Curriculum & Syllabus

of

B.E. Computer Science and Engineering

(For the batch admitted in 2007-08)

K.S.RANGASAMY COLLEGE OF TECHNOLOGY
TIRUCHENGODE – 637 215

(An Autonomous Institution affiliated to Anna University of Technology Coimbatore and approved by AICTE New Delhi)

K.S.Rangasamy College of Technology - Autonomous Regulation	R 2007
Department	Computer Science and Engineering
Programme Code & Name	14 : B.E. Computer Science and Engineering

K.S.Rangasamy College of Technology, Tiruchengode – 637 215								
Curriculum for the Programmes under Autonomous Scheme								
Regulation	R 2007							
Department	Department of Computer Science and Engineering							
Programme Code & Name	14 : B.E. Computer Science and Engineering							
Semester I								
Course Code	Course Name	Hours / Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
	THEORY							
07140101G	Technical English	3	0	0	3	50	50	100
07140102G	Engineering Mathematics I	3	1	0	4	50	50	100
07140103G	Applied Physics	3	1	0	4	50	50	100
07140104G	Applied Chemistry	3	1	0	4	50	50	100
07140105G	Fundamentals of Programming	3	1	0	4	50	50	100
07140106S	Basics of Civil and Mechanical Engineering. (Common to CSE, ECE, EEE, IT)	4	0	0	4	50	50	100
	PRACTICAL							
07140107P	Applied Physics Laboratory	0	0	3	2	50	50	100
07140108P	Applied Chemistry Laboratory	0	0	3	2	50	50	100
07140109P	Programming Laboratory	0	0	3	2	50	50	100
07140110P	Engineering Practices Laboratory	0	0	3	2	50	50	100
	Total	19	4	12	31			1000
Semester II								
Course Code	Course Name	Hours / Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
	THEORY							
07140201G	Communication Skills	3	0	0	3	50	50	100
07140202G	Engineering Mathematics II	3	1	0	4	50	50	100
07140203G	Materials Science	4	0	0	4	50	50	100
07140204G	Environmental Science	3	1	0	4	50	50	100
07140205 S	Basics of Electrical Engineering	3	1	0	4	50	50	100
07140206 S	Basics of Electronics Engineering	4	0	0	4	50	50	100
	PRACTICAL							
07140207P	Engineering Graphics Laboratory	1	0	3	3	50	50	100
07140208P	Electrical Engineering Laboratory	0	0	3	2	50	50	100
07140209P	Electronics Engineering Laboratory	0	0	3	2	50	50	100
07140210P	Comprehension I	0	0	3	0	100	00	100
	Total	21	3	12	30			1000

K.S.Rangasamy College of Technology, Tiruchengode – 637 215								
Curriculum for the Programmes under Autonomous Scheme								
Regulation	R 2007							
Department	Department of Computer Science and Engineering							
Programme Code & Name	14 : B.E. Computer Science and Engineering							
Semester III								
Course Code	Course Name	Hours / Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
	THEORY							
07140301G	Engineering Mathematics III	3	1	0	4	50	50	100
07140302S	Data Structures Using 'C' (Common to CSE, ECE)	3	1	0	4	50	50	100
07140303S	Advanced C (Common to CSE, Textile)	3	1	0	4	50	50	100
07140304C	Microprocessor and Microcontrollers	3	1	0	4	50	50	100
07140305C	Operating System	3	0	0	3	50	50	100
07140306C	Software Engineering	3	0	0	3	50	50	100
	PRACTICAL							
07140307P	Data Structures Laboratory	0	0	3	2	50	50	100
07140308P	Microprocessor and Microcontrollers Laboratory	0	0	3	2	50	50	100
07140309P	Operating System Laboratory	0	0	3	2	50	50	100
07140310P	Comprehension II	0	0	3	0	100	00	100
07140311P	Career Competency Development I	0	0	2	0	100	00	100
	Total	18	4	14	28			1100
Semester IV								
Course Code	Course Name	Hours / Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
	THEORY							
07140401C	Digital Signal Processing	3	1	0	4	50	50	100
07140402C	Discrete Mathematics	3	2	0	4	50	50	100
07140403C	Computer Architecture	3	1	0	4	50	50	100
07140404C	Object Oriented Programming and C ++	3	1	0	4	50	50	100
07140405C	Multimedia Systems	3	0	0	3	50	50	100
07140406C	Design and Analysis of Algorithm	3	1	0	4	50	50	100
	PRACTICAL							
07140407P	Digital Signal Processing Laboratory	0	0	3	2	50	50	100
07140408P	Object Oriented Programming Laboratory	0	0	3	2	50	50	100
07140409P	Multimedia and Graphics Laboratory	0	0	3	2	50	50	100
07140410P	Comprehension III	0	0	3	0	100	00	100
07140411P	Career Competency Development II	0	0	2	0	100	00	100
	Total	18	6	14	29			1100

K.S.Rangasamy College of Technology, Tiruchengode – 637 215								
Curriculum for the Programmes under Autonomous Scheme								
Regulation	R 2007							
Department	Department of Computer Science and Engineering							
Programme Code & Name	14 : B.E. Computer Science and Engineering							
Semester V								
Course Code	Course Name	Hours / Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
	THEORY							
07140501S	Principles of Management (Common to CSE, IT, ECE, BT)	3	0	0	3	50	50	100
07140502C	Computer Networks	3	0	0	3	50	50	100
07140503S	Database Management System (Common to CSE, IT)	3	1	0	4	50	50	100
07140504C	Probability and Queuing Theory	3	2	0	4	50	50	100
07140505C	Visual programming	3	1	0	4	50	50	100
07140506C	Java Programming	3	0	0	3	50	50	100
	PRACTICAL							
07140507P	Database Management System Laboratory	0	0	3	2	50	50	100
07140508P	Java Programming Laboratory	0	0	3	2	50	50	100
07140509P	Visual programming Laboratory	0	0	3	2	50	50	100
07140510P	Comprehension IV	0	0	3	0	100	00	100
07140511P	Career Competency Development III	0	0	2	0	100	00	100
	Total	18	4	14	27			1100
Semester VI								
Course Code	Course Name	Hours / Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
	THEORY							
07140601S	Professional Ethics	3	0	0	3	50	50	100
07140602S	Numerical Methods (Common to CSE, IT)	3	1	0	4	50	50	100
07140603C	Principles of Compiler Design	3	1	0	4	50	50	100
07140604C	Web Technology	3	1	0	4	50	50	100
071406**E	Elective-I	3	0	0	3	50	50	100
071406**E	Elective-II	3	0	0	3	50	50	100
	PRACTICAL							
07140607P	Compiler Design Laboratory	0	0	3	2	50	50	100
07140608P	Web technology Laboratory	0	0	3	2	50	50	100
07140609P	Mini Project	0	0	3	2	100	00	100
07140610P	Comprehension V	0	0	3	0	100	00	100
07140611P	Career Competency Development IV	0	0	2	0	100	00	100
	Total	18	3	14	27			1100

** Code number from respective elective

K.S.Rangasamy College of Technology, Tiruchengode – 637 215								
Curriculum for the Programmes under Autonomous Scheme								
Regulation	R 2007							
Department	Department of Computer Science and Engineering							
Programme Code & Name	14 : B.E. Computer Science and Engineering							
Semester VII								
Course Code	Course Name	Hours / Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
	THEORY							
07140701G	Total Quality Management	3	0	0	3	50	50	100
07140702C	Object Oriented Analysis and Design	3	1	0	4	50	50	100
07140703C	Theory of Computation	3	1	0	4	50	50	100
07140704C	System Software	3	0	0	3	50	50	100
071407**E	Elective III	3	0	0	3	50	50	100
071407**E	Elective IV	3	0	0	3	50	50	100
	PRACTICAL							
07140707P	System Software Laboratory	0	0	3	2	50	50	100
07140708P	Case Tools Laboratory	0	0	3	2	50	50	100
07140709P	Project Work - Phase I	0	0	4	2	100	00	100
07140710P	Career Competency Development V	0	0	2	0	100	00	100
	Total	18	2	12	26			1000
Semester VIII								
Course Code	Course Name	Hours / Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
	THEORY							
07140801C	Network Security	3	0	0	3	50	50	100
071408**E	Elective-V	3	0	0	3	50	50	100
	PRACTICAL							
07140803P	Project Work - Phase II	0	0	40	20	50	50	100
	Total	6	0	40	26			300

** Code number from respective elective

K.S.Rangasamy College of Technology, Tiruchengode – 637 215								
Curriculum for the Programmes under Autonomous Scheme								
Regulation	R 2007							
Department	Department of Computer Science and Engineering							
Programme Code & Name	14 : B.E. Computer Science and Engineering							
List of Electives								
Course Code	Course Name	Hours / Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
Elective – I								
07140641E	Resource Management Techniques	3	0	0	3	50	50	100
07140642E	UNIX Internals	3	0	0	3	50	50	100
07140643E	Client Server Computing	3	0	0	3	50	50	100
07140644E	Data Warehousing and Mining	3	0	0	3	50	50	100
07140645E	Advanced JAVA Programming	3	0	0	3	50	50	100
07140646E	Neural Networks and Applications	3	0	0	3	50	50	100
07140647E	Knowledge Based Decision Support Systems	3	0	0	3	50	50	100
Elective – II								
07140651E	C# and .NET Framework	3	0	0	3	50	50	100
07140652E	Principles of programming languages	3	0	0	3	50	50	100
07140653E	Advanced Computer Architecture	3	0	0	3	50	50	100
07140654E	Network Programming	3	0	0	3	50	50	100
07140655E	Hardware Troubleshooting and Maintenance	3	0	0	3	50	50	100
07140656E	User Interface Design	3	0	0	3	50	50	100
07140657E	Advanced Databases	3	0	0	3	50	50	100
Elective – III								
07140761E	Embedded Systems	3	0	0	3	50	50	100
07140762E	Software Quality Management	3	0	0	3	50	50	100
07140763E	Advanced Operating Systems	3	0	0	3	50	50	100
07140764E	Real Time Systems	3	0	0	3	50	50	100
07140765E	Component Based Technology	3	0	0	3	50	50	100
07140766E	Natural Language Processing	3	0	0	3	50	50	100
07140767E	Information Security	3	0	0	3	50	50	100
Elective – IV								
07140771E	Advanced Networks	3	0	0	3	50	50	100
07140772E	Graph Theory	3	0	0	3	50	50	100
07140773E	Parallel Computing	3	0	0	3	50	50	100
07140774E	XML and Web Services	3	0	0	3	50	50	100
07140775E	Soft Computing	3	0	0	3	50	50	100
07140776E	High Speed Networks	3	0	0	3	50	50	100
07140777E	Digital Image Processing	3	0	0	3	50	50	100
07140881E	Quantum Computing	3	0	0	3	50	50	100
07140882E	Grid Computing	3	0	0	3	50	50	100
07140883E	Mobile Computing	3	0	0	3	50	50	100
07140884E	TCP/IP Design And Implementation	3	0	0	3	50	50	100
07140885E	Service Oriented Architecture	3	0	0	3	50	50	100
07140886E	Wireless Technology	3	0	0	3	50	50	100

