0	0	3

Objective(s):

- To understand OSI security architecture and classical encryption techniques
- To understand fundamental concepts of finite fields and number theory
- To acquire knowledge on encryption techniques, design principles and modes of operation.
- To describe the principles of public key cryptosystems, hash functions and digital signature.

UNIT – I INTRODUCTION**9 Hrs**

The OSI security architecture-Services, Mechanisms and attacks – Network security model – Classical Encryption techniques: Symmetric cipher model - Substitution techniques - Transposition techniques – Steganography.

UNIT – II FINITE FIELDS AND NUMBER THEORY**9 Hrs**

Modular arithmetic-Euclid's algorithm-Groups, Rings, Fields –Finite fields – Polynomial Arithmetic –Prime numbers-Fermat's and Euler's theorem-Testing for Primality-The Chinese remainder theorem- Discrete logarithms.

UNIT – III BLOCK CIPHERS**9 Hrs**

Block cipher principles–Data Encryption Standard–Advanced Encryption Standard (AES)–Block cipher modes of operation–Triple DES–Blowfish– RC5 Algorithm.

UNIT – IV PUBLIC KEY CRYPTOGRAPHY**9 Hrs**

Principles of public key crypto systems–The RSA algorithm–Key management – Diffie Hellman Key exchange– Elliptic curve arithmetic –Elliptic curve cryptography.

UNIT – V HASH FUNCTIONS AND DIGITAL SIGNATURES**9 Hrs**

Hash functions–Hash Algorithms: MD5–Secure Hash Algorithm–Authentication functions–Message authentication codes–Digital Signatures: Authentication protocols–Digital signature standard.

Text Books:**Total hours: 45**

1. William Stallings, "Cryptography and Network Security", Pearson Education, New Delhi, Sixth Edition, 2013.
2. Behrouz A Forouzan, "Cryptography and Network Security", Tata McGraw Hill Education Pvt. Ltd., New Delhi, 2007.

References:

1. Atul Kahate, "Cryptography and Network Security", McGraw Hill Education India Pvt Ltd, Second Edition, 2009.
2. Charlie Kaufman, Radia Perlman, Mike Speciner, "Network security", Prentice Hall of India, 2002.
3. Charles Pfleeger, "Security in computing", Prentice Hall of India, Fourth Edition, 2006.
4. Ulysess Black, "Internet Security Protocols", Pearson Education Asia, 2000.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**SEMESTER – VI**

12CS4642	C# AND .NET FRAMEWORK(ELECTIVE)	L	T	P	C
	(Common to CS & IT)	3	0	0	3

Objective(s):

- To learn the concepts of C# and .NET framework.
- With sample applications, the student will get experience through large-scale projects.

UNIT – I BASIC CONCEPTS OF C# 9 Hrs

Introduction and Overview – Literals – Variables – Data Types – Operators – Expressions – Branching – Looping – Methods – Arrays – Strings – Structures and Enumerations.

UNIT – II OBJECT ORIENTED ASPECTS OF C# 9 Hrs

Classes – Objects – Inheritance – Polymorphism – Interfaces – Operator Overloading – Delegates – Events – Errors and Exceptions.

UNIT – III APPLICATION DEVELOPMENT ON .NET 9 Hrs

Controls – Menus and Context Menus – Forms – Building Windows Applications – Relational Databases and SQL – ADO.Net Object Model – Getting Started with ADO.NET – ADO Managed Providers – Data-Bound Controls – Changing Database Records – ADO.NET and XML.

UNIT – IV WEB BASED APPLICATION DEVELOPMENT ON .NET 9 Hrs

Introduction to ASP. Net and Visual Studio – Creating ASP site – ASP.Net Controls – Validation Controls – Working with the Page (Basic & Advanced) – ADO.NET Data Provider – ADO.NET Data Containers – Data-Binding Model – Creating Bindable Grids of Data – ASP.NET Caching; Deploying ASP.NET Application – Programming Web Services.

UNIT – V CLR AND .NET FRAMEWORK 9 Hrs

Assemblies – Versioning – Attributes – Reflection – Viewing Metadata – Type Discovery – Reflecting on a Type – Marshaling – Remoting – Understanding Server Object Types – Specifying a Server with an Interface – Building a Server – Building a Client – Using Single Call – Threads.

Total Hours: 45**Text Books:**

1. E. Balagurusamy, "Programming in C#", 3rd Edition, Tata McGraw-Hill, 2010.
2. J. Liberty, Ian Griffiths and Matthew Adams, "Programming C# 4.0", 6th Edition, O'Reilly, 2010.

References:

1. Herbert Schildt, "The Complete Reference. C# 4.0", Tata McGraw-Hill, 2010.
2. Robinson Simon Robinson, K. Scott Allen Ollie Cornes, Jay Glynn, Zach Greenvoss, Burton Harvey, Christian Nagel, Morgan Skinner and Karli Watson, "Professional C#", 2nd Edition, Wrox Press, 2004.
3. Andrew Troelsen, "Pro C# and the .NET Platform", Apress, 2010.
4. Art Gittleman, "Computing with C# and the .NET Framework", Jones & Bartlett Publishers, 2011.

K.S.R. COLLEGE OF ENGINEERING(Autonomous)**SEMESTER – VI**

12CS4603	COMPONENT BASED TECHNOLOGY (ELECTIVE)	L	T	P	C
	(Common to CS & IT)	3	0	0	3

Objectives:

- To gain knowledge on Component technologies.
- To learn Java, CORBA and .Net based component technologies.
- To study the concepts of component frameworks and developments.

UNIT – I FUNDAMENTALS OF COMPONENT TECHNOLOGIES 9 Hrs

Software Components – objects – fundamental properties of Component technology – modules – interfaces – callbacks – directory services – component architecture – components and middleware.

UNIT – II JAVA BASED COMPONENT TECHNOLOGIES 9 Hrs

Threads – Java Beans – Events and connections – properties – introspection – JAR files – reflection – object serialization – Enterprise Java Beans – Distributed Object models – RMI and RMI-IIOP.

UNIT – III CORBA COMPONENT TECHNOLOGIES 9 Hrs

Java and CORBA – Interface Definition language – Object Request Broker – system object model – portable object adapter – CORBA services – CORBA component model – containers – application server – model driven architecture.

UNIT – IV . NET BASED COMPONENT TECHNOLOGIES 9 Hrs

COM – Distributed COM – object reuse – interfaces and versioning – dispatch interfaces – connectable objects – OLE containers and servers – ActiveX controls – .NET components - assemblies – appdomains – contexts – reflection – remoting.

UNIT – V COMPONENT FRAMEWORKS AND DEVELOPMENTS 9 Hrs

Connectors – contexts – EJB containers – CLR contexts and channels – Black Box component framework – directory objects – cross-development environment – component-oriented programming – Component design and implementation tools – testing tools - assembly tools.

Total hours: 45**Text Books:**

1. Clemens Szyperski, "Component Software: Beyond Object-Oriented Programming", Pearson Education, 2011.
2. Ed Roman, "Mastering Enterprise Java Beans", John Wiley & Sons, 2006.

References:

1. Mowbray, "Inside CORBA", Pearson Education, 2003.
2. Freeze, "Visual Basic Development Guide for COM & COM+", BPB Publications, 2001.
3. Hortsamann, Cornell, "CORE JAVA", Volume – II, Sun Microsystems Press, 2002.
4. G. SudhaSadasivam, "Component Based Technology", John Wiley & Sons, 2008.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**SEMESTER – VI****12IT4604****VISUAL PROGRAMMING (ELECTIVE)**

L	T	P	C
3	0	0	3

Objective(s):

- To introduce the concepts of windows programming.
- To introduce GUI programming using Microsoft Foundation Classes.
- To enable the students to develop programs and simple applications using Visual C++.

UNIT- I WINDOWS PROGRAMMING**9 Hrs**

Windows Environment – A Simple Windows Program – Windows and Messages – Creating the Window – Displaying the Window – Message Loop – the Window Procedure – Message Processing – Text Output – Painting and Repainting – Introduction to GDI – Basic Drawing – Child Window Controls.

UNIT- II VISUAL C++ PROGRAMMING – INTRODUCTION**9 Hrs**

Application Framework – MFC Library – Visual C++ Components – Event Handling – Mapping Modes – Colors – Fonts – Modal and Modeless Dialog – Windows Common Controls.

UNIT-III DOCUMENT AND VIEW ARCHITECTURE**9 Hrs**

Menus – Keyboard Accelerators – Rich Edit Control – Toolbars – Status bars – Separating Document from Its View – Reading and Writing SDI and MDI Documents – Splitter Window and Multiple Views – Creating DLLs.

UNIT-IV ACTIVEX AND OBJECT LINKING AND EMBEDDING (OLE)**9 Hrs**

ActiveX Controls Vs. Ordinary Windows Controls – Installing ActiveX Controls – Calendar Control – Create ActiveX Control at Runtime – Component Object Model (COM) – OLE Drag and Drop – OLE Embedded Component and Containers.

UNIT-V ADVANCED CONCEPTS**9 Hrs**

Database Management with Microsoft ODBC – Structured Query Language – MFC ODBC Classes – Sample Database Applications – DAO Concepts – Displaying Database Records in Scrolling View – VC++ Networking Issues – Winsock – WinINet – Building a Web Client and Server – Threading – Internet Information Server – Chat application – Playing and multimedia (Sound and video files).

Total hours: 45**Text Books:**

1. Charles Petzold, "Windows Programming", Microsoft press, Nineteenth Indian Reprint, 2007.
2. David J.Kruglinski, George Shepherd and Scot Wingo, "Programming Microsoft Visual C++", Fifth Edition, Microsoft press, 2006 Reprint.

References:

1. Steve Holtzner, "Visual C++ 6 Programming", Wiley Dreamtech India Pvt. Ltd., 2003.
2. Jeff Cogswell, "Visual C++ .NET", Hungry Minds, 2002.
3. Richard C.Leinecker and Tom Archer, "Visual C++ 6 Programming Bible", Wiley DreamTech Press 2006.
4. John Mueller, "Visual C++ 6 From the grounded up ", McGraw –Hill, Indian Reprint 2008

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**SEMESTER – VI****12IT4605****FREE/OPEN SOURCE SOFTWARE (ELECTIVE)**

L	T	P	C
3	0	0	3

Objective(s):

- Understand concepts, strategies, and methodologies related to open source software development.
- Be familiar with open source software products and development tools currently available on the market
- Be able to utilize open source software for developing a variety of software applications, particularly Web applications.

UNIT – I INTRODUCTION**9 Hrs**

Introduction to Open sources – Need of Open Sources – Advantages of Open Sources– Application of Open Sources. Open source operating systems: LINUX: Introduction –General Overview – Kernel Mode and user mode – Process – Advanced Concepts –Scheduling – Personalities – Cloning – Signals – Development with Linux.

UNIT – II OPEN SOURCE DATABASE**9 Hrs**

MySQL: Introduction – Setting up account – Starting, terminating and writing SQL programs – Record selection Technology – Working with strings – Date and Time– Sorting Query Results – Generating Summary – Working with metadata – Using sequences – MySQL and Web.