K.S.Rangasamy College of Technology - Autonomous Regulation								R 2007
Department	Computer Science and Engineering		Programme Code & Name			14 : B.E. Computer Science and Engineering		
Semester I								
Course Code	Course Name	Hours/Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07140101G	TECHNICAL ENGLISH	3	0	0	3	50	50	100
Objective(s)	Learners are enhanced improve their vocabulary and to enable them to use words appropriately in different academic and professional contexts. familiarize learners with different rhetorical functions of Technical English. learners develop strategies that could be adopted while reading texts. learners acquire the ability to speak effectively in English in real-life and career related situations. Train learners in organized academic and professional writing.							
1	GRAMMAR AND VOCABULARY				Total Hrs	9		
Word formation with prefixes and suffixes – synonyms and antonyms – verb patterns-subject – verb agreement – tenses (simple and compound tenses) – simple, compound and complex sentences – impersonal passive voice – use of conditionals – comparative adjectives (affirmative and negative) – expanding nominal compounds – articles – use of prepositions - phrasal verbs – commonly mispronounced and misspelt words – British and American vocabulary.								
2	LISTENING				Total Hrs	9		
Extensive listening – listening for general content – listening to fill up gapped texts – intensive listening – listening for specific information: retrieval of factual information – listening to identify topic, context, function, speaker's opinion, attitude, etc. – global understanding skills and ability to infer, extract gist and understand main ideas – note-taking: guided and unguided.								
3	SPEAKING				Total Hrs	9		
Verbal and non verbal communication – speech sounds – syllables – word stress (structures and content words) – sentences stress – intonation – Pronunciation drills, tongue twisters – formal and informal English – oral practice – developing confidence – introducing oneself – asking for or eliciting information – describing objects – offering suggestions and recommendations – expressing opinions (agreement / disagreement) – giving instructions.								
4	READING				Total Hrs	9		
Exposure to different reading techniques – reading for gist and global meaning – predicting the content – skimming the text – identifying the topic sentence and its role in each paragraph – scanning – inferring / Identifying lexical and contextual meanings – reading for structure and detail – transfer of information / guided note-making – understanding discourse coherence – sequencing of sentences.								
5	WRITING				Total Hrs	9		
Introductions to the characteristics of technical style – writing definitions and descriptions – paragraph writing (topic sentence and its role, unity, coherence and use of cohesive expressions) – process description (use of sequencing connectives) – comparison and contrast – classifying the data – analyzing / interpreting the data – formal letter writing (letter to the editor, letter for seeking practical training, and letter for undertaking project works in industries) – editing (punctuation, spelling and grammar).								
Total hours to be taught						45		
Text book (s) :								
1	Rizvi M Ashraf, "Effective Technical Communication", 1st Edition, Tata McGrawhil Publishing Company Ltd., New Delhi, 2005.							
Reference(s):								
1	Dr.M.Balasubraminian and Dr.G.Anbalagan, "Performance in English" Anuradha Publications, Kumbakonan, 2007.							
2	Sharon J. Gerson, Steven M. Gerson, "Techinical Writing – Process & Product". 3rd Edition, Pearson Education (Singapore) (p) Ltd., New Delhi, 2004.							
3	Mitra K. Barun, "Effective Techinical Communication – A Guide for Scientists and Engineers", Oxford University Press, New Delhi, 2006.							

K.S.Rangasamy College of Technology - Autonomous Regulation								R 2007
Department	Computer Science and Engineering	Programme Code & Name			14 : B.E. Computer Science and Engineering			
Semester I								
Course Code	Course Name	Hours/Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07140102G	ENGINEERING MATHEMATICS I	3	1	0	4	50	50	100
Objective(s)	The course is aimed at developing the basic mathematical skills of engineering students that are imperative for effective understanding of Engineering subjects, to have a sound knowledge of Differential Equations. To identify algebraic eigen value problems from practical areas and obtain the eigen solutions in certain cases.							
1	MATRICES				Total Hrs	15		
Column matrix as vector – linear independent and dependent of vector – Characteristic equation – Eigen values and Eigen vectors of a real matrix – Properties of eigen values and eigenvectors – Cayley – Hamilton theorem (without proof) – Similarity transformation (concept only) – Orthogonal matrices – Orthogonal transformation of a symmetric matrix to diagonal form – Reduction of quadratic form to canonical form by orthogonal transformation.								
2	GEOMETRICAL APPLICATIONS OF DIFFERENTIAL CALCULUS				Total Hrs	15		
Curvature – Cartesian and polar co-ordinates – Centre and radius of curvature – Circle of curvature – Involutes and evolutes – Envelopes – Properties of envelopes and evolutes –Evolute as envelope of normals.								
3	FUNCTIONS OF SEVERAL VARIABLES				Total Hrs	15		
Functions of two variables – Partial derivatives – Total differential – Maxima and minima – Constrained maxima and minima – Lagrange's multiplier method – Jacobians.								
4	ORDINARY DIFFERENTIAL EQUATIONS				Total Hrs	15		
Linear differential equations of Second and higher order with constant coefficient when the R.H.S is e^{ax}, x^n $n>0$, $\sin ax$, $\cos ax$, $e^{ax}x^n$, $e^{\alpha x}\sin\beta x$, $e^{\alpha x}\cos\beta x$, $x^n\sin\alpha x$ and $x^n\cos\alpha x$ – Differential Equations with variable coefficients (Cauchy's Form and Legendre's Linear Equation).								
5	DIFFERENTIAL EQUATIONS AND ITS APPLICATIONS				Total Hrs	15		
Simultaneous first order linear equations with constant coefficients – Method of variation of parameters – Solution of specified differential equations connected with electric circuits, bending of beams and simple harmonic motion (Differential equations and associated conditions need be given).								
Total hours to be taught						75		
Text book (s) :								
1	Veerarajan. T., "Engineering Mathematics (for first year), Fourth Edition Tata McGraw- Hill Publishing Company Limited, New Delhi, 2005.							
2	Grewal. B.S., "Higher Engineering Mathematics", Thirty Eighth Edition, Khanna Publishers, Delhi, 2004.							
Reference(s):								
1	Kandasamy. P, Thilagavathy. K and Gunavathy. K, "Engineering Mathematics" –S.Chand and Co. – New Delhi 2007.							
2	Kreyszig. E., "Advanced Engineering Mathematics," Eighth Edition, John Wiley and Sons (Asia) Limited, Singapore 2001.							
3	Venkataraman.M.K, "Engineering Mathematics, Volume I & II Revised Enlarged Fourth Edition", The National Pub. Co., Chennai, 2004.							

<table>
<tr><td colspan="7">K.S.Rangasamy College of Technology - Autonomous Regulation</td><td>R 2007</td></tr>
<tr><td>Department</td><td colspan="2">Computer Science and Engineering</td><td colspan="2">Programme Code & Name</td><td colspan="3">14 : B.E. Computer Science and Engineering</td></tr>
<tr><td colspan="8">Semester I</td></tr>
<tr><td rowspan="2">Course Code</td><td rowspan="2" colspan="2">Course Name</td><td colspan="3">Hours/Week</td><td>Credit</td><td colspan="2">Maximum Marks</td></tr>
<tr><td>L</td><td>T</td><td>P</td><td>C</td><td>CA</td><td>ES</td><td>Total</td></tr>
<tr><td>07140103G</td><td colspan="2">APPLIED PHYSICS</td><td>3</td><td>1</td><td>0</td><td>4</td><td>50</td><td>50</td><td>100</td></tr>
<tr><td>Objective(s)</td><td colspan="7">To study the design of acoustically good buildings, Structural identification of engineering materials, Non destructive Techniques, Application of Quantum Physics, Application of Lasers in Engineering and Technology.</td></tr>
<tr><td>1</td><td colspan="4">LASERS</td><td colspan="2">Total Hrs</td><td colspan="2">09</td></tr>
<tr><td colspan="8">Introduction – principles of spontaneous emission and stimulated emission and stimulated emission-Population inversion, Pumping-Types of Lasers:He-Ne,Co2,Nd-YAG,Ruby Lasers, Semiconductor Laser- Applications: Lasers in Microelectronics, Welding, Heat Treatment and Cutting-Holography.</td></tr>
<tr><td>2</td><td colspan="4">FIBER OPTICS AND APPLICATIONS:</td><td colspan="2">Total Hrs</td><td colspan="2">09</td></tr>
<tr><td colspan="8">Principles-Modes of Propagation-Crucible-Crucible Technique-Classification based on materials, refractive index and modes of propagation-Splicing-Losses in optical fiber-Light Sources for fibre optics-Detectors-Fiber optical Communication Links-Fiber optic Sensors: Temperature, Displacement Measurement.</td></tr>
<tr><td>3</td><td colspan="4">QUANTUM PHYSICS AND APPLICATIONS</td><td colspan="2">Total Hrs</td><td colspan="2">09</td></tr>
<tr><td colspan="8">Introduction to quantum theory-Dual Nature of Matter and Radiation-De-Broglie wavelength-Uncertainity principle and its applications-Compton effect-Expression for Compton Shift-Experimental Verification-Schordinger’s Equation(Time dependent and time Independent)-Particle in a box-Electron microscope-Scanning electron microscope.</td></tr>
<tr><td>4</td><td colspan="4">ULTRASONICS</td><td colspan="2">Total Hrs</td><td colspan="2">09</td></tr>
<tr><td colspan="8">Introduction to Ultrasonics Waves-Magnetostriction effect, Magnetostriction generator, inverse piezoelectric effect, piezoelectric generator-Detection of ultrasonic waves-Properties-Cavitation-Industrial Applications drilling, welding, soldering and cleaning- Non destructive testing- Pulse echo system through transmission-Resonance system.</td></tr>
<tr><td>5</td><td colspan="4">ACOUSTICS</td><td colspan="2">Total Hrs</td><td colspan="2">09</td></tr>
<tr><td colspan="8">Introduction-Classification of Sound-Characteristics of Musical Sound-Loudness-Sound intensity Level(I_L)-Weber –Fechner Law-Decibel-Phon, Sone-Acoustics of building-Reverberation-Reverberation time-Sabine’s formula-Absorption coefficient-Determination of Absorption Co-efficient-Factors Affecting the acoustics of buildings and their remedies-Factors to be followed for good acoustic of building.</td></tr>
<tr><td colspan="6">Total hours to be taught</td><td colspan="2">45</td></tr>
<tr><td colspan="8">Text book (s) :</td></tr>
<tr><td>1</td><td colspan="7">APPLIED PHYSICS Authored by dept. of physics KSRCT.</td></tr>
<tr><td colspan="8">Reference(s):</td></tr>
<tr><td>1</td><td colspan="7">Jayakumar S, ”Engineering Physics”,R K Publishers, Coimbatore, 2003.</td></tr>
<tr><td>2</td><td colspan="7">Gaur R.K and Gupta S.L, ”Engineering Physics”, Dhanpati Rai and Sons, New Delhi, 2001.</td></tr>
<tr><td>3</td><td colspan="7">A Text book of Engineering Physics, New Age International Publications, New Delhi, First Edition 2007.</td></tr>
</table>