UNIT - III OPEN SOURCE PROGRAMMING LANGUAGES**9 Hrs**

PHP: Introduction – Programming in web environment – variables – constants – data types – operators – Statements – Functions – Arrays – OOP – String Manipulation and regular expression – File handling and data storage – PHP and SQL database – PHP and LDAP – PHP Connectivity – Sending and receiving E-mails – Debugging and error handling – Security – Templates.

UNIT - IV PYTHON**9 Hrs**

Syntax and Style – Python Objects – Numbers – Sequences – Strings – Lists and Tuples – Dictionaries – Conditionals and Loops – Files – Input and Output – Errors and Exceptions – Functions – Modules – Classes and OOP – Execution Environment.

UNIT - V PERL**9 Hrs**

Perl backgrounder – Perl overview – Perl parsing rules – Variables and Data – Statements and Control structures – Subroutines, Packages, and Modules- Working with Files –Data Manipulation.

Total hours: 45**Text Books:**

1. Card, Eric Dumas and Frank Mevel, "The Linux Kernel Book", Wiley Publications, 2003.
2. Steve Suchring, "MySQL Bible", John Wiley, 2002.

References:

1. RasmusLerdorf and Levin Tatroe, "Programming PHP", O'Reilly, 2002.
2. Martin C. Brown, "Perl: The Complete Reference", Tata McGraw-Hill Publishing Company Limited, Indian Reprint 2009.
3. Steven Holzner, "PHP: The Complete Reference", Tata McGraw-Hill Publishing Company Limited, Indian Reprint 2009.
4. VikramVaswani, "MYSQL: The Complete Reference", Tata McGraw- Hill Publishing Company Limited, Indian Reprint 2009.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**SEMESTER – VI****12IT4606****USER INTERFACE DESIGN (ELECTIVE)**

L	T	P	C
3	0	0	3

Objective(s):

- To understand the basics of User Interface Design.
- To design the user interface, design, menu creation and windows creation.
- To study about various problems in windows design with color, text, graphics.
- To study about various testing methods.

UNIT – I INTRODUCTION**8 Hrs**

Introduction – Importance–Human-Computer interface–Characteristics of graphics interface–Concept of direct manipulation–Graphical system –Web user interface – Merging of graphical business systems and the Web – Principles of User interface design.

UNIT- II HUMAN COMPUTER INTERACTION**10 Hrs**

User interface design process: Obstacles–Usability– Human characteristics in design - Human interaction speed–Business functions–Requirement analysis–Basic business functions–Design standards–System Training–Human consideration in screen design –Structures of menus – Functions of menus–Contents of menu– Formatting –Phrasing the menu – Selecting menu choice–Navigating menus–Graphical menus.

UNIT- III WINDOWS**9 Hrs**

Windows: Characteristics–Components–Presentation styles–Types–Managements–Organizations–Operations–Web Systems – Device-based controls: Characteristics – Screen based controls: Operable controls –Text boxes–Selection control–Combination control–Custom control – Presentation control.

UNIT- IV MULTIMEDIA**9 Hrs**

Text for web pages– Provide effective feedback –Guidance and assistance–Internationalization–Accessibility–Icons – Multimedia - Coloring.

UNIT - V WINDOWS LAYOUT AND TESTING**9 Hrs**

Organizing and laying out screens– Purpose of usability testing –Importance – Scope – Prototypes –Kinds of tests – Developing and Conducting the Test –Retest –Evaluate the working system.

Total hours: 45**Text Books:**

1. Wilbent. O. Galitz, "The Essential Guide to User Interface Design", John Wiley & Sons, Third Edition, 2007.
2. Ben Shneiderman, "Design the User Interface", Pearson Education, First Impression 2008.

References:

1. Alan Cooper, "The Essential of User Interface Design", Wiley – Dream Tech Ltd., 2002.
2. Helen Sharp, Yvonne Rogers, Jenny Preece, "Interaction Design: Beyond Human-Computer Interaction", Second Edition, Wiley, 2007.
3. Barfield, Lon, "The User Interface : Concepts and Design", Addison – Wesley, 2004.
4. Alan Dix, Janet E. Finlay, Gregory D. Abowd, Russell Beale, "Human – Computer Interaction", Pearson Education, Third Edition, 2004.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)

SEMESTER – VI

12IT4607

COMMUNICATION SWITCHING TECHNIQUES (ELECTIVE)

L	T	P	C
3	0	0	3

Objective(s):

- To understand the basics of switching system.
- To introduce the concepts of space switching, time switching and combination switching.
- To introduce ISDN, DSL / ADSL, and fiber optic systems in subscriber loop.
- To study the concepts of cellular wireless networks.

UNIT – I COMPONENTS AND PRINCIPLES

9 Hrs

Block diagram of switching system – Pulse and DTMF Dialing – Signaling Tones – Strowger Switching with design examples – Principles of common control, cross bar Switching.

UNIT- II SPACE DIVISION AND TIME DIVISION SWITCHING

9 Hrs

Stored program control – Centralized and distributed SPC, 2stage, 3 stage and N stage networks – Time division time and space switching – Time multiplexed time and space switching – combination switching.

UNIT- III TRAFFIC ENGINEERING

9 Hrs

Network traffic load and parameters – Grade of service and blocking probability – Modeling switching systems – Blocking models and loss estimates – Delay Systems.

UNIT- IV DIGITAL SUBSCRIBER ACCESS

9 Hrs

Integrated services digital network – High data rate digital subscriber loops – Digital loop carrier systems – Fiber in the loop – Voice band modems.

UNIT - V CELLULAR WIRELESS NETWORKS

9 Hrs

Handoff strategies – Cordless systems – Wireless local loop – Wireless application protocol – BLUE TOOTH: Overview – Radio specification – Base band specification – Link manager specification – Logical link control and adaptation protocol.

Total hours: 45

Text Books:

1. Viswanathan, T., "Telecommunication Switching System and Networks", Prentice Hall, New Delhi, 2004.
2. William Stallings, "Wireless Communication and Networks", Second Edition, Pearson Education, New Delhi, 2004.

References:

1. Frenzel, "Communication Electronics – Principles and Applications", Tata Mc-Graw Publishing Co. Ltd., Third Edition, New Delhi, 2009
2. John. C. Bellamy, "Digital Telephony", John Wiley & Sons, Singapore, 2000.
3. Behrouz Forouzan, "Introduction to Data Communication and Networking", Tata McGraw Hill, 2007.
4. Marion Cole, "Introduction to Telecommunications Voice, Data & the Internet", Pearson Education, New Delhi, 2002.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**SEMESTER – VII**

12EC4741	DIGITAL IMAGE PROCESSING (ELECTIVE)	L	T	P	C
	(Common to CS, EC & IT)	3	0	0	3

Objective(s):

- To learn the fundamental representation of images.
- To know the concept of various transforms using images
- To understand the various techniques of image enhancement, restoration, segmentation representation and compression

UNIT – I DIGITAL IMAGE FUNDAMENTALS 9 Hrs

Elements of digital image processing systems- Elements of visual perception-basic relationship between pixels, Connectivity, Distance measure - Brightness - Contrast -Hue -Saturation- Mach band effect- Color image fundamentals -RGB- HIS models- Conversion from RGB to HIS - Image sampling -quantization- dither.

UNIT – II IMAGE TRANSFORMS 9 Hrs

2D transforms – DFT - DCT- DST- Walsh- Hadamard – Slant -Haar - KL Transform - DWT: Haarwavelet, Daubechies wavelet.

UNIT - III IMAGE ENHANCEMENT AND RESTORATION 9 Hrs

Spatial domain enhancement: Gray level transformations - Histogram modification and specification techniques- Image averaging- Directional Smoothing- Median- Geometric mean- Harmonic mean- Contra harmonic and Yp mean filters- Homomorphic filtering- Color image enhancement. Image Restoration: Degradation model - Unconstrained restoration and constrained restoration- Inverse filtering - Wiener filtering - Geometric Transformations.

UNIT – IV IMAGE SEGMENTATION AND REPRESENTATION 9 Hrs

Line and point detection, Edge detection, Edge linking via Hough transform -Morphological operation - Thresholding - Region based segmentation - Region growing - Region splitting and Merging -Representation: Chain codes, Signatures, Boundary segments, Skeletons.

UNIT – V IMAGE COMPRESSION 9 Hrs

Need for data compression – Losslesscompression: Run length coding, Bit plane coding, LZW coding. Lossy compression: Scalar quantization, Vector quantization,Block Truncation coding - Applications: Satellite image processing,Digital image watermarking.

Total hours: 45**Text Books:**

1. Rafael C Gonzalez , Richard E Woods, "Digital Image Processing", Pearson Education- Inc- 3rd Edition, Third Impression,2011.
2. Jayaraman .S, Esakkirajan.S, Veerakumar.T,"Digital Image Processing", TMH New Delhi, 2009.

References:

1. Anil K.Jain, "Fundamentals of Digital Image Processing", Pearson/Prentice Hall of India-2002.
2. Kenneth R.Castleman,"Digital Image Processing",Pearson,2ndreprint, 2008.
3. William K Pratt, "Digital Image Processing", John Wiley, NewYork,2002.
4. Rafael C Gonzalez, Richard E Woods, Steven Eddins, "Digital Image Processing using MATLAB", Pearson Education Inc, 2nd Edition, 2004.
5. B.Chanda,D.Dutta Majumder,"Digital Image Processing and Analysis", 2nd Edition, PHI 2011.
6. David Salomon, "Data Compression – The Complete Reference", Springer Verlag, New York Inc, 2nd Edition, PHI 2011.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)

SEMESTER – VII

12IT4702	ENTERPRISE RESOURCE PLANNING (ELECTIVE)	L	T	P	C
	(Common to CS & IT)	3	0	0	3

Objective(s):

- To understand the components and modules of ERP System.
- To obtain Knowledge in development and significance of ERP Systems.
- To understand the business benefits of ERP System.

UNIT - I INTRODUCTION 9 Hrs

Overview of an Enterprise – Benefits of ERP – ERP and Related Technologies – Business Process Reengineering (BPR)– Data Warehousing – Data Mining – OLAP – SCM.

UNIT - II ERP IMPLEMENTATION 9 Hrs

Implementation Challenges – Strategies – Life Cycle – Pre-implementation Tasks –Requirements Definition – Methodologies – Package selection – Project Teams – Process Definitions – Vendors and Consultants – Data Migration – Project management – Post Implementation Activities.

UNIT-III THE BUSINESS MODULES 9 Hrs

Business modules in an ERP Package – Finance – Manufacturing – Human Resources – Plant Maintenance – Materials Management – Quality Management – Marketing – Sales, Distribution and Service.

UNIT - IV ERP MARKET 9 Hrs

Marketplace – Dynamics – SAP AG – Oracle – PeopleSoft – JD Edwards – QAD Inc – SSA Global – Lawson Software – Epicor – Intutive – BI-BO .

UNIT - V ERP PRESENT AND FUTURE 9 Hrs

Enterprise Application Integration – ERP and E-Business – ERP II – Total quality management – Future Directions – Trends in ERP– Case studies.