<table>
<tr><td colspan="8">K.S.Rangasamy College of Technology - Autonomous Regulation</td><td>R 2007</td></tr>
<tr><td>Department</td><td colspan="3">Computer Science and Engineering</td><td colspan="2">Programme Code & Name</td><td colspan="3">14 : B.E. Computer Science and Engineering</td></tr>
<tr><td colspan="9">Semester I</td></tr>
<tr><td rowspan="2">Course Code</td><td rowspan="2" colspan="3">Course Name</td><td colspan="3">Hours/Week</td><td>Credit</td><td colspan="3">Maximum Marks</td></tr>
<tr><td>L</td><td>T</td><td>P</td><td>C</td><td>CA</td><td>ES</td><td>Total</td></tr>
<tr><td>07140104G</td><td colspan="3">APPLIED CHEMISTRY</td><td>3</td><td>1</td><td>0</td><td>4</td><td>50</td><td>50</td><td>100</td></tr>
<tr><td>Objective(s)</td><td colspan="8">The student should be conversant with The principles involved in electro chemistry, corrosion and its inhibition, Treatment of water for industrial purposes and the concept of energy storage devices, Knowledge with respect to fuels and combustion, Polymer and engineering materials.</td></tr>
<tr><td>1</td><td colspan="5">WATER TREATMENT</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">Turbidity, color, acidity, alkalinity, nitrogen, fluoride – (Definition, sources and sanitary significance only) – Water- Hardness- Estimation of hardness by EDTA method- Boiler feed water- scale formation, corrosion, caustic embrittlement, priming and forming- softening of water- lime soda process- zeolite process – demineralization – desalination – electro dialysis and reverse osmosis.</td></tr>
<tr><td>2</td><td colspan="5">ELECTRO CHEMISTRY</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">Electrochemical cells – reversible and irreversible cells – EMF – measurements – Standard Weston Cadmium cell – Nernst equation – problems – Electrodes – Single electrode potential – Types of electrodes – Calomel electrode – Electrochemical series – significance – Potentiometric titrations – Batteries – Lead acid and Ni-Cd batteries.</td></tr>
<tr><td>3</td><td colspan="5">CORROSION & CORROSION CONTROL</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">Corrosion – Electrochemical and chemical – Mechanism – corrosion reaction – types of corrosion – differential aeration – granular - pitting – corrosion control – Sacrificial anode and Impressed current method – Inhibitors – Protective coatings – Preliminary treatment – Electroplating (Cr & Ni) – Paints – Constituents and their functions – mechanism of drying.</td></tr>
<tr><td>4</td><td colspan="5">FUELS & COMBUSTION</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">Fuels – Calorific values – Gross and Net – Theoretical air for combustion – flue gas analysis – Orsat method – Coal – proximate and ultimate analysis – their importance – metallurgical coke – Petrol – Straight run, cracked and polymer petrol – Synthetic petrol – Fisher- Tropsch and Bergius method – Octane number – improving octane number by additives – Diesel – Cetane number – Water gas, producer gas & LPG.</td></tr>
<tr><td>5</td><td colspan="5">POLYMERS</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">Polymer structure – Nomenclature – Polymerization – types – mechanism (free radical only) – co-ordination polymerization – mechanism – individual polymers – Polyethylene, Polypropylene, PVC, Teflon, Acrylics, Nylon6-6, Bakelite, Polyester, Epoxy, Polyurethane – Structure, Preparation, Properties and Uses – Compounding and fabrication – Compression, Injection, Extrusion and Blow moulding– Foamed plastics.</td></tr>
<tr><td colspan="8">Total hours to be taught</td><td>45</td></tr>
<tr><td colspan="9">Text book (s) :</td></tr>
<tr><td>1</td><td colspan="8">Applied Chemistry by R.Palanivelu, R.Parimalam, B.Srividhya, K.Tamilarasu and P.Padmanaban.</td></tr>
<tr><td colspan="9">Reference(s):</td></tr>
<tr><td>1.</td><td colspan="8">Jain P.C. & Monica Jain, “Engineering Chemistry”, Dhanpat Rai Publishing Co.
New Delhi, 14th Edition, 2002.</td></tr>
<tr><td>2.</td><td colspan="8">Clair N Sawyer and Perry L Mc Carty, ”Chemistry for Environmental Engineering”,
TMH Book Company, New Delhi, 14th Edition, 2002.</td></tr>
<tr><td>3.</td><td colspan="8">Dara S.S. “A text book of Engineering Chemistry, S.Chand & Co. Ltd., 2003.</td></tr>
<tr><td>4.</td><td colspan="8">Uppal M.M. revised by S.C.Bhatia, ”Engineering Chemistry”, Khanna Publishers,
New Delhi, 6th Edition, 2001.</td></tr>
</table>

<table>
<tr><td colspan="8">K.S.Rangasamy College of Technology - Autonomous Regulation</td><td>R 2007</td></tr>
<tr><td colspan="2">Department</td><td colspan="2">Computer Science and Engineering</td><td colspan="2">Programme Code & Name</td><td colspan="3">14 : B.E. Computer Science and Engineering</td></tr>
<tr><td colspan="9">Semester I</td></tr>
<tr><td colspan="2" rowspan="2">Course Code</td><td rowspan="2">Course Name</td><td colspan="3">Hours/Week</td><td>Credit</td><td colspan="3">Maximum Marks</td></tr>
<tr><td>L</td><td>T</td><td>P</td><td>C</td><td>CA</td><td>ES</td><td>Total</td></tr>
<tr><td colspan="2">07140105G</td><td>FUNDAMENTALS OF PROGRAMMING</td><td>3</td><td>1</td><td>0</td><td>4</td><td>50</td><td>50</td><td>100</td></tr>
<tr><td colspan="2">Objective(s)</td><td colspan="7">Student to learn the basic concepts of computer and to develop skills in programming using C language.</td></tr>
<tr><td>1</td><td colspan="5">COMPUTER BASICS</td><td colspan="2">Total Hrs</td><td>8</td></tr>
<tr><td colspan="9">Evolution of computers- Generations of computers- Applications of computers- - Computer Memory and Storage- Input Output Media – Algorithm- Flowchart- Pseudo code – Program control structures- - Programming languages- - Computer Software- Definition- Categories of Software.</td></tr>
<tr><td>2</td><td colspan="5">C FUNDAMENTALS</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">Introduction to C- Constants- Variables- Data types- Operators and Expressions- Managing Input and Output operations- Decision Making and Branching- Looping.</td></tr>
<tr><td>3</td><td colspan="5">ARRAYS AND FUNCTIONS</td><td colspan="2">Total Hrs</td><td>10</td></tr>
<tr><td colspan="9">Arrays- Character Arrays and Strings- User defined functions- Storage Classes</td></tr>
<tr><td>4</td><td colspan="5">STRUCTURES AND FILES</td><td colspan="2">Total Hrs</td><td>10</td></tr>
<tr><td colspan="9">Structures- Definition- Initialization- Array of Structures- Structures within structures- Structures and Functions- Unions- File Management.</td></tr>
<tr><td>5</td><td colspan="5">POINTERS</td><td colspan="2">Total Hrs</td><td>8</td></tr>
<tr><td colspan="9">Pointer Basics – Pointer Arithmetic – Pointers and array Pointers and character string Pointers and functions – Pointers and structures.</td></tr>
<tr><td colspan="7">Total hours to be taught</td><td colspan="2">45</td></tr>
<tr><td colspan="9">Text book (s) :</td></tr>
<tr><td>1</td><td colspan="8">Dr.K.Duraisamy, R.Nallusamy, R.Kanagavalli, S.Ponmathangi, D.Muthusankar, P.Kaladevi “Fundamentals of Programming”, Techvision Publishers 2008.</td></tr>
<tr><td>2.</td><td colspan="8">E.Balagurusamy, “Programming in ANSI C”, TMH, New Delhi, 2002.</td></tr>
<tr><td colspan="9">Reference(s):</td></tr>
<tr><td>1</td><td colspan="8">Rajaraman V, “Fundamentals of Computers”, Fourth Edition, PHI 2006.</td></tr>
<tr><td>2</td><td colspan="8">Byron Gottfried, “Programming with C”, II Edition, TMH, 2002.</td></tr>
</table>

<table>
<tr><td colspan="8">K.S.Rangasamy College of Technology - Autonomous Regulation</td><td>R 2007</td></tr>
<tr><td colspan="2">Department</td><td colspan="3">Computer Science and Engineering</td><td colspan="2">Programme Code & Name</td><td colspan="2">14 : B.E. Computer Science and Engineering</td></tr>
<tr><td colspan="9">Semester I</td></tr>
<tr><td colspan="2" rowspan="2">Course Code</td><td colspan="3" rowspan="2">Course Name</td><td colspan="3">Hours/Week</td><td>Credit</td><td colspan="3">Maximum Marks</td></tr>
<tr><td>L</td><td>T</td><td>P</td><td>C</td><td>CA</td><td>ES</td><td>Total</td></tr>
<tr><td colspan="2">07140106S</td><td colspan="3">BASICS OF CIVIL AND MECHANICAL ENGINEERING (Common to CSE, ECE, EEE, IT)</td><td>4</td><td>0</td><td>0</td><td>4</td><td>50</td><td>50</td><td>100</td></tr>
<tr><td colspan="2">Objective(s)</td><td colspan="7">At the end of this semester, the student should be conversant in properties of materials, components of structures and basic concepts of survey.</td></tr>
<tr><td>1</td><td colspan="5">INTRODUCTION</td><td colspan="2">Total Hrs</td><td colspan="2">10</td></tr>
<tr><td colspan="9">Introduction – Civil Engineering – Materials – bricks – stones – sand - cement – concrete – steel sections – site for foundations. Bearing capacity – loads – Requirement of good foundations – types.</td></tr>
<tr><td>2</td><td colspan="5">SUPERSTRUCTURE</td><td colspan="2">Total Hrs</td><td colspan="2">10</td></tr>
<tr><td colspan="9">Superstructure – brick masonry – stone masonry – beams – columns – lintels – roofing – flooring – plastering – valuation mechanics – internal and external forces – strain – elasticity – Types of Bridges and Dams – Basics of Interior and Landscaping.</td></tr>
<tr><td>3</td><td colspan="5">SURVEYING</td><td colspan="2">Total Hrs</td><td colspan="2">10</td></tr>
<tr><td colspan="9">Surveying – Objects – types – classification – principles – measurements of distances – angles – leveling – determination of areas – illustrative examples.</td></tr>
<tr><td>4</td><td colspan="5">POWER PLANT ENGINEERING</td><td colspan="2">Total Hrs</td><td colspan="2">10</td></tr>
<tr><td colspan="9">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.</td></tr>
<tr><td>5</td><td colspan="5">I C ENGINES</td><td colspan="2">Total Hrs</td><td colspan="2">10</td></tr>
<tr><td colspan="9">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 – Boiler as a power plant.</td></tr>
<tr><td>6</td><td colspan="5">REFRIGERATION AND AIR CONDITIONING SYSTEM</td><td colspan="2">Total Hrs</td><td colspan="2">10</td></tr>
<tr><td colspan="9">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.</td></tr>
<tr><td colspan="7">Total hours to be taught</td><td colspan="2">60</td></tr>
<tr><td colspan="9">Text book (s) :</td></tr>
<tr><td>1</td><td colspan="8">M.S. Palanisamy, “Basic Civil Engineering”, Tata McGraw Hill, 3rd Edition.</td></tr>
<tr><td>2</td><td colspan="8">Venugopal K. and Prabu Raja V., “Basic Mechanical Engineering”, Anuradha Publishers, Kumbakonam, 2000.</td></tr>
<tr><td colspan="9">Reference(s):</td></tr>
<tr><td>1</td><td colspan="8">Ramamrutham S. “Basic Civil Engineering”, Danpat Rai Publishing Company, 2002 Edition.</td></tr>
<tr><td>2</td><td colspan="8">Ramesh Babu, “Basic Civil Engineering”, Anuradha Publications, 2003 Edition.</td></tr>
<tr><td>3</td><td colspan="8">Shanmugam G., ″Basic Mechanical Engg.″, TMH Publishing Co., New Delhi, 2005.</td></tr>
<tr><td>4</td><td colspan="8">Shantha Kumar S.R.J., “Basic Mechanical Engineering”, Hi-tech Publications, Mayiladuthurai, 2000.</td></tr>
</table>

<table>
<tr><td colspan="7">K.S.Rangasamy College of Technology - Autonomous Regulation</td><td>R 2007</td></tr>
<tr><td>Department</td><td colspan="2">Computer Science and Engineering</td><td colspan="2">Programme Code & Name</td><td colspan="3">14 : B.E. Computer Science and Engineering</td></tr>
<tr><td colspan="8">Semester I</td></tr>
<tr><td rowspan="2">Course Code</td><td rowspan="2">Course Name</td><td colspan="3">Hours/Week</td><td>Credit</td><td colspan="3">Maximum Marks</td></tr>
<tr><td>L</td><td>T</td><td>P</td><td>C</td><td>CA</td><td>ES</td><td>Total</td></tr>
<tr><td>07140107P</td><td>APPLIED PHYSICS LABORATORY</td><td>0</td><td>0</td><td>3</td><td>2</td><td>50</td><td>50</td><td>100</td></tr>
<tr><td>Objective(s)</td><td colspan="7">To give exposure for understanding the various physical phenomena’s in optics, acoustics and Material science and properties of matter for engineering applications to determine the fundamental constants like acceleration due to gravity, viscosity of liquid, thermal conductivity of bad conductor etc.,</td></tr>
<tr><td colspan="8">List of experiments</td></tr>
<tr><td colspan="8">1. Determination of rigidity modulus of a wire by torsional pendulum.
2. Determination of Young’s modulus of the material of a uniform bar by non-uniform bending method.
3. Determination of Young’s modulus of the material of a uniform bar by uniform bending method.
4. Determination of Viscosity of liquid by Poiseuille’s method.
5. Determination of acceleration due to gravity by compound (bar) pendulum.
6. Determination of wavelength of mercury spectrum by Spectrometer grating.
7. Determination of thickness of fiber by Air-wedge method
8. Determination of wavelength of laser using grating and particle size determination
9. Determination of velocity of ultrasonic waves and compressibility using ultrasonic interferometer.
10. Determination of band gap energy of a semiconductor.
11. Determination of radius of curvature of a Plano convex lens by Newton rings method.
12. Determination of thermal conductivity of a bad conductor using Lee’s disc method.</td></tr>
<tr><td colspan="6">Total Hours thought</td><td colspan="2">36 hours</td></tr>
<tr><td colspan="8">Text book (s) :</td></tr>
<tr><td>1</td><td colspan="7">Engineering Physics Laboratory-Authored by dept. of Physics, KSRCT.</td></tr>
</table>

K.S.Rangasamy College of Technology - Autonomous Regulation								R 2007
Department	Computer Science and Engineering		Programme Code & Name			14 : B.E. Computer Science and Engineering		
Semester I								
Course Code	Course Name	Hours/Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07140108P	APPLIED CHEMISTRY LABORATORY	0	0	3	2	50	50	100
Objective(s)	Educate the theoretical concepts Experimentally							
List of experiments								
1.	Estimation of hardness of water by EDTA.			Total Hrs		3		
2.	Estimation of alkalinity of water sample.			Total Hrs		3		
3.	Estimation of chloride content in water sample.			Total Hrs		3		
4.	Determination of dissolved oxygen in boiler feed water.			Total Hrs		3		
5.	Determination of water of crystallization of a crystalline salt.			Total Hrs		3		
6.	Conductometric titration of strong acid with strong base.			Total Hrs		3		
7.	Conductometric titration of mixture of acids.			Total Hrs		3		
8.	Precipitation titration by conductometric method.			Total Hrs		3		
9.	Determination of strength of HCl by pH Meter.			Total Hrs		3		
10.	Estimation of ferrous ion by potentiometric titration .			Total Hrs		3		
11.	Determination of sodium and potassium in a water sample by flame photometry (Demo only).			Total Hrs		3		
12.	Estimation of ferric ion by spectrophotometry (Demo only).			Total Hrs		3		
Total hours to be taught						30		
Lab Manual :								
1	Chemistry Lab Manual by R.Palanivelu, R.Parimalam and B.Srividhya							
Reference(s):								
1	J. Mendham, R.C. Denney, J.D. Barnes and N.J.K. Thomas, Vogel's Text book of Quantitative Chemical Analysis, 6th Edition, Pearson Education, 2004.							

K.S.Rangasamy College of Technology - Autonomous Regulation								R 2007
Department	Computer Science and Engineering	Programme Code & Name			14 : B.E. Computer Science and Engineering			
Semester I								
Course Code	Course Name	Hours/Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07140109P	PROGRAMMING LABORATORY	0	0	3	2	50	50	100
Objective(s)	To enable the students to apply the concepts of C to solve real time problems							

List of experiments

1. Write a C program to print Pascal's triangle.
2. Write a C program to print the sine and cosine series.
3. Write a C program to perform Matrix multiplication.
4. Write a C program to prepare and print the sales report.
5. Write a C program to perform string manipulation functions like string concatenations, comparison, find the length and string copy without using library functions.
6. Write a C program to arrange names in alphabetical order.
7. Write a C program to calculate the mean, variance and standard deviation using functions.
8. Write a C program to perform sequential search using functions.
9. Write a C program to print the Fibonacci series and to calculate the factorial of the given number using functions.
10. Write a C program to print the mark sheet of n students using structures.
11. Write a C program to merge the given two files
12. Write a C Program to perform Swap Using Pointers

<table>
<tr><td colspan="8">K.S.Rangasamy College of Technology - Autonomous Regulation</td><td>R 2007</td></tr>
<tr><td colspan="2">Department</td><td colspan="2">Computer Science and Engineering</td><td colspan="2">Programme Code & Name</td><td colspan="3">14 : B.E. Computer Science and Engineering</td></tr>
<tr><td colspan="9">Semester I</td></tr>
<tr><td colspan="2" rowspan="2">Course Code</td><td colspan="2" rowspan="2">Course Name</td><td colspan="3">Hours/Week</td><td>Credit</td><td colspan="3">Maximum Marks</td></tr>
<tr><td>L</td><td>T</td><td>P</td><td>C</td><td>CA</td><td>ES</td><td>Total</td></tr>
<tr><td colspan="2">07140110P</td><td colspan="2">ENGINEERING PRACTICES LABORATORY</td><td>0</td><td>0</td><td>3</td><td>2</td><td>50</td><td>50</td><td>100</td></tr>
<tr><td colspan="2">Objective(s)</td><td colspan="7">To provide exposure to the students with hands on experience on various basic engineering practices in Mechanical Engineering</td></tr>
<tr><td colspan="9">List of experiments</td></tr>
<tr><td>1</td><td colspan="5">PLUMBING</td><td colspan="2">Total Hrs</td><td>10</td></tr>
<tr><td colspan="9">Safety aspects in Plumbing, Study of tools and equipments - preparation of models, Cutting and Threading o G.I. Pipes, Study of valves, taps and repairing. Measuring and marking practice of PVC & G.I. pipes - connectior to service line.</td></tr>
<tr><td>2</td><td colspan="5">SHEET METAL</td><td colspan="2">Total Hrs</td><td>10</td></tr>
<tr><td colspan="9">Study of Tools, Equipments and Safety precautions, Drawing of tools and accessories, Different types of joints making - knocked up, double grooving joints, Model making –Trays, Baskets and Funnels.</td></tr>
<tr><td>3</td><td colspan="5">ELECTRICAL WIRING</td><td colspan="2">Total Hrs</td><td>15</td></tr>
<tr><td colspan="9">Safety aspects of Electrical wiring, Safety aspects of Electrical wiring, Wiring circuit for a lamp using single and Stair case switches, Wiring circuit for fluorescent lamps, Calculation of power and energy.</td></tr>
<tr><td>4</td><td colspan="5">WELDING AND SOLDERING</td><td colspan="2">Total Hrs</td><td>10</td></tr>
<tr><td colspan="9">Safety aspects of Welding and Soldering, Study of Gas and Arc Welding Equipments, Welding of Lap, Butt, T-joints & Corner Joints, Soldering of Small Electrical and Electronic Circuits.</td></tr>
<tr><td colspan="8">Total hours to be taught</td><td>45</td></tr>
</table>

<table>
<tr><td colspan="8">K.S.Rangasamy College of Technology - Autonomous Regulation</td><td>R 2007</td></tr>
<tr><td colspan="2">Department</td><td colspan="2">Computer Science and Engineering</td><td colspan="2">Programme Code & Name</td><td colspan="3">14 : B.E. Computer Science and Engineering</td></tr>
<tr><td colspan="9">Semester II</td></tr>
<tr><td colspan="2" rowspan="2">Course Code</td><td colspan="2" rowspan="2">Course Name</td><td colspan="3">Hours/Week</td><td>Credit</td><td colspan="3">Maximum Marks</td></tr>
<tr><td>L</td><td>T</td><td>P</td><td>C</td><td>CA</td><td>ES</td><td>Total</td></tr>
<tr><td colspan="2">07140201G</td><td colspan="2">COMMUNICATION SKILLS</td><td>3</td><td>0</td><td>0</td><td>3</td><td>50</td><td>50</td><td>100</td></tr>
<tr><td colspan="2">Objective(s)</td><td colspan="7">To equip students with effective speaking and listening skills in English. Them develop the soft skills and people skills which will make them to excel in their job’s. Enhance the students’ performance at placement interviews.</td></tr>
<tr><td>1</td><td colspan="5">LISTENING</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">Barriers in Listening - Listening to academic lectures - Listening to announcements at railway stations, airports, etc - Listening to news on the radio / TV - Listening to casual conversation - Listening to live speech.</td></tr>
<tr><td>2</td><td colspan="5">COMMUNICATION</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">What is communication? - What does it involve? Accuracy, fluency and appropriateness - Levels of formality - Differences between spoken and written communication - Greeting and introduction - Making requests - Asking for permission, giving / denying permission - Offering help, accepting / declining help - Giving instructions - Giving directions - Art of small talk - Taking part in casual conversation - Making a short formal speech Describing people, place, things and Events.</td></tr>
<tr><td>3</td><td colspan="5">CONVERSATION SKILLS</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">Using the telephone - Preparing for a call - Stages of a call - Handling calls - Identifying self - Asking for repetitions - Spelling out names or words - Giving information on the phone – Making requests - Answering calls - Leaving messages on answer Machines - Making / changing appointments - Making complaints – Reminding - Agreeing / disagreeing – Listening - Listening and taking messages - Giving instructions & responding to instructions.</td></tr>
<tr><td>4</td><td colspan="5">REMIDIAL GRAMMER & VOCUBULARY</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">Subject – verb agreement – Tenses - ‘Do’ forms - Active and Passive voice - Use of negatives – Prepositions - Phrasal verbs - Correct use of words - Use of formal words in informal situations – Indianisms - Commonly confused words - Common errors & remedial measures.</td></tr>
<tr><td>5</td><td colspan="5">WRITTEN COMMUNICATION & CAREER SKILLS</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">Writing e-mails - Writing Reports - Note – taking and note – making - Preparing curriculum vitae and cover – letters - Facing an interview - Presentation skills - Persuasion skills.</td></tr>
<tr><td colspan="7">Total hours to be taught</td><td colspan="2">45</td></tr>
<tr><td colspan="9">Text book (s) :</td></tr>
<tr><td>1</td><td colspan="8">Rizvi M Ashraf, “Effective Technical Communication”, 1st Edition, Tata McGrawhil Publishing Company Ltd., New Delhi, 2005.</td></tr>
<tr><td colspan="9">Reference(s):</td></tr>
<tr><td>1</td><td colspan="8">Kiranmai Dutt P, Geetha Rajeevan and Prakash C L N, “A Course in Communication Skills”, by Ebek – Cambridge University Press India Pvt. Ltd.,</td></tr>
<tr><td>2</td><td colspan="8">Naterop, cup “Telephoning in English – Cambridge University Press India Pvt.Ltd., 2007.</td></tr>
<tr><td>3</td><td colspan="8">Richard, “New Interchange Services (Student’s Book)” – Introduction, Level – 1, Level – 2, Level – 3, Cambridge University Press India Pvt.Ltd., 2007.</td></tr>
</table>