Total hours: 45

Text Books:

1. Alexis Leon, "ERP Demystified", Tata McGraw Hill, Second Edition, 2008.
2. D P Goyal, "Enterprise Resource Planning", Tata McGraw-Hill Education, 2011.

References:

1. Mary Sumner, "Enterprise Resource Planning", Pearson Education, 2007.
2. Jim Mazzullo, "SAP R/3 for Everyone", Pearson Education, 2007.
3. Vinod Kumar Garg and Venkitakrishnan N K, "Enterprise Resource Planning – Concepts and Practice", PHI, New Delhi, 2003.
4. Ellen Monk , Bret Wagner, "Concepts in Enterprise Resource Planning", Fourth Edition, Thompson Course Technology, 2012.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**SEMESTER – VII****12IT4703****SOFTWARE PRACTICE AND TESTING (ELECTIVE)**

L	T	P	C
3	0	0	3

Objective(s):

- To highlight the strategies for software testing.
- To stress the need and conduct of testing levels.
- To identify the issues in testing management.
- To bring out the ways and means of controlling and monitoring testing activity.

UNIT - I INTRODUCTION TO TESTING**8 Hrs**

Software Testing – Definition of Software Testing – Objective and limits of testing – Testing Strategy – Roles and Responsibilities of a Software Tester – Independent Verification and Validation.

UNIT – II SOFTWARE TESTING REQUIREMENTS**10 Hrs**

Software Testing Requirements – Analyzing the requirements -Classifying the Functional and Non Functional Requirements. Software Testing Review Process – Objective of Software Testing Review – Types of Reviews: Peer Review – Walkthrough – Inspection – Checklists of Review Process - Review Log.

UNIT- III TESTING TECHNIQUES**9 Hrs**

White box testing techniques – Static and Dynamic Testing – Statement Coverage – Decision/Branch Coverage – Basic Path Testing – Control Flow Graph Coverage – Conditional Coverage – McCabe's Cyclomatic Complexity – Mutation Testing. Black Box Test Techniques: Boundary Value Analysis – Equivalent Class Partition – Cause-Effect Analysis – Decision Table – State Transition Table – Pair Wise Testing – Use Case Testing.

UNIT - IV TESTING TYPES**9 Hrs**

Unit Testing, Functional Testing: Smoke Testing – Integration, System Testing, User Acceptance Testing – Non Functional Testing: Performance Testing – Recovery Testing – Security Testing –Compatibility Testing – Usability Testing – Ad Hoc Testing – Internationalization Testing – Configuration Testing - Data ware House Testing and Business Intelligence Testing – SOA Testing - Mobile Testing.

UNIT - V TEST CASE DESIGN**9 Hrs**

Definition of Test Case - Standards, Guidelines and Naming Conventions – Characteristics of Good Test Cases – Test Case templates – Creation of Test Case – Requirement Coverage –Traceability Matrix – Test Case Review Process – Test Execution – Test Log – Reporting of Test Execution – Definition of Risk – Risk Based Testing Approach.

Total hours: 45**Text Books:**

1. S.Subashni, N.Satheesh Kumar, Dr.B.G.Geetha, Dr.G.Singaravel, "Software Testing", Umayam Publications, First edition, 2013.
2. Srinivasan Desikan, Gopalaswamy Ramesh, "Software Testing: Principles and Practice", Pearson Education India, First Impression 2006.

References:

1. Marnie L. Hutchison, "Software Testing Fundamentals Methods and Metrics", Wiley, 2003 edition
2. Glenford J. Myer, "The Art of testing", Wiley, 2003 edition.
3. Mauro pezze, Michal young, "Software Testing and Analysis: Process, Principles, and Techniques", Wiley, 2008.
4. Elfriede Dustin, "Effective Software Testing", Pearson Education, New Delhi, 2003.

K.S.R. COLLEGE OF ENGINEERING(Autonomous)**SEMESTER – VII**

12CS4704	KNOWLEDGE BASED DECISION SUPPORT SYSTEM (ELECTIVE)	L	T	P	C
	(Common to CS & IT)	3	0	0	3

Objective(s):

- To learn and understand the various aspects of managerial support system such as decision making, Information Support Systems, Knowledge Base systems, Artificial Intelligence and Current Issues.

UNIT – I DECISION MAKING AND COMPUTERIZED SUPPORT 9 Hrs

Decision making, Systems, Modeling, and support – Introduction and Definition – Systems – Models – Modeling process – Decision making: The intelligence phase – The design phase – The choice phase – Evaluation: The implementation phase – Alternative Decision – Making models – Decision support systems – Decision makers.

UNIT – II DECISION SUPPORT SYSTEMS 9 Hrs

Decision Support System Development: Introduction – System development Life cycle – Methodologies – prototype – Technology Levels and Tools – Development platforms – Tool selection – Developing DSS. Enterprise systems: Concepts and Definition – Evolution of information systems – Information needs – Characteristics and capabilities – Comparing and Integrating EIS and DSS – EIS data access, Data Warehouse, OLAP, Multidimensional analysis, Presentation and the web – Including soft information enterprise on systems - Organizational DSS – supply and value chains and decision support – supply chain problems and solutions – computerized systems MRP, ERP, SCM – frontline decision support systems.

UNIT – III KNOWLEDGE DISCOVERY MANAGEMENT 9 Hrs

Introduction – Organizational learning and memory – Knowledge management – Development – methods, Technologies, and Tools – success – Knowledge management and Artificial intelligence – Electronic document management. Knowledge acquisition and validation: Knowledge engineering – Scope – Acquisition methods - Interviews – Tracking methods – Observation and other methods – Grid analysis – Machine Learning: Rule induction, case-based reasoning – Neural computing – Intelligent agents – Selection of an appropriate knowledge acquisition methods – Multiple experts – Validation and verification of the knowledge base – Analysis, coding, documenting, and diagramming – Numeric and documented knowledge acquisition – Knowledge acquisition and the Internet/Intranets. Knowledge representation: Introduction – Representation in logic and other schemas – Semantic networks – Production rules – Frames – Multiple knowledge representation – Experimental knowledge representations - Representing uncertainty.

UNIT – IV INTELLIGENT SYSTEMS 9 Hrs

Inference Techniques: Reasoning in artificial intelligence – Inference with rules: The Inference tree – Inference with frames – Model-based and case-based reasoning - Explanation and Meta knowledge – Inference with uncertainty – Representing uncertainty – Probabilities and related approaches – Theory of certainty – Approximate reasoning using fuzzy logic. Intelligent Systems Development: Prototyping: Project Initialization – System analysis and design – Software classification: Building expert systems with tools – Shells and environments – Software selection – Hardware – Rapid prototyping and a demonstration prototype - System development – Implementation – Post implementation.

UNIT – V MANAGEMENT SUPPORT SYSTEMS 9 Hrs

Implementing and integrating management support systems – Implementation - The major issues - Strategies – System integration – Generic models MSS, DSS, ES – Integrating EIS, DSS and ES, and global integration – Intelligent DSS – Intelligent modeling and model management – Examples of integrated systems – Problems and issues in integration. Impacts of Management Support Systems – Introduction – overview – Organizational structure and related areas – MSS support to business process reengineering – Personnel management issues – Impact on individuals – Productivity, quality, and competitiveness – decision making and the manager manager's job – Issues of legality, privacy, and ethics – Intelligent systems and employment levels – Internet communication – other societal impacts – managerial implications and social responsibilities – Future of management support system.

Text Books:

1. Efraim Turban, Jay E. Aronson Ting-Peng Liang, "Decision Support Systems and Intelligent Systems", 7th Edition, Pearson Education, 2005.
2. George M Marakas, "Decision support Systems", 2nd Edition, Pearson Education, 2002.

References:

1. V.S. Janakiraman and K. Sarukesi, "Decision Support Systems", 2006.
2. Efrem G Mallach, "Decision Support systems and Data warehouse Systems", Tata McGraw Hill, 2008.
3. Donald Hislop, "Knowledge Management in Organizations A Critical Introduction", Oxford University Press, 2013.
4. SheldaDebowski, "Knowledge Management", John Wiley & Sons, 2007.

K.S.R. COLLEGE OF ENGINEERING(Autonomous)

SEMESTER – VII

12CS4705

ARTIFICIAL INTELLIGENCE(ELECTIVE)
(Common to CS & IT)

L	T	P	C
3	0	0	3

Objective(s):

- *To learn the basics of designing intelligent agents to solve general purpose problems, represent and process knowledge, plan and act, to learn from experiences and communicate with other agents.*

UNIT – I FUNDAMENTALS OF ARTIFICIAL INTELLIGENCE 9 Hrs

Intelligent Agents – Agents and environments – Good behavior – Nature of environments – Structure of agents – Problem Solving : Problem solving agents – Example problems – Searching for solutions – Un-informed search strategies – Avoiding repeated states – Searching with partial information.

UNIT – II INFORMED SEARCHING TECHNIQUES 9 Hrs

Informed search and exploration – Informed search strategies – Heuristic function – Local search algorithms and optimistic problems – Constraint Satisfaction Problems (CSP) – Backtracking search – Structure of problems - Adversarial Search – Games – Optimal decisions in games – Alpha – Beta Pruning.

UNIT – III LOGICAL REASONING 9 Hrs

First order logic – Representation revisited – Syntax and semantics for first order logic – Using first order logic – Knowledge engineering in first order logic – Inference in First order logic – Prepositional versus first order logic – Unification and lifting – Forward chaining – Backward chaining – Resolution – Knowledge representation.

UNIT – IV PLANNING 9 Hrs

Planning Problem – Planning with state – space search – Partial-order planning – Planning graphs – Planning and acting in the real world :Time schedules and resources – Planning and acting in non deterministic Domain – Conditional Planning – Execution monitoring and replanning – Continuous planning and Multi agent planning.

UNIT – V LEARNING AND COMMUNICATIONS 9 Hrs

Learning from observation - Inductive learning – Decision trees – Explanation based learning Communication – Communication as action – Formal grammar for a fragment of English –Syntactic analysis – Augmented grammars – Semantic interpretation – Ambiguity and disambiguation – Discourse understanding – Grammar induction.

Total hours: 45

Text Books:

1. Stuart Russell and Peter Norvig, "Artificial Intelligence – A Modern Approach", Pearson Education, 2nd Edition, 2013.
2. Elaine Rich, Kevin Knight and Shivashankar B.Nair, "Artificial Intelligence", Tata McGraw-Hill, 2nd Edition, 2009.

References:

1. David Poole, Alan Mackworth and Randy Goebel, "Computational Intelligence : A logical approach", Oxford University Press, 2004.
2. G. Luger, "Artificial Intelligence: Structures and Strategies for complex problem solving", Pearson Education, 4th Edition, 2002.
3. Nils J. Nilsson, "Artificial Intelligence: A new Synthesis", Harcourt Asia Pvt. Ltd., 2000.
4. Stuart Russell, Peter Norvig, "Artificial Intelligence: A Modern Approach", Prentice Hall, 2010.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**SEMESTER – VII****12IT4706****ELECTRONIC COMMERCE (ELECTIVE)**
(Common to CS & IT)

L	T	P	C
3	0	0	3

Objective(s):

- To understand the basics concepts of e-commerce.
- To know the e-commerce applications and their security.
- To become aware of various standard of e-commerce available in the market.