<table>
<tr><td colspan="8">K.S.Rangasamy College of Technology - Autonomous Regulation</td><td>R 2007</td></tr>
<tr><td colspan="2">Department</td><td colspan="2">Computer Science and Engineering</td><td colspan="2">Programme Code & Name</td><td colspan="3">14 : B.E. Computer Science and Engineering</td></tr>
<tr><td colspan="9">Semester II</td></tr>
<tr><td colspan="2" rowspan="2">Course Code</td><td colspan="2" rowspan="2">Course Name</td><td colspan="3">Hours/Week</td><td>Credit</td><td colspan="3">Maximum Marks</td></tr>
<tr><td>L</td><td>T</td><td>P</td><td>C</td><td>CA</td><td>ES</td><td>Total</td></tr>
<tr><td colspan="2">07140202G</td><td colspan="2">ENGINEERING MATHEMATICS II</td><td>3</td><td>1</td><td>0</td><td>4</td><td>50</td><td>50</td><td>100</td></tr>
<tr><td colspan="2">Objective(s)</td><td colspan="7">The course is aimed at developing the basic mathematical skills of engineering students that are imperative for effective understanding of Engineering subjects, to have a sound knowledge of Laplace transform and its properties and understand analytic functions and their interesting properties.</td></tr>
<tr><td>1</td><td colspan="5">MULTIPLE INTEGRALS</td><td colspan="2">Total Hrs</td><td>12</td></tr>
<tr><td colspan="9">Double integration in Cartesian and Polar coordinates – Change of order of integration – Area between two curves – Area as double integrals – Triple integration in Cartesian coordinates – Volume as Triple integrals (Simple problems only).</td></tr>
<tr><td>2</td><td colspan="5">VECTOR CALCULUS</td><td colspan="2">Total Hrs</td><td>12</td></tr>
<tr><td colspan="9">Gradient, divergence and curl – Line, surface and volume integrals – Green's, Gauss divergence and Stoke's theorems (without proof) – Verification of the above theorems and evaluation of integrals using them.</td></tr>
<tr><td>3</td><td colspan="5">ANALYTIC FUNCTIONS</td><td colspan="2">Total Hrs</td><td>12</td></tr>
<tr><td colspan="9">Function of a complex variable – Analytic function – Necessary conditions – Cauchy – Riemann equations – Sufficient conditions (excluding proof) – Properties of analytic function – Harmonic conjugate – Construction of Analytic functions - Conformal mapping: Z w z a az 1 = + , , and bilinear transformation.</td></tr>
<tr><td>4</td><td colspan="5">COMPLEX INTEGRATION</td><td colspan="2">Total Hrs</td><td>12</td></tr>
<tr><td colspan="9">Cauchy's theorem (without proof) – Cauchy's integral formula – Taylor and Laurent series (without proof) – Singularities – Classification – Cauchy's residue theorem – Contour integration – circular and semi-circular contours (excluding poles on real axis).</td></tr>
<tr><td>5</td><td colspan="5">LAPLACE TRANSFORM</td><td colspan="2">Total Hrs</td><td>12</td></tr>
<tr><td colspan="9">Laplace Transform – Conditions for existence – Transform of elementary functions – Basic properties – Derivatives and integrals of transforms – Transforms of derivatives and integrals – Initial and final value theorems – Transform of unit step function – Transform of periodic functions. Inverse Laplace transform – Convolution theorem – Solution of linear ODE of second order with constant coefficients and first order simultaneous equations with constant coefficients using Laplace transformation.</td></tr>
<tr><td colspan="7">Total hours to be taught</td><td colspan="2">60</td></tr>
<tr><td colspan="9">Text book (s) :</td></tr>
<tr><td>1</td><td colspan="8">Veerarajan. T., "Engineering Mathematics (for first year), Fourth Edition Tata McGraw- Hill Publishing Company Limited, New Delhi, 2005.</td></tr>
<tr><td>2</td><td colspan="8">Venkataraman.M.K, "Engineering Mathematics, Volume I & II Revised Enlarged Fourth Edition", The National Pub. Co., Chennai, 2004.</td></tr>
<tr><td colspan="9">Reference(s):</td></tr>
<tr><td>1</td><td colspan="8">Kandasamy. P, Thilagavathy. K and Gunavathy. K, "Engineering Mathematics" – S.Chand and Co. New Delhi 2007.</td></tr>
<tr><td>2</td><td colspan="8">Widder. D.V., "Advanced Calculus", Second Edition, Prentice Hall of India, New Delhi, 2000.</td></tr>
</table>

K.S.Rangasamy College of Technology - Autonomous Regulation									R 2007
Department	Computer Science and Engineering		Programme Code & Name			14 : B.E. Computer Science and Engineering			
Semester II									
Course Code	Course Name	Hours/Week				Credit	Maximum Marks		
		L	T	P		C	CA	ES	Total
07140203G	MATERIALS SCIENCE	4	0	0		4	50	50	100
Objective(s)	Impart fundamental knowledge in various engineering subject and applications and Application of conducting, Superconducting and Magnetic Materials, Application of dielectric, New engineering Materials and Nano materials in Modern Technology.								
1	CONDUCTING AND SUPERCONDUCTING MATERIALS					Total Hrs	09		
Introduction-Free electron theory-Electrical Conductivity- Expression for electrical Conductivity-thermal Conductivity-Expression for thermal Conductivity-Lorentz number-Widemann Franz Law(Derivation)-Verification of Ohm's Law-Classical Free Electron theory advantages and drawbacks. Properties of Superconductors-Critical Field-Meissner's Effect-Isotope effect-BCS theory- Type-I and Type-II superconductors-Josephson effect (Qualitative)-High T_C Superconductors-Applications:SQUID, Cryotron, Magnetic Levitation.									
2	SEMICONDUCTING MATERIALS					Total Hrs	09		
Elemental and Compound Semiconductors-Intrinsic and Extrinsic Semiconductors-Properties-Carrier Concentration in intrinsic and Extrinsic semiconductors(Derivation)-Fermilevel-Variation of fermilevel with Temprature and impurities-Hall effect-Hall Coefficient-Experimental Determination of Hall Coefficient, Applications.									
3	MAGNETIC MATERIALS					Total Hrs	09		
Classification of Magnetic materials-properties-Heisenberg and Domain theory of ferromagnetism-Hystersis-Hard and Soft magnetic materials-Ferrites-Structure, prepration and Applications-Magnetic Recording and read out-Bubble memory-Magnetic Tape-Floppy Disc and Magnetic hard disc.									
4	DIELECTRIC MATERIALS					Total Hrs	09		
Introduction - Polarisation: Electronic, ionic, orientational and space charge - frequency and Temprature dependence of polarization - Active and Passive Dielectirc - internal field - Clasius – mosotti relation(Derivation) - Dilectric Losses - Dilectric breakdown Mechanism - Ferroelectric materials:properties and applications.									
5	NEW ENGINEERING MATERIALS					Total Hrs	09		
Shape Memory Alloy(SMA):Characteristics, properties of NiTi alloy, Applications, Metallic glasses:Prepration, properties and application. Nanomaterials: Fabrication methods-Topdown process: Ball milling, Nanolithography-Bottom up process: Vapor Phase deposistion method(PVD and CVD)-Carbon nanotubes : Fabrication and Applications.									
Total hours to be taught							45		
Text book (s) :									
1	Material Science-Authored by dept. of Physics KSRCT.								
Reference(s):									
1	Raghavan V., "Materials Science and Engineering"-Prentice Hall of India,New Delhi,2001.								
2	Rajendran V., "Materials Science"-Tata McGraw Hill, New Delhi, 2005.								
3	Dr.Arumugam M., "Materials Science"-Anuradha Agencies, Kumbakonam, 2003.								

K.S.Rangasamy College of Technology - Autonomous Regulation								R 2007
Department	Computer Science and Engineering			Program code & Name		14 : B.E. Computer Science and Engineering		
Semester II								
Course Code	Course Name	Hours / Week			Credit	Maximum marks		
		L	T	P	C	CA	ES	Total
07140204G	ENVIRONMENTAL SCIENCE	3	1	0	4	50	50	100
Objective(s)	The student should be conversant with The evolution of environmentalism and the importance of environmental studies Focuses on the various natural resources and the current threats to their sustainability Significance and protection of bio diversity and various forms of environmental degradation The significant international conventions and protocols for the protection of environment.							

1	ATMOSPHERE AND ECOSYSTEM	Total Hrs	9

Atmosphere – composition of atmosphere (troposphere, stratosphere, mesosphere and thermosphere) - Ozone and ozone depletion – Air pollution – sources, effects and control – Green house effect - Global warming – Climate change – Acid rain - Planet Earth – Biosphere – Hydrosphere – Lithosphere. Concept of ecosystem – structure and functions of ecosystem- producers, consumers and decomposers - Energy flow – Ecological succession-Food chains-Food webs- Ecological pyramids-Introduction, types, characteristic features-structures and function of forest, grassland and aquatic ecosystems (ponds and rivers) - Case Studies in current scenario.

2	WATER RESOURCES AND ITS TREATMENT	Total Hrs	9

Water – hydrologic cycle – ground water – water shed – water use and quality – point and non-point sources of pollution – Oceans and fisheries – salinity – temperature – density – pressure – light – bioluminescence – Tsunamis – Glaciers – Water pollution – dissolved oxygen – surface water treatment – waste water treatment – Thermal pollution, noise pollution and control - Case Studies in current scenario.

3	LAND RESOURCES AND ITS DEGRADATION	Total Hrs	9

Land – weathering and erosion - types of weathering – types of soil – soil erosion – land slides – Wet land and deforestation- deserts – types – desertification – land degradation – features of desert – geochemical cycling – solid and hazardous waste, chemical waste, radio active waste – non hazardous waste - Case Studies in current scenario.

4	FUTURE POLICY AND ALTERNATIVES	Total Hrs	9

Future policy and alternatives – fossil fuels – nuclear energy – solar energy – wind energy – hydroelectric energy – geothermal energy – tidal energy – sustainability – green power – nano technology – international policy - - Case Studies in current scenario.

5	BIO DIVERSITY AND HUMAN POPULATION	Total Hrs	9

Introduction to Bio diversity-Definition, genetic species and ecosystem diversity.
Biogeographical classification of India – Biodiversity in India – India as mega diversity nation – hotspots of biodiversity in India – threats to biodiversity – endemic and endangered- habitat – conservation of biodiversity – environment protection act – issues and possible solution – population growth - population explosion – environment and human health - Case Studies in current scenario.

Total hours to be taught	45

Text book :

1.	Environmental Science by R.Palanivelu, R.Parimalam, and B.Srividhya

References :

1.	Linda D. Williams – “Environmental Science Demystified”, Tata McGraHill Publishing Company Limited, 2005
2.	G. Tyler Miller, JR _ “Environmental Science “, Thomson, 2004
3.	William P. Cunningham – “Principles of Environmental Science”, Tata McGraHill, New Delhi, 2007
4.	Bharucha Erach –“The Biodiversity of INDIA”, Mapin Publishing Private Limited, Ahamedabad, India.
5.	Trivedi R.K., “Hand Book of Environmental Laws, Rules, Guidelines, Compliances and Standards”, Volume I & II, Environmedia