UNIT - I INTRODUCTION**9 Hrs**

E-Commerce framework – E- Business models – Network infrastructure for E-commerce – Internet as a Network Infrastructure – E-commerce and World Wide Web.

UNIT - II E-COMMERCE**9 Hrs**

Consumer oriented E-Commerce- Applications - Mercantile process models - Electronic Payment Systems – Digital Token based EPS – Smart cards – Credit cards – Risks – designing EPS – Paybal - ebay.

UNIT - III INTERORGANIZATIONAL COMMERCE AND EDI**9 Hrs**

Electronic Data Interchange: EDI applications in Business – EDI and E-Commerce – EDI standardization and implementation – Internet based EDI.

UNIT - IV SECURITY ISSUES IN E-COMMERCE**9 Hrs**

Network Security – Client-Server Network Security – CS Security Threats – Firewalls – Data & Message Security – Encrypted Documents – Security on the Web.

UNIT - V INTRAORGANIZATIONAL E-COMMERCE AND MARKETING**9 Hrs**

Internal Information System – Work-flow Automation and Coordination – Supply Chain Management-Documents Library – Types of Digital Documents-Corporate Data Warehouses – Advertising and Marketing on the Internet.

Total hours: 45**Text Books:**

1. Ravi Kalakota and Andrew B Whinston, "Frontiers of Electronic Commerce", Pearson Education Asia, 2009.
2. Marilyn Greenstein and Todd M Feinman, "Electronic commerce: Security, Risk Management and Control" Tata McGraw-Hill, 2000.

References:

1. Judy Strauss and Raymond Frost, "E Marketing", PHI, 2002.
2. Brenda Kienan, "Managing E Commerce Business", PHI, 2001.
3. Vivek Sharma and Rajiv Sharma, "Developing E-Commerce Sites – an integrated approach", Pearson Education Asia, 2000.
4. Kamallesh K. Bajaj, "E-Commerce: The Cutting Edge & Business", Tata McGraw-Hill, 2003.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**SEMESTER – VII****12CS4707****GRID COMPUTING(ELECTIVE)**
(Common to CS & IT)

L	T	P	C
3	0	0	3

Objective(s):

- To understand the need for evolution of Grids in the context of processor- and data-intensive applications.
- To familiar with the fundamental components of Grid environments, such as authentication, authorization, resource access, and resource discovery.
- To design and implement Grid computing applications using Globus or similar toolkits.
- To justify the applicability or non-applicability of Grid technologies for a specific application.

UNIT – I CONCEPTS AND ARCHITECTURE 9 Hrs

Introduction-Parallel and Distributed Computing-Cluster Computing-Grid Computing-Anatomy and Physiology of Grid-Review of Web Services – OGSA-WSRF.

UNIT – II GRID MONITORING 9 Hrs

Grid Monitoring Architecture (GMA) - An Overview of Grid Monitoring Systems –GridICE- JAMM – MDS- Network Weather Service-R-GMA –Other Monitoring Systems- Ganglia and GridMon.

UNIT – III GRID SECURITY AND RESOURCE MANAGEMENT 9 Hrs

Grid Security- Brief Security Primer – PKI-X509 Certificates-Grid Security-Grid Scheduling and Resource Management-Scheduling Paradigms- Working principles of Scheduling –Review of Condor, SGE, PBS and LSF-Grid Scheduling with QoS.

UNIT – IV DATA MANAGEMENT AND GRID PORTALS 9 Hrs

Data Management-Categories and Origins of Structured Data-Data Management Challenges-Architectural Approaches-Collective Data Management Services-Federation Services-Grid Portals-First Generation Grid Portals-Second Generation Grid Portals.

UNIT – V GRID MIDDLEWARE 9 Hrs

List of globally available grid Middlewares – Case Studies-Current version of Globus Toolkit and gLite – Architecture, Components and Features.

Total hours: 45**Text Books:**

1. Maozhen Li and Mark Baker, "The Grid: Core Technologies", John Wiley & Sons, 2012.
2. Ian Foster and Carl Kesselman, "The Grid 2 – Blueprint for a New Computing Infrastructure", Morgan Kaufman, 2011.

References:

1. Joshy Joseph and Craig Fellenstein, "Grid Computing", Pearson Education, 2011.
2. Fran Berman, Geoffrey Fox and Anthony J.G.Hey, "Grid Computing: Making the Global Infrastructure a Reality", John Wiley and Sons, 2009.
3. Bart Jacob, "Introduction to Grid Computing", 1st Edition, IBM Red Books, Vervante, 2005.
4. Barry Wilkinson, "Grid Computing: Techniques and Applications", Chapman and Hall, CRC, Taylor and Francis Group, 2010.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**SEMESTER – VII****12CS4708****SOFT COMPUTING(ELECTIVE)**
(Common to CS & IT)

L	T	P	C
3	0	0	3

Objective(s):

- To impart knowledge on the working principles and applications of Genetic Algorithms.
- To understand Neural Network architecture and its function.
- To impart knowledge on Fuzzy Logic and Fuzzy Systems.

UNIT – I INTRODUCTION TO SOFT COMPUTING 9 Hrs

Evolution of Computing – Soft Computing Constituents – Conventional AI to Computational Intelligence – Machine Learning Basics.

UNIT – II GENETIC ALGORITHMS 9 Hrs

Introduction – Biological Background – Operators and Techniques in Genetic Algorithms – Classification of Genetic Algorithms – Applications.

UNIT – III NEURAL NETWORKS 9 Hrs

Machine Learning Using Neural Network – Adaptive Networks – Feed forward Networks – Supervised Learning Neural Networks – Radial Basis Function Networks – Reinforcement Learning – Unsupervised Learning Neural Networks – Adaptive Resonance architectures – Advances in Neural networks.

UNIT – IV FUZZY LOGIC 9 Hrs

Fuzzy Sets – Operations on Fuzzy Sets – Fuzzy Relations – Membership Functions- Fuzzy Rules and Fuzzy Reasoning – Fuzzy Inference Systems – Fuzzy Expert Systems – Fuzzy Decision Making.

UNIT – V NEURO-FUZZY MODELING 9 Hrs

Adaptive Neuro-Fuzzy Inference Systems – Coactive Neuro-Fuzzy Modeling – Classification and Regression Trees – Data Clustering Algorithms – Rule based Structure Identification – Neuro-Fuzzy Control – Case studies.

Total hours: 45**Text Books:**

1. Jyh-Shing Roger Jang, Chuen-Tsai Sun and Eiji Mizutani, "Neuro-Fuzzy and Soft Computing", Prentice-Hall of India, 2007.
2. Sivanandam. S.N. and Deepa .S.N., "Introduction to Genetic Algorithms", Springer, 2013.

References:

1. Timothy J. Ross, "Fuzzy Logic with Engineering Applications", Wiley, 3rd Edition, 2010.
2. Simon Haykin, "Neural Networks and Learning Machines", Prentice Hall, 3rd Edition, 2009.
3. Rajasekaran. S. and Vijayalakshmi Pai.G.A., "Neural Networks, Fuzzy Logic and Genetic Algorithms: Synthesis and Applications", PHI Learning, 2004.
4. David E. Goldberg, "Genetic Algorithm in Search Optimization and Machine Learning" Pearson Education, 2013.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)

SEMESTER – VII

12IT4709

ADVANCED DATABASE TECHNOLOGY(ELECTIVE)
(Common to CS & IT)

L	T	P	C
3	0	0	3

Objective(s):

- To understand the basics of Database Management Systems.
- To have an overview of Data Warehousing concepts.
- To know about various types of Database Management systems.

UNIT - I DATABASE SYSTEM DESIGN

9 Hrs

Storage and File Structure - Query Processing Algorithms – Query Optimization Techniques –Physical Database Design and Tuning - Transaction Processing Concepts – Concurrency Control – Recovery Techniques – Database Security.

UNIT- II DISTRIBUTED DATABASES

9 Hrs

Centralized versus Distributed databases – Distributed Database Concepts – Advantages of Distributed Databases – Additional functions of Distributed Databases –Fragmentation and Replication Techniques – Types of Distributed databases – Distributed database Architecture – Concurrency Control and Recovery Techniques in Distributed Databases – Client/Server Architecture.

UNIT -III OBJECT ORIENTED AND RELATIONAL DATABASES

9 Hrs

Introduction to Object Oriented Concepts – Overview of the Object model of Object Data Management Group – Object Definition Language – Object Query Language – Object Database Conceptual Design – Functional Dependencies and Normalization for Relational Databases – Relational Database Design Algorithms.

UNIT- IV ENHANCED DATA MODELS FOR ADVANCED APPLICATIONS

9 Hrs

Enhanced Data models – Web Databases - Temporal Databases –Incorporating Time in Relational Database - Incorporating Time in Object Oriented Database– Temporal Querying Constructs – Time Series Data – Spatial Databases – Overview of Data mining Techniques and Data Modeling for Data Warehouses.

UNIT- V CURRENT ISSUES

9 Hrs

Active Database Concepts – Introduction to Deductive Databases – Clausal Form and Horn Clauses – Interpretation of Rules – Use of Relational Operations – Multimedia Databases – The Nature of Multimedia data and Applications – Text Database – Web Database – Geographic Information systems.

Text Books:

Total hours: 45

1. RamezElmasri and B.Navathe, "Fundamentals of Database Systems", Fifth Edition, Addison Wesley, 2011.
2. Henry F.Korth, Abraham Silberschatz and S.Sudharshan, "Database system concepts", Eighth Edition, McGrawHill Publications, 2011.

References:

1. Raghu Ramakrishnan and Johannes Gehrke, "Database Management Systems", Third Edition McGraw Hill Publications, 2004.
2. Date C.J, "An Introduction to Database", Addison-Wesley Pub Co, Eighth Edition, 2006.
3. Peter Rob, Carlos Coronel, "Database Systems – Design, Implementation, and Management", Ninth Edition, Thomson Learning, 2009.
4. Tamer M. Ozsu , Patrick Ualduriel, "Principles of Distributed Database Systems", Second Edition, Pearson Education, 2003.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**SEMESTER – VII****12IT4710****BIO-INFORMATICS(ELECTIVE)**

L	T	P	C
3	0	0	3

Objective(s):

- To study the scope of Bioinformatics
- To understand the types of Databases and their uses.
- To analyze the Tools and Algorithms.
- To learn the Pair wise Sequence Alignment methods.

UNIT - I INTRODUCTION**9 Hrs**

Introduction-Historical Overview and Definition- Bioinformatics Applications - Major Databases in Bioinformatics- Data Management and Analysis- Molecular Biology and Bioinformatics- Central Dogma of Molecular Biology.

UNIT- II DATABASES**9 Hrs**

Introduction- Characteristics of Bioinformatics Databases- Categories of Bioinformatics Databases- Navigating databases- Sequence Databases - Nucleotide sequence database- secondary Nucleotide sequence database – protein sequence databases- structure databases- Structure file formats- Protein Structure Database Collaboration- PDB- CATH –SCOP- Other databases- Enzyme Databases- MEROPS- Pathway Databases: CAZY.

UNIT - III TOOLS**9 Hrs**

Introduction- Need for Tools- Knowledge Discovery - Data Mining Tools- Data Submission tools- Nucleotide Sequence Submission and Protein Submission tools- Data Analysis tools- Prediction Tools- Phylogenetic trees and Phylogenetic Analysis- Modelling Tools.

UNIT- IV ALGORITHMS**9 Hrs**

Introduction - Classification of Algorithms - Implementing Algorithms - Biological Algorithms - Bioinformatics Tasks and Corresponding Algorithms - Data Analysis Algorithms- Sequence Comparison Algorithms – Substitution Matrices Algorithms –Sequence Alignment Optimal Algorithms Prediction Algorithms- Phylogenetic prediction Algorithm – Protein Structure Prediction.

UNIT - V GENOME ANALYSIS AND SEQUENCE ALIGNMENT**9 Hrs**

Introduction- Genome Analysis- Genome mapping- The Sequence Assembly Problem- Genome Sequencing- Biological Motivation of Alignment Problems - Methods of Sequence Alignments- Using Scoring matrices- Measuring Sequence Detection Efficiency- Working with FASTA and BLAST.

Text Books:**Total hours: 45**

1. Orpita Bosu, Simminder Kaur Thukral, "Bioinformatics: Database, Tools, Algorithms", Oxford University Press, Chennai, 2007.
2. Rastogi S. C., Namita Mendiratta, Parag Rastogi, "Bioinformatics: Methods and Applications. Genomics, Proteomics and Drug Discovery", Third Edition, PHI Learning Pvt. Ltd., New Delhi, 2011.

References:

1. Bryan Bergeron, "Bioinformatics computing", PHI Learning Pvt. Ltd, New Delhi, 2010.
2. Rastogi S.C., Namita Mendiratta, Parag Rastogi, "Bioinformatics: Concepts", Skills & Applications, Second Edition, CBS Publishers & Distributors Pvt. Ltd, 2009
3. Arthur M. Lesk, "Introduction to Bioinformatics", Third Edition, Oxford University Press, Chennai, 2010
4. Gautham N., "Bioinformatics: Databases and Algorithms", Alpha Science 2006.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**SEMESTER – VII****12IT4711****INFORMATION SECURITY (ELECTIVE)**

L	T	P	C
3	0	0	3

Objective(s):

- To understand the basics of Information Security.
- To know the legal, ethical and professional issues in Information Security.
- To become aware of various standards in this area.
- To know the technological aspects of Information Security.

UNIT- I INTRODUCTION**9 Hrs**

History of Information Security –Critical Characteristics of Information –CNSS Security Model– Components of an Information System – Securing the Components – Balancing Security and Access– The SDLC – The Security SDLC – Need for Security – Business Needs – Threats – Attacks.

UNIT- II ISSUES AND RISK ANALYSIS**9 Hrs**

Legal, Ethical and Professional Issues– Ethics in Information Security – Risk Management: Introduction – Identifying and Assessing Risk – Assessing and Controlling Risk – Selecting a Risk Control Strategy –Risk Management Discussion Points.

UNIT- III LOGICAL DESIGN**9 Hrs**

Blueprint for Security – Information Security Policy Standards and Practices – ISO 27000 Series – NIST Models–VISA International Security Model – Design of Security Architecture – Security Education – Continuity Strategies.

UNIT – IV SECURITY TECHNOLOGIES**9 Hrs**

Access Control– Firewalls– Protecting Remote Connections – Intrusion Detection and Prevention Systems – Scanning and Analysis Tools– Biometric Access Controls – Cryptography– Network Security Tools.

UNIT – V PHYSICAL DESIGN**9 Hrs**

Physical Security – Implementing Information Security: Information Security Project Management – Technical Aspects – Non technical Aspects – Security Certification and Accreditation – Security and Personnel.

Total hours: 45**Text Books:**

1. Michael E Whitman and Herbert J Mattord, "Principles of Information Security", Fourth Edition, Vikas Publishing House, New Delhi, 2011.
2. Mark Merkow, James Breithaupt, "Information Security: Principles and Practices", Prentice Hall, 2005.

References:

1. Micki Krause, Harold F. Tipton, "Handbook of Information Security Management", Vol 1-3, CRC Press LLC, 2004.
2. Stuart McClure, Joel Scrambray, George Kurtz, "Hacking Exposed", Tata McGraw-Hill, 2003.
3. William Stallings, "Cryptography and Network Security", Pearson Education, New Delhi, 2006.
4. Matt Bishop, "Computer Security Art and Science", Pearson/PHI, 2002.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**SEMESTER – VII****12IT4712****SOFTWARE AGENT(ELECTIVE)**

L	T	P	C
3	0	0	3

Objective(s):

- To provide students with a broad knowledge in Software Agent
- To understand the basic concepts of agent architecture.
- To enable the students to design and build a mobile agents.

UNIT - I AGENT AND USER EXPERIENCE 9 Hrs

Interacting with Agents - Agent from Direct Manipulation to Delegation – Interface Agent Metaphor with Character - Designing Agents - Direct Manipulation versus Agent.

UNIT- II AGENTS FOR LEARNING AND INTELLIGENT ASSISTANCE 9 Hrs

Agents for Information Sharing and Coordination - Agents that Reduce Work Information Overhead - Agents without Programming Language - Life like Computer character - Software Agents for cooperative Learning - Architecture of Integrated Agents

UNIT- III AGENT COMMUNICATION AND COLLABORATION 9 Hrs

Overview of Agent Oriented Programming - Agent Communication Language – Agent Based Framework of Interoperability

UNIT - IV AGENT ARCHITECTURE 9 Hrs

Agents for Information Gathering - Open Agent Architecture - Communicative Action for Artificial Agent

UNIT- V MOBILE AGENTS 9 Hrs

Mobile Agent Paradigm - Mobile Agent Concepts - Mobile Agent Technology - Programming Mobile Agents - Using Mobile Agents.

Total hours: 45**Text Books:**

1. Jeffrey M. Bradshaw, "Software Agents ", PHI Learning, 2010.
2. Joseph P. Bigus, Jennifer Bigus, "Constructing Intelligent agents with Java ", Wiley, 2001.

References:

1. Russel, Norvig, "Artificial Intelligence: A Modern Approach", Third Edition, Pearson Education, 2014.
2. Richard Murch, Tony Johnson, "Intelligent Software Agents", Prentice Hall, 2000.
3. Gerhard Weiss, "Multi Agent Systems – A Modern Approach to Distributed Artificial Intelligence", MIT Press, 2000.
4. Antonio Moreno, John L. Nealon, "Applications of Software Agent Technology in the Health Care Domain", Springer, 2003.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)

SEMESTER – VIII

12IT4841

CLOUD COMPUTING (ELECTIVE)

(Common to CS & IT)

L	T	P	C
3	0	0	3

Objective(s):

- To learn about different services offered by cloud.
- To understand the design and implementation of cloud-based applications.
- To study the security and storage concepts in cloud.

UNIT - I INTRODUCTION

8 Hrs

Cloud computing basics: Cloud computing – Cloud Types - Characteristics of Cloud computing – Assessing the role of Open Standards - Measuring the cloud's value - Cloud Architecture: Exploring the cloud computing stack.

UNIT- II CLOUD SERVICES

10 Hrs

Understanding Services and Applications by Type: Defining Infrastructure as a service- Defining Platform as a Service- Defining software as a Service – Defining Identity as a Service, Understanding Abstraction and virtualization: Virtualization Technologies – Load Balancing and Understanding Hypervisors- Machine Imaging – Porting applications

UNIT – III CLOUD PLATFORMS

9 Hrs

Platform as a Service: PaaS Applications Frameworks – Using Amazon Web Services: Amazon Web service components and Services – Working with Elastic Compute Cloud (EC2) – Working with Amazon Storage systems- Understanding Amazon Database Services

UNIT - IV MICROSOFT CLOUD SERVICES AND CLOUD SECURITY

9 Hrs

Microsoft Cloud Services: Exploring Microsoft Cloud services – Windows Azure Platform, Cloud Security: Securing the cloud – Securing Data –Establishing Identity and Presence.

UNIT – V SERVICE ORIENTED ARCHITECTURE AND CLOUD STORAGE

9 Hrs

Service Oriented Architecture: Introducing service Oriented Architecture - SOA Communications –Managing and Monitoring SOA. Cloud storage: Provisioning Cloud Storage - Exploring Cloud Backup Solutions–Cloud Storage Interoperability.

Total hours: 45

Text Books:

1. Barrie Sosinsky, "Cloud Computing Bible". Wiley Publishing, 2011.
2. Anthony T .Velte, Toby J.Velte, Robert Elsenpeter, "Cloud Computing: A Practical Approach", Tata McGraw Hill Edition, Fourth Reprint, 2010.

References:

1. George Reese, "Cloud Application Architectures: Building Applications and Infrastructure in the Cloud". First Edition, Orelly's Publisher, 2009.
2. Ronald L.Krutz, Russell vines, "Cloud Security: A Comprehensive Guide to Secure Cloud Computing", Wiley Publishing Inc., First Edition, 2010.
3. Kris Jamsa, "Cloud Computing: SaaS, PaaS, IaaS, Virtualization, Business Models Mobile, Security and more", Jones&Bartlett Learning Company LLC, 2013.
4. Bloor R., Kanfman M., Halper F. Judith Hurwitz "Cloud Computing for Dummies", Wiley India Edition, 2010.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**SEMESTER – VIII**

12CS4802	GREEN COMPUTING(ELECTIVE)	L	T	P	C
	(Common to CS & IT)	3	0	0	3

Objective(s):

- To learn the concepts and techniques of green computing.

UNIT – I BASICS OF GREEN COMPUTING 9 Hrs

Role of Computer Consultants in Propagating Green Computing – Impact of Green Computing in the Industry – Grid Computing as a Better Research Initiative Tool – Effective Project Initiative – Green Computing Impact Development – Impact on Research – Adapting to Change in an Organization – Implementing Green Computing.

UNIT – II BUSINESS IMPACT 9 Hrs

Basics of Business Impact – Organizational Development – Adopting Green Data Center – High Impact Computer: Computer Power and Versatility for Business and Home Use – Information Technology Consulting: Providing Expert IT Support for Businesses – Managing Organization.

UNIT – III RESOURCES AND STANDARDS 9 Hrs

Resource allocation and Virtualization – Green Computers Initiatives – Green Computing Impact in Organization – Green Electronics Council – Challenges – Green Grid Framework – CSCI – EPEAT Standards – Green Computer – Green Computing Initiative Platforms.

UNIT – IV GREEN IT 9 Hrs

Terminal servers – Power management – Operating system support – Power supply – Storage – Video card and Display – Scope of Green Computers – Green IT – Complementing Information Technology and Going Green – Organization Information Systems for Green Computing.