<table>
<tr><td colspan="8">K.S.Rangasamy College of Technology - Autonomous Regulation</td><td>R 2007</td></tr>
<tr><td colspan="2">Department</td><td colspan="2">Computer Science and Engineering</td><td colspan="2">Programme Code & Name</td><td colspan="3">14 : B.E. Computer Science and Engineering</td></tr>
<tr><td colspan="9">Semester II</td></tr>
<tr><td colspan="2" rowspan="2">Course Code</td><td colspan="2" rowspan="2">Course Name</td><td colspan="3">Hours/Week</td><td>Credit</td><td colspan="3">Maximum Marks</td></tr>
<tr><td>L</td><td>T</td><td>P</td><td>C</td><td>CA</td><td>ES</td><td>Total</td></tr>
<tr><td colspan="2">07140205S</td><td colspan="2">BASICS OF ELECTRICAL ENGINEERING</td><td>3</td><td>1</td><td>0</td><td>4</td><td>50</td><td>50</td><td>100</td></tr>
<tr><td colspan="2">Objective(s)</td><td colspan="7">To improve the basic knowledge in electrical engineering, to make the students to understand the concepts of various electrical laws and to know the applications of electrical machines.</td></tr>
<tr><td>1</td><td colspan="5">FUNDAMENTALS OF DC AND AC CIRCUITS</td><td colspan="2">Total Hrs</td><td>12</td></tr>
<tr><td colspan="8">Fundamentals of DC circuits: Ohm’s law, Kirchhoff’s law, Simple resistive circuits – Effect of series and parallel resistances – Mesh and Nodal analysis – Simple problems. Fundamentals of AC circuits: RMS and Average values of sine wave, Form factor, Peak factor. Single phase AC circuits – Impedance, Power and Power Factor – RL, RC, RLC circuits - Simple AC circuits – problems.</td></tr>
<tr><td>2</td><td colspan="5">FUNDAMENTALS OF MAGNETIC CIRCUITS</td><td colspan="2">Total Hrs</td><td>12</td></tr>
<tr><td colspan="8">Ohm’s law of magnetic circuit, Simple and composite magnetic circuits, Effect of air gap – leakage factor – fringing effect – Simple problems. Faraday’s law of electromagnetic induction – Self and Mutually induced EMF – Statically and Dynamically induced EMF – Simple problems.</td></tr>
<tr><td>3</td><td colspan="5">DC MACHINES AND TRANSFORMERS</td><td colspan="2">Total Hrs</td><td>12</td></tr>
<tr><td colspan="8">DC Machine: Construction – EMF equation of DC generator – Types of Generators and Motors – Characteristics. Transformer: Construction – EMF equation – Transformation ratio – Types of Transformers – Instrumentation Transformer.</td></tr>
<tr><td>4</td><td colspan="5">INDUCTION MACHINES</td><td colspan="2">Total Hrs</td><td>12</td></tr>
<tr><td colspan="8">Three Phase Induction Motor: Construction, Types – Principle of Operation – Torque Equation – Slip Vs Torque Characteristics of Cage and wound rotor. Single Phase Induction Motor: Principle of Operation – Types – Applications.</td></tr>
<tr><td>5</td><td colspan="5">POWER SUPPLIES</td><td colspan="2">Total Hrs</td><td>12</td></tr>
<tr><td colspan="8">Half Wave and Full Wave Rectifiers – Bridge Rectifier – Types of filters – Voltage Regulator – Introduction to SMPS and UPS.</td></tr>
<tr><td colspan="7">Total hours to be taught</td><td>60</td></tr>
<tr><td colspan="8">Text book (s) :</td></tr>
<tr><td>1</td><td colspan="7">J. Gnanavadivel, S.Elangovan, and M.Muruganantham, “Basic of Electrical Engineering”, Anuradha Publication.</td></tr>
<tr><td colspan="8">Reference(s):</td></tr>
<tr><td>1</td><td colspan="7">B.L.Theraj and A.K.Theraja, “Electrical Technology”, S.Chand & Company LTD, New Delhi, 2005.</td></tr>
<tr><td>2</td><td colspan="7">V.N.Mittel, “Basic Electrical Engineering”,Tata Mc Graw Hill, New Delhi, 1990. 3 V. Del Toro, “Electrical Engineering Fundamentals”, Prentice Hall of India, New Delhi, 1993.</td></tr>
</table>

<table>
<tr><td colspan="7">K.S.Rangasamy College of Technology - Autonomous Regulation</td><td>R 2007</td></tr>
<tr><td>Department</td><td colspan="2">Computer Science and Engineering</td><td colspan="2">Programme Code & Name</td><td colspan="3">14 : B.E. Computer Science and Engineering</td></tr>
<tr><td colspan="8">Semester II</td></tr>
<tr><td rowspan="2">Course Code</td><td rowspan="2" colspan="2">Course Name</td><td colspan="3">Hours/Week</td><td>Credit</td><td colspan="2">Maximum Marks</td></tr>
<tr><td>L</td><td>T</td><td>P</td><td>C</td><td>CA</td><td>ES</td><td>Total</td></tr>
<tr><td>07140206S</td><td colspan="2">BASICS OF ELECTRONICS ENGINEERING</td><td>4</td><td>0</td><td>0</td><td>4</td><td>50</td><td>50</td><td>100</td></tr>
<tr><td>Objective(s)</td><td colspan="7">To study about an overview of electronic devices and Amplifiers and Oscillators. Understand the design of digital system and study combinational and sequential circuits.</td></tr>
<tr><td>1</td><td colspan="3">INTRODUCTION TO SEMICONDUCTORS AND DIODES</td><td colspan="2">Total Hrs</td><td colspan="2">12</td></tr>
<tr><td colspan="8">Introduction : Semiconductors – N-Type and P-Type – Majority and Minority Carriers – PN Junction Characteristics – Type and Applications – Power Supplies – Rectifier – Filters – Voltage Multiplier – Zener Regulators.</td></tr>
<tr><td>2</td><td colspan="3">TRANSISTORS-INTRODUCTION TO SMALL SIGNAL AMPLIFIER</td><td colspan="2">Total Hrs</td><td colspan="2">12</td></tr>
<tr><td colspan="8">Amplification – Transistor Characteristic Curve – Transistor – Types – Transistor as Switch – Measuring gain – Common Emitter Amplifier – Stabilizing the Amplifier – Other Configurations.</td></tr>
<tr><td>3</td><td colspan="3">LARGE SIGNAL AMPLIFICATION – OSCILLATORS</td><td colspan="2">Total Hrs</td><td colspan="2">12</td></tr>
<tr><td colspan="8">Basic features – Amplifier classification – Class A,B, AB, C and Switched Mode Amplifiers – Oscillators – RC, LC, Crystal and Relaxation Oscillators – SCR.</td></tr>
<tr><td>4</td><td colspan="3">DIGITAL LOGIC AND COMBINATIONAL CIRCUITS</td><td colspan="2">Total Hrs</td><td colspan="2">12</td></tr>
<tr><td colspan="8">Binary number System and Codes – Basic Logic Gates and Truth Tables – Boolean Algebra and De-Morgan;s Theorem – Logic Circuits – Sum of Product Methods – Product of Sum Method – Simple Design of Combinational Logic Networks – Digital Arithmetic – Addition, Subtraction, Multiplication and Division of Binary Numbers.</td></tr>
<tr><td>5</td><td colspan="3">SEQUENTIAL LOGIC CIRCUITS</td><td colspan="2">Total Hrs</td><td colspan="2">12</td></tr>
<tr><td colspan="8">Flip Flops – SR Flip Flop, Clocked SR, Master Slave, SR, JK Flip Flop – D Flip Flop – Registers – Types of Registers – Counters – Synchronous and Asynchronous Counters – BCD Decade Counter.</td></tr>
<tr><td colspan="6">Total hours to be taught</td><td colspan="2">60</td></tr>
<tr><td colspan="8">Text book (s) :</td></tr>
<tr><td>1</td><td colspan="7">Electronics Principles & Applications (6th Edition), Charles A. Schuler, Mc.Graw Hill, 2003.</td></tr>
<tr><td>2</td><td colspan="7">Basic Electronics, Santiram Kal A.P. Godse U.A. Bukshi, PHI, 2002.</td></tr>
<tr><td colspan="8">Reference(s):</td></tr>
<tr><td>1</td><td colspan="7">Charles A Schuler, ”Electronics Principles and Applications”, 6th edition, Mc. Graw Hill, 2003.</td></tr>
<tr><td>2</td><td colspan="7">Albert Malvino, David J Bates, ”Electronic Principles”, 7th Edition, TMH, 2007 3 Santiram Kal, “Basic Electronics”, PHI, 2002.</td></tr>
</table>

<table>
<tr><td colspan="8">K.S.Rangasamy College of Technology - Autonomous Regulation</td><td>R 2007</td></tr>
<tr><td colspan="2">Department</td><td colspan="2">Computer Science and Engineering</td><td colspan="2">Programme Code & Name</td><td colspan="3">14 : B.E. Computer Science and Engineering</td></tr>
<tr><td colspan="9">Semester II</td></tr>
<tr><td colspan="2" rowspan="2">Course Code</td><td colspan="2" rowspan="2">Course Name</td><td colspan="3">Hours/Week</td><td>Credit</td><td colspan="3">Maximum Marks</td></tr>
<tr><td>L</td><td>T</td><td>P</td><td>C</td><td>CA</td><td>ES</td><td>Total</td></tr>
<tr><td colspan="2">07140207P</td><td colspan="2">ENGINEERING GRAPHICS LABORATORY</td><td>1</td><td>0</td><td>3</td><td>3</td><td>50</td><td>50</td><td>100</td></tr>
<tr><td colspan="2">Objective(s)</td><td colspan="7">Students skill in the graphical communication of concepts and ideas in the design of engineering products are to be obtained by training them to understand objects by making free hand sketches of simple engineering objects and computer 2D and 3D modeling techniques.</td></tr>
<tr><td>1</td><td colspan="4">CURVES AND SHAPES USED IN ENGINEERING PRODUCTS</td><td colspan="2">Total Hrs</td><td colspan="2">8</td></tr>
<tr><td colspan="9">CONCEPTS AND CONVENTIONS Primitive and Prismatic shapes - Conics – ellipse, parabola and hyperbola – equations used and parametric interpretations – ellipsoid, paraboloid and hyperboloid – involutes and cycloids – applications - tangents and normals – mathematical requirements – their importance and applications to engineering products.</td></tr>
<tr><td>2</td><td colspan="4">FREE HAND SKETCHING PRACTICES</td><td colspan="2">Total Hrs</td><td colspan="2">7</td></tr>
<tr><td colspan="9">Representation of Three Dimensional objects – Need for and importance of multiple views and their orientations – Concept of orthographic projection - Developing skills through free hand sketching of multiple views from pictorial views of objects – isometric (pictorial) representation of objects from multiple views – simple exercises to practice.</td></tr>
<tr><td>3</td><td colspan="4">DEVELOPMENT OF SURFACES – PRACTICES</td><td colspan="2">Total Hrs</td><td colspan="2">5</td></tr>
<tr><td colspan="9">Development of lateral surfaces of simple and truncated solids – prisms, pyramids, cylinders and cones - freehand sketching practices - simple exercises to practice.</td></tr>
<tr><td>4</td><td colspan="4">2D DRAFTING</td><td colspan="2">Total Hrs</td><td colspan="2">20</td></tr>
<tr><td colspan="9">Importance of 2D drafting – sketching, mirroring, scaling, copying (simple and multiple) dimensioning - wiring diagram and piping layout drawings - Practice of Computer Aided Drafting and dimensioning using appropriate software packages.</td></tr>
<tr><td>5</td><td colspan="4">SOLID MODELING</td><td colspan="2">Total Hrs</td><td colspan="2">20</td></tr>
<tr><td colspan="9">3D modeling techniques - constructive solid geometry (CSG) and boundary representation (BRep) techniques - solid modeling of simple and moderately complex engineering products – table, chair, V-block, flange coupling (one) half, bolts and nuts, computer monitor, slotted angle rack and such other products - Practice of solid modeling and extraction of 2D views using appropriate software packages.</td></tr>
<tr><td colspan="7">Total hours to be taught</td><td colspan="2">60</td></tr>
<tr><td colspan="9">Text book (s) :</td></tr>
<tr><td>1</td><td colspan="8">K.Venugopal, “Engineering Graphics”, 8th Edition, New Age International (P) Limited, 2002.</td></tr>
<tr><td colspan="9">Reference(s):</td></tr>
<tr><td>1</td><td colspan="8">Dhananjay.A. Jolhe, “Engineering Drawing”, Tata McGraw Hill Publishing Co., 2007.</td></tr>
<tr><td>2</td><td colspan="8">K.V.Nataraajan “A text book of Engineering Graphics”, Dhanalakshmi Publishers, Chennai, 2006.</td></tr>
<tr><td>3</td><td colspan="8">M.B. Shah and B.C. Rana, “Engineering Drawing”, Pearson Education, 2005.</td></tr>
<tr><td>4</td><td colspan="8">Luzadder and Duff, “Fundamentals of Engineering Drawing” Prentice Hall of India Pvt Ltd, XI Edition - 2001.</td></tr>
</table>