UNIT – V MATERIALS RECYCLING AND TELECOMMUTING 9 Hrs

Materials Recycling: Web, Temporal and Spatial Data Mining – Telecommuting: Basics – Resources – Pros and Cons.

Total hours: 45**Text Books:**

1. Jason Harris, "Green Computing and Green IT Best Practices on Regulations and Industry Initiatives, Virtualization, Power Management, Materials Recycling and Telecommuting", Emereo Publishing, 2008.
2. Wu-chun Fang, "The Green Computing Book: Tackling Energy Efficiency at Large Scale", CRC Press, 2014.

References:

1. John Lamb, "The Greening of IT", Pearson Education, 2010.
2. Jae H. Kim and Myung J. Lee, "Green IT: Technologies and Applications", Springer, 2011.
3. Ishfaq Ahmad and Sanjay Ranka, "Handbook of Energy-aware and Green Computing", Volume 1, CRC Press, 2012.
4. Jinsong Wu, SundeepRangan and Honggang Zhang, "Green Communications: Theoretical Fundamentals, Algorithms and Applications", CRC Press, 2013.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)

SEMESTER – VIII

12CS4803

NANO COMPUTING(ELECTIVE)
(Common to CS & IT)

L	T	P	C
3	0	0	3

Objective(s):

- To learn the concepts of Nano computing, soft computing and functional machines.

UNIT – I MICROELECTRONICS AND NANOSTRUCTURES 9 Hrs

Development of Microelectronics and Nanostructures – Complexity Problem – Challenges – Basics of Nanoelectronics: Electromagnetic Fields and Photons – Quantization of Action, Charge, and Flux – Electrons behaving as waves – Electrons in potential wells – Diffusion Process.

UNIT – II BIOCHEMICAL AND QUANTUM-MECHANICAL COMPUTERS 9 Hrs

DNA Computer – Information Processing with Chemical reactions – Nanomachines – Parallel Processing – Quantum Computers – Bit and Qubit – Coherence and Entanglement – Quantum Parallelism.

UNIT – III PARALLEL ARCHITECTURES FOR NANOSYSTEMS 9 Hrs

Mono and Multiprocessor Systems – Parallel Processing Considerations – Influence of Delay Time – Power Dissipation – Architecture for Processing Nanosystems: Classic Systolic Arrays – Processor with large memory – Processor array with SIMD and PIP Architectures – Reconfigurable Computers – Teramac as a Prototype.

UNIT – IV SOFT COMPUTING AND NANO ELECTRONICS 9 Hrs

Methods of Soft Computing – Fuzzy Systems – Evolutionary Algorithms – Connectionistic Systems – Computationally Intelligent Systems – Characteristics of Neural Networks in Nanoelectronics – Local Processing – Distributed and Fault-tolerant Storage – Self-organization.

UNIT – V NANOSYSTEMS AS INFORMATION PROCESSING MACHINES 9 Hrs

Nanosystems as Functional Machines – Information Processing as Information Modification – System Design and its interfaces – Requirements of Nanosystems – Uncertainties : Uncertainties in Nano systems – In the Development of Nanoelectronics – Removal of Uncertainties by Nanomachines.

Total hours: 45

Text Books:

- Karl Goser, "Nanoelectronics and Nanosystems: From Transistors to Molecular and Quantum Devices", Springer, 2008.
- Sandeep Shukla and R. Iris Bahar, "Nano, Quantum and Molecular Computing: Implications to high level design and validation", Kluwer Academic Publishers, 2010.

References:

- Mick Wilson, KamaliKannangara and Geoff smith, "Nanotechnology: Basic Science and Emerging Technologies", Overseas press, 2005.
- Vishal Sahni, "Nanocomputing: The Future of Computing", Tata McGraw-Hill, 2008
- Sahni V. and Goswami D., "Nano Computing", Tata McGraw-Hill, 2008.
- Jean-Baptiste Waldner, "Nanocomputers and Swarm Intelligence", John Wiley & Sons, 2008.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**SEMESTER – VIII****12IT4804****SOFTWARE QUALITY MANAGEMENT(ELECTIVE)**

L	T	P	C
3	0	0	3

Objective(s):

- To introduce an integrated approach to software development incorporating quality management methodologies.
- To study about the quality improvements in software
- To understand the software quality standards

UNIT- I INTRODUCTION**9 Hrs**

The Software Quality Challenge – Software Quality Factors – Components of the Software Quality Assurance System – Pre-Project Software Quality Components: Contract Review – Development and Quality Plans.

UNIT- II SQA COMPONENTS**9 Hrs**

Integrating Quality Activities in the Project Life Cycle – Reviews – Software Testing – Strategies -Software Testing – Implementation – Assuring the Quality of Software Maintenance – Assuring the Quality of External Participants' Parts.

UNIT - III SOFTWARE QUALITY INFRASTRUCTURE**9 Hrs**

Procedures and Work Instructions – Supporting Quality Devices – Staff Training, Instructing and Certification – Preventive and Corrective Actions – Configuration Management – Documentation and Quality Records Controls.

UNIT- IV QUALITY MANAGEMENT SYSTEM**9 Hrs**

Project Progress Control: Components – Implementation – Computerized Tools, Software Quality Metrics: Classification – Product metrics – Process metrics – Implementation – Limitations – Software Quality Costs.

UNIT - V QUALITY STANDARDS**9 Hrs**

Quality Management Standards – IEEE Software Engineering Standards – Organizing for Quality Assurance- Management and its Role in Quality Assurance – The Software Quality Assurance Unit – Other Actors in the SQA System.

Total hours: 45**Text Books:**

1. Daniel Galin, "Software Quality Assurance: From Theory to Implementation", Pearson Education, 2004.
2. Allan C. Gillies, "Software Quality: Theory and Management", Thomson Learning, 2011.

References:

1. Stephen H. Kan, "Metrics and Models in Software Quality Engineering", Pearson Education (Singapore) Pvt. Ltd., 2003.
2. E. Norman Fenton and Shari Lawrence Pfleeger, "Software Metrics", Thomson, 2003.
3. Mordechai Ben Menachem and Garry S. Marliss, "Software Quality", Thomson Asia Pvt Ltd, 2003.
4. Mary Beth Chrissis, Mike Konrad and Sandy Shrum, "CMMI", Pearson Education (Singapore) Pvt Ltd, 2003.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**SEMESTER – VIII****12IT4805****INDIAN CONSTITUTION AND SOCIETY (ELECTIVE)**

L	T	P	C
3	0	0	3

Objective(s):

- To understand the fundamentals of Indian constitution.
- To understand the structure of central, state and local government.
- To know about the Indian Federal system.

UNIT - I HISTORICAL BACKGROUND**9 Hrs**

Historical Background – Making of Constitution – Philosophical foundations of the Indian Constitution – Preamble – Citizenship – Fundamental Rights and Duties – Directive Principles of State Policy – Constitutional Remedies for citizens.

UNIT - II STRUCTURE OF CENTRAL GOVERNMENT**9 Hrs**

Union Government – President – Vice President – Powers and duties of the presidents – The council of ministers – Union Legislature – Organization of the judiciary in General – Supreme Court of India.

UNIT - III STRUCTURE OF STATE GOVERNMENT**9 Hrs**

State Government – Structure and Functions – Governor – The council of ministers – State Legislature – Judicial System in States – High Courts.

UNIT - IV STRUCTURE OF LOCAL GOVERNMENT**9 Hrs**

System of Panchayats – Municipalities and Cooperative Societies – Panchayats – Municipalities and Planning Committees – Rights and Liabilities of the Government and Public Servants – Elections – Languages.

UNIT - V FEDERAL SYSTEM**9 Hrs**

Distribution of Legislative and Executive powers – Distribution of financial Powers – Administrative relation between union and states – Inter-state relations Emergency provisions – Provision for protection of minorities.

Total hours: 45**Text Books:**

1. Durga Das Basu, Introduction to the Constitution of India, Lexis Nexis Publication, 21st Edition, 2013.
2. R.C.Agarwal, Indian Political System, S.Chand and Company, New Delhi, 2000.

References:

1. Brij Kishore Sharma, Introduction to the Constitution of India, Prentice Hall of India, New Delhi, 2002.
2. Yogendra Singh, Social Stratification and Change in India, Manohar, New Delhi, 2006.
3. Maciver and Page, Society: An Introduction Analysis, Mac Milan India Ltd., New Delhi, 2000.
4. P.M Bakwshi, "The Constitution of India", Universal Law Publishing Co., New Delhi, 2006.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**SEMESTER – VIII****12IT4807****INTELLECTUAL PROPERTY RIGHTS (ELECTIVE)**

L	T	P	C
3	0	0	3

Objective(s):

- To understand Intellectual Property Rights and Patents.
- To know about copyright and trademark.
- Learn and acquire sufficient knowledge about patents, rights and obligations, procedure to procure and maintain them.

UNIT - I INTRODUCTION TO INTELLECTUAL PROPERTY**9 Hrs**

Introduction - Intellectual Property Law- Patents: Sources of Patent Law – Subject Matter of Patents – Rights – Patent Requirements – Limitations – Ownership – Search Process – Application Process – Infringement – Litigation – International Patent Laws.

UNIT- II TRADEMARKS**9 Hrs**

Principles of Trademarks – Selection, Evaluation and Registration – Trademark Protection and Maintenance – Ownership – Inter Partes Proceedings – Likelihood of Confusion –Infringement – Litigation - International Trademark Laws.

UNIT - III COPYRIGHTS**9 Hrs**

Principles of Copyrights: Sources – Protectable under copyright Law – Works of Authorship – Derivative Works and Compilations – Non - Protectable under copyright Law – Copyrights: Rights and Limitations – Copyrights Ownership: Ownership of Copyright – Joint Copyrights – Works made for Hire – Transfer of Ownership – Terminating Transfers.

UNIT - IV COPYRIGHT REGISTRATION AND LAWS**9 Hrs**

Notice of Copyrights and Omission – Registration – Preparing Application – Special Situations – Correcting and Cancellation of Registration – Infringement – Resolving the Infringement dispute prior to Litigation – Litigation – International Copyright Laws.

UNIT - V TRADE SECRETS**9 Hrs**

Introduction to Trade Secret – Maintaining Trade Secret – Protecting a Submission – Trade Secret Law - Trade Secret Litigation: Breach of Contract – Applying State Law – Litigation checklists – Case Studies.

Total hours: 45**Text books:**

1. Richard Stim, "Intellectual Property Copyrights,Trademarks and Patents", Cengage Learning, Third Indian Reprint, 2011.
2. Prabuddha ganguli, "Intellectual Property Rights", Tata McGraw-Hill Education, 2001.

References:

1. P. Narayanan, "Patent Law", Eastern Law House, Fourth Edition, 2002.
2. V.K. Unni, "Trademarks &The Emerging Concepts of Cyber Property Rights", Eastern Law House, 2005.
3. Chandrasekaran,"Intellectual Property Law", C. Sitaraman & Co. Pvt. Ltd., 2004.
4. VikesVashishth, "Law & Practice of Intellectual Property in India", Bharath Law House Pvt. Ltd., 2002.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**SEMESTER – VIII**

12CS4808	NATURAL LANGUAGE PROCESSING(ELECTIVE)	L	T	P	C
	(Common to CS & IT)	3	0	0	3

Objective(s):

- To learn the use of state automata for language processing.
- To understand the fundamentals of word classes, grammars, and parsing techniques.
- To impart knowledge on advanced features like feature structures and realistic parsing methodologies.
- To develop typical natural language processing applications.

UNIT – I FUNDAMENTALS 9 Hrs

Introduction: Knowledge in speech and language processing – Ambiguity – Models and Algorithms – Language, Thought and Understanding- Regular Expressions and automata: Regular expressions – Finite-State automata- Morphology and Finite-State Transducers: Survey of English morphology – Finite-State Morphological parsing – Combining FST lexicon and rules – Lexicon-Free FSTs: The porter stammer – Human morphological processing.

UNIT – II SYNTAX 9 Hrs

Word classes and part-of-speech tagging: English word classes – Tagsets for English – Part-of-speech tagging – Rule-based part-of-speech tagging – Stochastic part-of-speech tagging – Transformation-based tagging – Other issues- Context-Free Grammars for English: Constituency – Context-Free rules and trees – Sentence-level constructions – The noun phrase – Coordination – Agreement – The verb phrase and sub categorization – Auxiliaries – Spoken language syntax – Grammars equivalence and normal form – Finite-State and Context-Free grammars – Grammars and human processing- Parsing with Context-Free Grammars: Parsing as search – A Basic Top-Down parser – Problems with the basic Top-Down parser – The early algorithm – Finite-State parsing methods.

UNIT – III ADVANCED FEATURES AND SYNTAX 9 Hrs

Features and Unification: Feature structures – Unification of feature structures – Features structures in the grammar – Implementing unification – Parsing with unification constraints – Types and Inheritance- Lexicalized and Probabilistic Parsing: Probabilistic context-free grammar – problems with PCFGs – Probabilistic lexicalized CFGs – Dependency Grammars – Human parsing.

UNIT – IV SEMANTIC 9 Hrs

Representing Meaning: Computational desiderata for representations – Meaning structure of language – First order predicate calculus – Some linguistically relevant concepts – Related representational approaches – Alternative approaches to meaning. Semantic Analysis: Syntax-Driven semantic analysis – Attachments for a fragment of English – Integrating semantic analysis into the early parser – Idioms and compositionality – Robust semantic analysis- Lexical semantics: relational among lexemes and their senses – WordNet: A database of lexical relations – The Internal structure of words – Creativity and the lexicon.

UNIT – V APPLICATIONS 9 Hrs

Word Sense Disambiguation and Information Retrieval- Text Mining: Categorization – Extraction based Categorization- Clustering- Hierarchical Clustering-Document Classification and routing- Finding and organizing answers from Text search Use of categories and clusters for organizing retrieval results – Text Categorization and efficient Summarization using Lexical Chains – Pattern Extraction- Machine Translation: Language similarities and differences – The transfer metaphor – The interlingua idea: Using meaning – Direct translation – Using statistical techniques – Usability and system development.

Total hours: 45

Text Books:

1. Daniel Jurafsky and James H. Martin "Speech and Language Processing: An Introduction to Natural Language Processing, Computational Linguistics, and Speech Recognition", Pearson Edition, 2nd Edition, 2009.
2. Michael W. Berry, "Survey of Text Mining: Clustering, Classification and Retrieval", Springer Verlag, 2003.

References:

1. James Allen, "Natural Language Understanding", Pearson Education, 2nd Edition, 2008.
2. Gerald J. Kowalski and Mark.T. Maybury, "Information Storage and Retrieval systems: Theory and Implementation", Kluwer academic Publishers, 2nd Edition, 2000.
3. Peter Jackson, Isabelle Moulinier, "Natural Language Processing for Online Applications", John Benjamins Publishing, 2007.
4. Nitin Indurkha and Fred J. Damerau, "Handbook of Natural Language Processing", 2nd Edition, CRC Press, 2010.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**SEMESTER – VIII****12CS4809****ETHICAL HACKING(ELECTIVE)**

(Common to CS & IT)

L	T	P	C
3	0	0	3

Objective(s):

- To impart knowledge on foot printing, social engineering, port scanning and vulnerabilities in OS.
- To understand the concepts of hacking web servers, wireless networks, cryptography and security devices.

UNIT – I**FUNDAMENTALS OF ETHICAL HACKING****9 Hrs**

Introduction to Ethical Hacking – Legal and illegal actions on NET – TCP/IP concepts: Overview of TCP/IP, IP addressing and Numbering systems. Networks and Computer attacks: Malware, Protecting against Malware attacks, Intruder attacks, Physical security addressing.

UNIT – II**FOOT PRINTING, SOCIAL ENGINEERING & PORT SCANNING****9 Hrs**

Using web tools for Foot printing – Conducting competitive intelligence – Using DNS zone transfers – Introduction: Social engineering, Port scanning – Types of port scans – scanning tools – Conducting Ping sweeps – Shell scripting.

UNIT – III**VULNERABILITIES IN OPERATING SYSTEM****9 Hrs**

Microsoft OS: Tools to identify vulnerabilities on Microsoft systems – Microsoft OS vulnerabilities – Vulnerabilities in Microsoft services – Linux OS: Review of Linux Fundamentals – Linux OS vulnerabilities – Remote access attacks on Linux systems – Countermeasures against Linux remote attacks.

UNIT – IV**HACKING WEB SERVERS AND WIRELESS NETWORKS****9 Hrs**

Web servers: Web applications, Web application vulnerabilities – Tools of web attackers and security testers – Wireless networks: wireless technology, Wireless network standards, authentication, wardriving, Wireless hacking.

UNIT – V**CRYPTOGRAPHY AND NETWORK PROTECTION****9 Hrs**

Cryptography: Basics of Cryptography, Symmetric and Asymmetric algorithms – Public Key infrastructure, Cryptography attacks – Protecting networks with security devices: Network security devices, Firewalls, Intrusion Detection Systems and Honeypots.

Total hours: 45**Text Books:**

1. Michael T. Simpson, "Ethical Hacking and Network defense", Course Technology, India Edition, 2010.
2. Ankit Fadia, "Ethical Hacking", Macmillan India Ltd, 2nd Edition, 2006.

References:

1. Steven Defino, Barry Kaufman and Nick Valenteen, "Official Certified Ethical Hacker review guide", Cengage learning, 2012.
2. Ankit Fadia, "The Ethical Hacking Guide to Corporate Security", Macmillan Publishers, 2010.
3. James S. Tiller, "The Ethical Hack: A Framework for Business Value Penetration Testing", CRC Press, 2005.
4. Scambray and Joel, "Hacking Exposed Web Applications", Tata McGraw-Hill, 2011.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**SEMESTER – VIII****12IT4810****DISTRIBUTED SYSTEMS (ELECTIVE)**

L	T	P	C
3	0	0	3

Objective(s):

- To layout foundations of Distributed Systems.
- To introduce the idea of middleware and related issues.
- To understand in detail the system level and support required.
- To understand the issues involved in studying data and design distributed algorithms.

UNIT – I INTRODUCTION**9 Hrs**

Introduction – Examples of distributed systems – Challenges-Architectural models – Fundamental models – Introduction to Inter-Process communications – External data representation and marshalling – multicast communication – Case study: MPI.

UNIT– II DISTRIBUTED OBJECTS AND FILE SYSTEM**9 Hrs**

Introduction – Communication between distributed objects –Request Reply Protocols – Remote procedure call – Remote Method Invocation – Java RMI case Study – Introduction to DFS – File service architecture – Sun network file system – Introduction to Name Services – Name services and DNS – Directory services.

UNIT – III DISTRIBUTED OPERATING SYSTEM SUPPORT**11 Hrs**

The operating system layer – Protection – Process and threads – Communication and invocation – Operating system architecture –Introduction to time and global states – Clocks, Events and Process states –Synchronizing physical clocks – Logical time and logical clocks – Global states – Distributed debugging – Distributed mutual exclusion.

UNIT – IV TRANSACTION AND CONCURRENCY CONTROL**8 Hrs**

Transactions – Nested transaction – Locks – Optimistic concurrency control – Timestamp ordering – Comparison of methods for concurrency control – Introduction to distributed transactions – Flat and nested distributed transactions – Atomic commit protocols – Concurrency control in distributed transactions – Distributed deadlocks – Transaction recovery.

UNIT – V SECURITY AND REPLICATION**8 Hrs**

Overview of security techniques – Cryptographic algorithms – Digital signatures – Cryptography pragmatics – Replication – System model and group communications – Fault tolerant services – Highly available services– Transactions with replicated data.

Total hours: 45**Text Books:**

1. George Coulouris, Jean Dollimore, Tim Kindberg, "Distributed Systems Concepts and Design" Fifth Edition, Addison- Wesley, 2012.
2. A.S.Tanenbaum, M.VanSteen, "Distributed Systems", Pearson Education, 2004.

References:

1. Mukesh Singhal, Niranjan Shivaratri, "Advanced Concepts In Operating Systems" McGraw-Hill, 2001.
2. M.L.Liu, "Distributed Computing Principles and Applications", Pearson AddisonWesley, 2004.
3. Nancy A. Lynch, "Distributed Algorithms", Morgan Kaufmann Publishers, 2000.
4. Ajay D. Kshemkalyani and MukeshSinghal, "Distributed computing: principles, algorithms, and Systems", Cambridge University Press, 2008.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**SEMESTER – VIII****12IT4811****SPEECH PROCESSING (ELECTIVE)**

L	T	P	C
3	0	0	3

Objective(s):

- To provide a general introduction to speech technology
- To understand techniques used for building speech recognition systems
- To learn the syntax and semantics of speech recognition.

UNIT- I INTRODUCTION**9 Hrs**

Introduction - Regular Expressions and automata - Words and transducers - N-grams - Part of speech tagging
- Hidden Markov and Entropy models.

UNIT - II SPEECH RECOGNITION**9 Hrs**

Speech - Phonetics-Speech synthesis - Automatic speech recognition - Speech recognition advanced topics
- Computational Phonology

UNIT - III SPEECH PARSING**9 Hrs**

Formal grammar of English - Syntactic parsing - Statistical parsing - Features and Unification - Language and complexity

UNIT - IV SEMANTICS OF SPEECH RECOGNITION**9 Hrs**

Semantics and Pragmatics - The representation of meaning - Computational semantics - Lexical semantics
- Computational lexical semantics - Computational discourse.

UNIT- V APPLICATIONS**9 Hrs**

Information extraction - Question answering summarization - Dialogue and conversational agents - Machine translation.

Total hours: 45**Text Books:**

1. Daniel Jurafsky and James Martin "Speech and Language Processing", Second Edition, Prentice- Hall, 2009.
2. L. R. Rabiner and B. H. Juang, "Fundamentals of Speech Recognition", Pearson Education, Delhi, India, 2008.