<table>
<tr><td colspan="7">K.S.Rangasamy College of Technology - Autonomous Regulation</td><td>R 2007</td></tr>
<tr><td>Department</td><td colspan="2">Computer Science and Engineering</td><td colspan="2">Programme Code & Name</td><td colspan="3">14 : B.E. Computer Science and Engineering</td></tr>
<tr><td colspan="8">Semester II</td></tr>
<tr><td rowspan="2">Course Code</td><td rowspan="2">Course Name</td><td colspan="3">Hours/Week</td><td>Credit</td><td colspan="3">Maximum Marks</td></tr>
<tr><td>L</td><td>T</td><td>P</td><td>C</td><td>CA</td><td>ES</td><td>Total</td></tr>
<tr><td>07140208P</td><td>ELECTRICAL ENGINEERING LABORATORY</td><td>0</td><td>0</td><td>3</td><td>2</td><td>50</td><td>50</td><td>100</td></tr>
<tr><td>Objective(s)</td><td colspan="7">To import the practical knowledge in basic electrical and electronics devices and the applications of Electrical and Electronics Equipments.</td></tr>
<tr><td colspan="8">List of experiments</td></tr>
<tr><td colspan="8">1. Verification of Ohm’s law and Kirchhoff’s laws
2. Measurement of Power and Impedance in RL, RC and RLC circuits
3. Open Circuit and Load Characteristics of Separately Excited DC Generator
4. Load Test on DC Shunt motor
5. Load Test on Single Phase Transformer
6. Load Test on Single Phase and Three Phase Induction Motor
7. Single Phase Half Wave and Full Wave Rectifiers
8. Study of Passive Filters
9. Study of Voltage Regulator Circuits
10. Study of SMPS and UPS</td></tr>
</table>

<table>
<tr><td colspan="7">K.S.Rangasamy College of Technology - Autonomous Regulation</td><td>R 2007</td></tr>
<tr><td>Department</td><td colspan="2">Computer Science and Engineering</td><td colspan="2">Programme Code & Name</td><td colspan="3">14 : B.E. Computer Science and Engineering</td></tr>
<tr><td colspan="8">Semester II</td></tr>
<tr><td rowspan="2">Course Code</td><td rowspan="2">Course Name</td><td colspan="3">Hours/Week</td><td>Credit</td><td colspan="3">Maximum Marks</td></tr>
<tr><td>L</td><td>T</td><td>P</td><td>C</td><td>CA</td><td>ES</td><td>Total</td></tr>
<tr><td>07140209P</td><td>ELECTRONICS ENGINEERING LABORATORY</td><td>0</td><td>0</td><td>3</td><td>2</td><td>50</td><td>50</td><td>100</td></tr>
<tr><td>Objective(s)</td><td colspan="7">To obtain and study the characteristics of diodes, Transistors, semi conductor devices, the performance parameters of simple electronic circuits involving discrete components, the application of Integrated circuit timers, operational amplifiers, implementation of the combinational circuits, sequential circuits and Flip flops using logic gates.</td></tr>
<tr><td colspan="8">List of experiments</td></tr>
<tr><td colspan="8">1. Forward and Reverse characteristics of PN diode and Zener Diode
2. Implementation of HW & FW Rectifier with simple Capacitor Filter.
3. Input and Output characteristics of BJT in CE configuration
4. Frequency response of Common Emitter Amplifier
5. Observation of output waveform with cross over distortion using class B complementary symmetry power amplifier.
6. Implementation of RC / LC Oscillator and study the waveforms.
7. Characteristics of UJT and SCR
8. Relaxation Oscillator using UJT
9. Verification of truth table for various TTL Logic Gates.
10. Half adder, Full adder, Half subtractor and Full subtractor.
11. Implementation and Verification of truth table RS, D and T flip Flops using Logic Gates.
12. Implementation and Verification of BCD Decade Counter.</td></tr>
</table>

K.S.Rangasamy College of Technology - Autonomous Regulation								R 2007
Department	Computer Science and Engineering	Programme Code & Name			14 : B.E. Computer Science and Engineering			
Semester II								
Course Code	Course Name	Hours / Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07140210P	COMPREHENSION I	0	0	3	0	100	00	100
Objective(s)	Comprehending the semester subjects studies and improving the technical knowledge of the students. Improving the skill level of Engineering, Technology and Applied Science students and improving the employability of students in placement interviews.							

1	For each subject 200 Keywords/important words or terms (5 units x 40 words) are to be prepared using the students.
2	These 200 Keywords are to be printed in double column (2 x 50 words) and in 2 pages and is to be handled over each student for all the subjects.
3	The staff who handled the subject in the previous semester will handle their discussion period (3 periods / semester) as given below.
4	The staff will question the students using 'W' and 'H' type questions linking the keywords.
5	In a similar way the students have to prepare themselves for all the keywords.
6	Each test will carry 100 questions and two hours duration. The questions will be of objective type: 'W' and 'H' type questions by attaching with keywords.
7	Based on Test-I and Test-II, sessional marks (maximum 50 marks) will be awarded.
8	Test-III will be held for all the units and all the subjects. The passing norms will be similar as other subjects (i.e. minimum 50/100 marks)

Schedule for Conduct of Comprehension Subject		
Total No of weeks planned:10	Total No of subjects: 5 to 7	Total duration per week: 3 periods

Week No	Duration: 1½ period Subject No (No of units)	Duration: 1½ period Subject No (No of units)
W1	S1(3)	S2(3)
W2	S3(3)	S4(3)
W3	S5(3)	S6(3)
W4	Test-I (Portion: 3 units in each subject)	
W5	S1(2)	S2(2)
W6	S3(2)	S4(2)
W7	S5(2)	S6(2)
W8	Test-II (Portion: 2 units in each subject)	
W9	Discussion	
W10	Test-III (All 5 units and all the subjects)	

<table>
<tr><td colspan="8">K.S.Rangasamy College of Technology - Autonomous Regulation</td><td>R 2007</td></tr>
<tr><td colspan="2">Department</td><td colspan="2">Computer Science and Engineering</td><td colspan="3">Programme Code & Name</td><td colspan="3">14 : B.E. Computer Science and Engineering</td></tr>
<tr><td colspan="9">Semester III</td></tr>
<tr><td colspan="2" rowspan="2">Course Code</td><td colspan="2" rowspan="2">Course Name</td><td colspan="3">Hours/Week</td><td>Credit</td><td colspan="3">Maximum Marks</td></tr>
<tr><td>L</td><td>T</td><td>P</td><td>C</td><td>CA</td><td>ES</td><td>Total</td></tr>
<tr><td colspan="2">07140301G</td><td colspan="2">ENGINEERING MATHEMATICS III</td><td>3</td><td>1</td><td>0</td><td>4</td><td>50</td><td>50</td><td>100</td></tr>
<tr><td colspan="2">Objective(s)</td><td colspan="7">To obtain the capacity to formulate and identify certain boundary value problems encountered in engineering practices, decide on applicability of the Fourier series method of solution, solve them and interpret the results, to grasp the concept of expression of a function, under certain conditions, as a double integral leading to identification of transform pair, and specialization on Fourier transform pair, their properties, the possible special cases with attention to their applications and have learnt the basics of Z – transform in its applicability to discretely varying functions, to gain the skill to formulate certain problems in terms of difference equations and solve them using the Z – transform technique bringing out the elegance of the procedure involved.</td></tr>
<tr><td>1</td><td colspan="5">PARTIAL DIFFERENTIAL EQUATIONS</td><td colspan="2">Total Hrs</td><td colspan="2">12</td></tr>
<tr><td colspan="9">Formation of partial differential equations by elimination of arbitrary constants and arbitrary functions – Solution of standard types of first order partial differential equations – Lagrange’s linear equation – Linear partial differential equations of second and higher order with constant coefficients.</td></tr>
<tr><td>2</td><td colspan="5">FOURIER SERIES</td><td colspan="2">Total Hrs</td><td colspan="2">12</td></tr>
<tr><td colspan="9">Dirichlet’s conditions – General Fourier series – Odd and even functions – Half range sine series – Half range cosine series – Parseval’s identify – Harmonic Analysis.</td></tr>
<tr><td>3</td><td colspan="5">BOUNDARY VALUE PROBLEMS</td><td colspan="2">Total Hrs</td><td colspan="2">12</td></tr>
<tr><td colspan="9">Classification of second order quasi linear partial differential equations- Solutions of one dimensional wave equation – One dimensional heat equation - Fourier series solutions in Cartesian coordinates.</td></tr>
<tr><td>4</td><td colspan="5">FOURIER TRANSFORM</td><td colspan="2">Total Hrs</td><td colspan="2">12</td></tr>
<tr><td colspan="9">Fourier transform pair – Sine and Cosine transforms – Properties – Transforms of simple functions – Convolution theorem – Parseval’s identity – Problems.</td></tr>
<tr><td>5</td><td colspan="5">Z -TRANSFORM AND DIFFERENCE EQUATIONS</td><td colspan="2">Total Hrs</td><td colspan="2">12</td></tr>
<tr><td colspan="9">Z-transform - Elementary properties – Initial and final value theorem-Inverse Z – transform – Partial fraction method – Residue method - Convolution theorem - Solution of difference equations using Z - transform.</td></tr>
<tr><td colspan="8">Total hours to be taught</td><td colspan="2">60</td></tr>
<tr><td colspan="9">Text book (s) :</td></tr>
<tr><td>1</td><td colspan="8">Grewal, B.S., “Higher Engineering Mathematics”, Thirty Sixth Edition, Khanna Publishers, Delhi, 2001.</td></tr>
<tr><td>2</td><td colspan="8">T.Veerarajan, “Engineering Mathematics” Tata Mcgraw Hill Publishing company Limited, New Delhi.</td></tr>
<tr><td colspan="9">Reference(s):</td></tr>
<tr><td>1</td><td colspan="8">Kandasamy, P., Thilagavathy, K., and Gunavathy, K., “Engineering Mathematics Volume III”, S. Chand & Company Ltd., New Delhi, ‘1996.</td></tr>
<tr><td>2</td><td colspan="8">Narayanan, S., Manicavachagom Pillay, T.K.. and Ramahiah, G., “Advanced mathematics for Engineering Students”, Volumes II and III, S.Viswanathan (Printers and Publishers) Pvt. Ltd. Chennai – 2002.</td></tr>
</table>