References:

1. B. Gold and N. Morgan, "Speech and Audio Signal Processing", Wiley Student Edition, Singapore, 2004.
2. D. O Shaughnessy, "Speech Communication: Human and Machine", Second edition, IEEE Press, NY, USA, 2001.
3. T.F. Quateri, "Discrete-Time Speech Signal Processing: Principles and Practice", Pearson Education, 2004.
4. Xuedong Huang, Alex Acero and Hsiao-Wuen Hon, "Spoken Language Processing", Prentice- Hall, May 2001.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**SEMESTER – VIII****12IT4812****SOFTWARE REQUIREMENT MANAGEMENT(ELECTIVE)**

L	T	P	C
3	0	0	3

Objective(s):

- To learn the process of requirements elicitation.
- To build knowledge on how to analysis and identify various types of requirements.
- To study various methods of software prototyping.
- To build knowledge on how to validate software requirements.

UNIT - I**REQUIREMENTS ENGINEERING OVERVIEW****9 Hrs**

Software Requirement Overview – Software Development Roles –Software Development Process Kernels – Commercial Life Cycle Model – Vision Development – Stakeholders Needs and Analysis.

UNIT- II**REQUIREMENTS ELICITATION****9 Hrs**

The Process of Requirements Elicitation – Requirements Elicitation Problems – Problems of Scope – Problems of Understanding – Problems of Volatility – Current Elicitation Techniques – Information Gathering – Requirements Expression and Analysis – Validation – An Elicitation Methodology Framework – A Requirements Elicitation Process Model – Methodology over Method – Integration of Techniques – Fact-Finding – Requirements Gathering – Evaluation and Rationalization – Prioritization – Integration and Validation.

UNIT- III**REQUIREMENTS ANALYSIS****9 Hrs**

Identification of Functional and Non Functional Requirements – Identification of Performance Requirements – Identification of safety Requirements – Analysis – Feasibility and Internal Compatibility of System Requirements – Definition of Human Requirements Baseline.

UNIT - IV**REQUIREMENTS DEVELOPMENT****9 Hrs**

Requirements analysis – Requirements Documentation – Requirements Development Workflow – Fundamentals of Requirements Development – Requirements Attributes Guidelines Document – Supplementary Specification Document – Use Case Specification Document – Methods for Software Prototyping – Evolutionary prototyping –Throwaway prototyping.

UNIT - V**REQUIREMENTS VALIDATION****9 Hrs**

Validation objectives – Analysis of requirements validation – Activities – Properties – Requirement reviews – Requirements testing – Case tools for requirements engineering.

Total hours: 45**Text Books:**

1. Ian Sommerville, Pete Sawyer, "Requirements Engineering: A Good Practice Guide", Sixth Edition, Pearson Education, 2004.
2. Swapna Kishore, Rajesh Naik, "Software Requirements and Estimation", Tata McGraw Hill, 2001.

References:

1. Karl Eugene Wiegers, "Software Requirements", O'Reilly Media, Inc., 2nd Edition, 2009.
2. Murali,Chemuturi, "Requirements Engineering and Management for Software Development Projects", Springer, 2013.
3. Aybuke Aurum &Claes Wohlin, "Engineering and Managing Software Requirements", Springer, 2005
4. Dean Leffingwell , Don Widrig, "Managing Software Requirements A Use Case Approach", Second Addition, Addison Wesley , 2003.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)

SEMESTER – VIII

12IT4813

AD HOC AND SENSOR NETWORKS(ELECTIVE)

L	T	P	C
3	0	0	3

Objective(s):

- To understand the principles of mobile ad hoc networks.
- To study and design MAC and Routing protocols.
- To introduce the concept of transport layer and security issues.
- To study about Energy Management in Ad Hoc Networks.
- To understand the principles and characteristics of wireless sensor networks.

UNIT - I

AD-HOC MAC

9 Hrs

Introduction – Issues in Ad-Hoc Wireless Networks - MAC Protocols – Issues – Classifications of MAC protocols – Contention Based Protocols – Contention Based Protocols with Reservation Mechanisms –Contention Based Protocols with Scheduling Mechanisms –Multi channel MAC & Power control MAC protocol.

UNIT- II

AD-HOC NETWORK ROUTING

9 Hrs

Issues – Classifications of routing protocols – Table Driven and On-Demand Routing Protocols –Multicast routing – Issues – Operations of Multicast Routing –Classifications.

UNIT- III

TRANSPORT LAYER AND SECURITY ISSUES

9 Hrs

Introduction – Issues –Design Goals –TCP over Ad Hoc Wireless Networks – Security in Ad Hoc Wireless Networks – Network Security Requirements – Issues and Challenges in Security Provisioning – Network Security Attacks – Key Management – Secure Routing in Ad Hoc Wireless Networks.

UNIT- IV

ENERGY MANAGEMENT IN AD HOC NETWORKS

9 Hrs

Need for Energy Management – Classification of Energy Management Schemes – Battery Management and Transmission Power Management Schemes – Network Layer and Data Link Layer Solutions – System power Management schemes

UNIT - V

SENSOR NETWORKS

9 Hrs

Introduction – Sensor Network architecture – Data Dissemination – Data Gathering – MAC Protocols for sensor Networks – Location discovery – Quality of Sensor Networks – Evolving Standards – Other Issues.

Total hours: 45

Text Books:

- C. Siva Ram Murthy and B.S.Manoj, "Ad hoc Wireless Networks – Architectures and Protocols", Pearson Education, 2007.
- Charles E.Perkins, "AdHoc Networking", Addison-Wesley, 2001.

References:

- Feng Zhao and Leonidas Guibas, "Wireless Sensor Networks", Morgan Kaufman Publishers, 2004.
- C.K.Toh, "Adhoc Mobile Wireless Networks", Pearson Education, 2002.
- Thomas Krag and SebastinBuettrich, 'Wireless Mesh Networking', O'Reilly Publishers, 2007.
- KazemSohraby, Daniel Manoli, "Wireless Sensor networks- Technology, Protocols and Applications", Wiley Inter Science Publications, 2007.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)**SEMESTER - VIII****12IT4814****BIG DATA ANALYTICS(ELECTIVE)**

L	T	P	C
3	0	0	3

Objective(s):

- To explore the fundamental concepts of big data analytics
- To learn the data mining techniques
- To understand the applications using Map Reduce Concepts.

UNIT - I FUNDAMENTAL CONCEPTS**9 Hrs**

Big data from business Perspective: Introduction of big data – Characteristics of big data – Data in the warehouse and data in Hadoop – Importance of Big data – Big data Use cases: Patterns for Big data deployment – Big data Market Survey.

UNIT - II FINDING SIMILAR ITEMS**9 Hrs**

NN Search – Locality-Sensitive Hashing – Distance Measures–Mining Data Streams: Stream Data Model Sampling Data in a Stream – Filtering Streams – Counting Distinct Elements – Estimating Moments–Counting Ones–Decaying Windows.

UNIT - III LINK ANALYSIS AND CLUSTERING**9 Hrs**

PageRank – Efficient Computation of PageRank – Topic-Sensitive PageRank– Link Spam–Hubs and Authorities–Clustering: Clustering Techniques – Hierarchical Clustering – K-means Algorithms.

UNIT - IV MAP REDUCE**9 Hrs**

Distributed File Systems – Map-Reduce – Map-Reduce Algorithm Design – Extensions to Map-Reduce – Complexity Theory.

UNIT - V HADOOP**9 Hrs**

History of Hadoop – Components of Hadoop – Setting up a Hadoop Cluster – Developing a Map Reduce Application – Application Development in Hadoop – Getting your data in Hadoop – Other Hadoop Component.

Total hours: 45**Text Books:**

1. Chris Eaton, Dirk DeRoos, Tom Deutsch, George Lapis, Paul Zikopoulos, "Understanding Big Data: Analytics for Enterprise Class Hadoop and Streaming Data", McGrawHill Publishing, 2012
2. Anand Rajaraman and Jeffrey David Ullman, "Mining of Massive Datasets", Cambridge University Press, 2012.

References:

1. Frank J Ohlhorst, "Big Data Analytics: Turning Big Data into Big Money", Wiley and SAS Business Series, 2012.
2. Colleen Mccue, "Data Mining and Predictive Analysis: Intelligence Gathering and Crime Analysis", Elsevier, 2007
3. Michael Berthold, David J. Hand, "Intelligent Data Analysis", Springer, 2007.
4. EddDumbill, "Planning for Big Data", Published by O'Reilly Media, First Edition, 2012.

K.S.R. COLLEGE OF ENGINEERING (Autonomous)

SEMESTER – VIII

12HS4821

TOTAL QUALITY MANAGEMENT(ELECTIVE)
(Common to AU, CE, CS, EE, IT & ME)

L	T	P	C
3	0	0	3

Objective(s):

- To understand the Total Quality Management concept, tools available to achieve TQM and the ISO certification process.

9 Hrs

UNIT – I INTRODUCTION

Introduction - Need for quality - Evolution of quality - Definition of quality - Dimensions of manufacturing and service quality - Basic concepts of TQM - Definition of TQM - TQM Implementation steps - Quality council- Importance of leadership and motivation in TQM - Contributions of Deming, Juran and Crosby - Barriers to TQM.

9 Hrs

UNIT – II TQM PRINCIPLES

Quality statements - Customer perception of quality - Customer complaints, Customer retention. Employee involvement, Empowerment, Team and Teamwork, Recognition and Reward - Continuous process improvement - Juran trilogy, PDSA cycle, 5s, Kaizen - Supplier partnership - Partnering, Supplier selection, Supplier Rating.

9 Hrs

UNIT – III STATISTICAL PROCESS CONTROL

The seven traditional tools of quality - Measurement of central tendency and dispersion, population and sample, normal curve, control chart (X,R,p) for variable and attributes, process capability - Seven new management tools - Six-sigma Concepts.

9 Hrs

UNIT – IV TQM TOOLS

Bench marking - reason, process - Quality circles concepts - FMEA - stages, types- Quality Function Deployment (QFD) - Taguchi quality loss function -TPM - concepts, improvement needs -Performance measures-criteria - Quality Cost.

UNIT – V QUALITY SYSTEMS

9 Hrs

Need for ISO 9000 - ISO 9001-2008, ISO 14000 Quality System - elements, implementation, Documentation. Quality auditing - concepts, requirements and benefits, non conformance report - Case studies of TQM implementation in manufacturing and service sectors.

Total hours: 45

Text Books:

- Dale H.Besterfield, et al., "Total Quality Management", 3rd Edition, Indian Reprint, Pearson Education, New Delhi, 2011.
- Dr.V.Jayakumar&Dr.R.Raju, "Total Quality Management", 15th Edition, Lakshmi Publications, Chennai, 2013

References:

- Janakiraman, B and Gopal, R.K, "Total Quality Management - Text and Cases", 3rd Edition, Prentice Hall (India) Pvt. Ltd., New Delhi, 2006.
- Sugenthi, L and Anand Samuel, "Total Quality Management", 5th Edition, Prentice Hall (India) Pvt. Ltd., New Delhi, 2006.
- James R. Evans and William M. Lindsay, "The Management and Control of Quality", 6th Edition, South-Western (Thomson Learning), 2005.
- Subburaj R, "Total Quality Management", 1st Edition, Tata McGraw Hill, New Delhi, 2005.

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