<table>
<tr><td colspan="8">K.S.Rangasamy College of Technology - Autonomous Regulation</td><td>R 2007</td></tr>
<tr><td colspan="2">Department</td><td colspan="2">Computer Science and Engineering</td><td colspan="2">Programme Code & Name</td><td colspan="3">14 : B.E. Computer Science and Engineering</td></tr>
<tr><td colspan="9">Semester III</td></tr>
<tr><td colspan="2" rowspan="2">Course Code</td><td colspan="2" rowspan="2">Course Name</td><td colspan="3">Hours/Week</td><td>Credit</td><td colspan="3">Maximum Marks</td></tr>
<tr><td>L</td><td>T</td><td>P</td><td>C</td><td>CA</td><td>ES</td><td>Total</td></tr>
<tr><td colspan="2">07140302S</td><td colspan="2">DATA STRUCTURES USING ‘C’ (Common to CSE & ECE)</td><td>3</td><td>1</td><td>0</td><td>4</td><td>50</td><td>50</td><td>100</td></tr>
<tr><td colspan="2">Objective(s)</td><td colspan="7">To learn the systematic way of solving problems, different methods of organizing large amounts of data, Programming in C, efficient implementation of different data structures, and to implement solutions for specific problems.</td></tr>
<tr><td>1</td><td colspan="5">PROBLEM SOLVING</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">Introduction - Problem solving aspect – Top-down Design – Implementation of algorithms – Efficiency of algorithms – Analysis of algorithms – Fundamental algorithms.</td></tr>
<tr><td>2</td><td colspan="5">LISTS, STACKS AND QUEUES</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">Abstract Data Type (ADT) – The List ADT – The Stack ADT – The Queue ADT</td></tr>
<tr><td>3</td><td colspan="5">TREES</td><td colspan="2">Total Hrs</td><td>10</td></tr>
<tr><td colspan="9">Preliminaries – Binary Trees – The Search Tree ADT – Binary Search Trees – AVL Trees – Tree Traversals – Hashing – General Idea – Hash Function – Priority Queues (Heaps) – Model – Simple implementations – Binary Heap.</td></tr>
<tr><td>4</td><td colspan="5">SORTING</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">Preliminaries – Insertion Sort – Shellsort – Heapsort – Mergesort – Quicksort – External Sorting.</td></tr>
<tr><td>5</td><td colspan="5">GRAPHS</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">Definitions – Topological Sort – Shortest-Path Algorithms – Unweighted Shortest Paths – Dijkstra’s Algorithm – Minimum Spanning Tree – Prim’s Algorithm, Kruskal’s Algorithm – Applications of Depth-First Search – Undirected Graphs – Biconnectivity.</td></tr>
<tr><td colspan="7">Total hours to be taught</td><td colspan="2">45</td></tr>
<tr><td colspan="9">Text book (s) :</td></tr>
<tr><td>1</td><td colspan="8">R. G. Dromey, “How to Solve it by Computer” (Chaps 1-2), Prentice-Hall of India, 2002.</td></tr>
<tr><td>2</td><td colspan="8">M. A. Weiss, “Data Structures and Algorithm Analysis in C”, 2nd ed, Pearson Education Asia, 2002. (chaps 3, 4.1-4.4 (except 4.3.6), 4.6, 5.1-5.2, 6.1-6.3.3, 7.1-7.7 (except 7.2.2, 7.3, 7.4.1, 7.5.1, 7.6.1, 7.7.5, 7.7.6), 7.11, 9.1-9.3.2, 9.5-9.5.2, 9.6-9.6.2).</td></tr>
<tr><td colspan="9">Reference(s):</td></tr>
<tr><td>1</td><td colspan="8">Y. Langsam, M. J. Augenstein and A. M. Tenenbaum, “Data Structures using C”, Pearson Education Asia, 2004.</td></tr>
<tr><td>2</td><td colspan="8">Richard F. Gilberg, Behrouz A. Forouzan, “Data Structures – A Pseudocode Approach with C”, Thomson Brooks / COLE, 1998.</td></tr>
</table>

<table>
<tr><td colspan="7">K.S.Rangasamy College of Technology - Autonomous Regulation</td><td>R 2007</td></tr>
<tr><td>Department</td><td colspan="2">Computer Science and Engineering</td><td colspan="2">Programme Code & Name</td><td colspan="2">14 : B.E. Computer Science and Engineering</td></tr>
<tr><td colspan="8">Semester III</td></tr>
<tr><td rowspan="2">Course Code</td><td rowspan="2" colspan="2">Course Name</td><td colspan="3">Hours/Week</td><td>Credit</td><td colspan="2">Maximum Marks</td></tr>
<tr><td>L</td><td>T</td><td>P</td><td>C</td><td>CA</td><td>ES</td><td>Total</td></tr>
<tr><td>07140303S</td><td colspan="2">ADVANCED C
(Common to CSE & TEXTILE)</td><td>3</td><td>1</td><td>0</td><td>4</td><td>50</td><td>50</td><td>100</td></tr>
<tr><td>Objective(s)</td><td colspan="7">It provides a strong foundation of fundamental concepts in C and also enable the student to apply these concepts to solve real time problems.</td></tr>
<tr><td>1</td><td colspan="4">OVERVIEW OF C</td><td colspan="2">Total Hrs</td><td>7</td></tr>
<tr><td colspan="8">Introduction to C – Identifiers, While statement, Do while statement, Redirecting input and output, Variables. Operators – Arithmetic, Relational and Logical and Assignment. Operators ++ and --. Conditional expression, cast operator, sizeof operator, Bitwise Operator.</td></tr>
<tr><td>2</td><td colspan="4">FUNCTIONS AND ARRAYS</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="8">Introduction – Arguments and parameters, Scope of variables, The preprocessor, Recursion. Arrays – Array indexes and cell offsets, Array as function arguments, String handling functions, Multidimensional array, and Character string as arrays of character.</td></tr>
<tr><td>3</td><td colspan="4">STORAGE CLASSES AND TYPE QUALIFIERS</td><td colspan="2">Total Hrs</td><td>10</td></tr>
<tr><td colspan="8">Storage classes in a single source file, Storage classes in multiple source files, Nested blocks, type qualifiers: const and volatile, sample program. Files- Opening and closing, Character input /output, string input / output, Formatted input / output, unformatted , Moving around in a file. Unions and bit fields, Enumerated types.</td></tr>
<tr><td>4</td><td colspan="4">POINTERS AND ARRAYS</td><td colspan="2">Total Hrs</td><td>10</td></tr>
<tr><td colspan="8">Introduction to pointers – The & and * Operators - Pointer expressions, Char, int, and float pointers, - Passing addresses to functions, Functions returning pointers. Pointers and arrays – What are arrays?, Passing Arrays elements to a functions – Pointers and two dimensional arrays - Pointer to an array, Passing 2D array to a function, 3 Dimensional arrays passing 3D arrays to a function returning array from a function, returning 3D array from a function, array of pointers, Dynamic memory allocation.</td></tr>
<tr><td>5</td><td colspan="4">POINTERS AND STRINGS, STRUCTURES</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="8">Pointers and strings - What are strings, Standard library string functions, Pointers and strings, The const qualifier, returning const values, Two dimensional arrays of characters, Array of pointers to strings, Limitation of array of pointers to strings - Pointers and structures – An array of structures, Structure pointers, Offset of structure elements. File pointers, Pointers to functions, typedef with function pointers, argc and argv – arguments to main (), Near far, huge pointers.</td></tr>
<tr><td colspan="6">Total hours to be taught</td><td>45</td></tr>
<tr><td colspan="8">Text book (s) :</td></tr>
<tr><td>1</td><td colspan="7">Richard Johnsonbaugh & Martin Kalin, “Applications Programming in ANSI C”, third edition, Pearson Education.</td></tr>
<tr><td>2</td><td colspan="7">Understading Pointers in C, ”Yashavant Kanetkar”, third edition, BPB publications.</td></tr>
<tr><td colspan="8">Reference(s):</td></tr>
<tr><td>1</td><td colspan="7">Byron Gottfried, “Programming with C”, II Edition, TMH, 2002.</td></tr>
<tr><td>2</td><td colspan="7">Herbert Schildt “The Complete Reference C” Fourth Edition, TATA McGRAW HILL Publications.</td></tr>
<tr><td>3</td><td colspan="7">E. Balagurusamy, “Programming in ANSI C” IIIrd Edition, MCGRAW HILL.</td></tr>
</table>

<table>
<tr><td colspan="8">K.S.Rangasamy College of Technology - Autonomous Regulation</td><td>R 2007</td></tr>
<tr><td colspan="2">Department</td><td colspan="2">Computer Science and Engineering</td><td colspan="2">Programme Code & Name</td><td colspan="3">14 : B.E. Computer Science and Engineering</td></tr>
<tr><td colspan="9">Semester III</td></tr>
<tr><td colspan="2" rowspan="2">Course Code</td><td rowspan="2">Course Name</td><td colspan="3">Hours/Week</td><td>Credit</td><td colspan="3">Maximum Marks</td></tr>
<tr><td>L</td><td>T</td><td>P</td><td>C</td><td>CA</td><td>ES</td><td>Total</td></tr>
<tr><td colspan="2">07140304C</td><td>MICROPROCESSOR AND MICROCONTROLLERS</td><td>3</td><td>1</td><td>0</td><td>4</td><td>50</td><td>50</td><td>100</td></tr>
<tr><td colspan="2">Objective(s)</td><td colspan="7">Study the architecture and Instruction set of 8085 and 8086, develop assembly language programs in 8085 and 8086, design and understand multiprocessor configurations, different peripheral devices and their interfacing to 8085/8086, architecture and programming of 8051 microcontroller.</td></tr>
<tr><td>1</td><td colspan="5">THE 8085 MICROPROCESSOR</td><td>Total Hrs</td><td colspan="3">9</td></tr>
<tr><td colspan="9">Introduction to 8085 – Microprocessor architecture – Instruction set – Programming the 8085 – Addressing mode interrupts.</td></tr>
<tr><td>2</td><td colspan="5">8086 MICROPROCESSOR</td><td>Total Hrs</td><td colspan="3">9</td></tr>
<tr><td colspan="9">Intel 8086 microprocessor – Architecture – Instruction set and assembler directives.</td></tr>
<tr><td>3</td><td colspan="5">8086 ASSEMBLY LANGUAGE</td><td>Total Hrs</td><td colspan="3">9</td></tr>
<tr><td colspan="9">Addressing modes – Assembly language programming – Interrupts and interrupt service routines.</td></tr>
<tr><td>4</td><td colspan="5">I/O INTERFACING</td><td>Total Hrs</td><td colspan="3">9</td></tr>
<tr><td colspan="9">Memory Interfacing and I/O interfacing - Parallel communication interface – Serial communication interface – Timer – Interrupt controller – DMA controller – Programming and applications.</td></tr>
<tr><td>5</td><td colspan="5">MICROCONTROLLERS</td><td>Total Hrs</td><td colspan="3">9</td></tr>
<tr><td colspan="9">Architecture of 8051 – Signals – Operational features – Memory and I/O addressing – Interrupts – Instruction set – Applications.</td></tr>
<tr><td colspan="7">Total hours to be taught</td><td colspan="2">45</td></tr>
<tr><td colspan="9">Text book (s) :</td></tr>
<tr><td>1</td><td colspan="8">Ramesh S.Gaonkar, “Microprocessor - Architecture, Programming and Applications with the 8085”, Penram International publishing private limited, fifth edition.</td></tr>
<tr><td>2</td><td colspan="8">A.K. Ray & K.M.Bhurchandi, “Advanced Microprocessors and peripherals- Architectures, Programming and Interfacing”, TMH, 2002 reprint.</td></tr>
<tr><td colspan="9">Reference(s):</td></tr>
<tr><td>1</td><td colspan="8">Douglas V.Hall, “Microprocessors and Interfacing: Programming and Hardware”, TMH, Third edition</td></tr>
<tr><td>2</td><td colspan="8">Yu-cheng Liu, Glenn A.Gibson, “Microcomputer systems: The 8086 / 8088 Family architecture, Programming and Design”, PHI 2003.</td></tr>
<tr><td>3</td><td colspan="8">Mohamed Ali Mazidi, Janice Gillispie Mazidi, “The 8051 microcontroller and embedded systems”, Pearson education, 2004.</td></tr>
</table>

<table>
<tr><td colspan="8">K.S.Rangasamy College of Technology - Autonomous Regulation</td><td>R 2007</td></tr>
<tr><td colspan="2">Department</td><td colspan="2">Computer Science and Engineering</td><td colspan="2">Programme Code & Name</td><td colspan="3">14 : B.E. Computer Science and Engineering</td></tr>
<tr><td colspan="9">Semester III</td></tr>
<tr><td colspan="2" rowspan="2">Course Code</td><td rowspan="2">Course Name</td><td colspan="3">Hours/Week</td><td>Credit</td><td colspan="3">Maximum Marks</td></tr>
<tr><td>L</td><td>T</td><td>P</td><td>C</td><td>CA</td><td>ES</td><td>Total</td></tr>
<tr><td colspan="2">07140305C</td><td>OPERATING SYSTEM</td><td>3</td><td>0</td><td>0</td><td>3</td><td>50</td><td>50</td><td>100</td></tr>
<tr><td colspan="2">Objective(s)</td><td colspan="7">To know the components of an operating system, to have the thorough knowledge of process management and to have a thorough knowledge of storage management.</td></tr>
<tr><td>1</td><td colspan="5">OVERVIEW OF OS</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">Introduction - Mainframe systems – Desktop Systems – Multiprocessor Systems – Distributed Systems – Clustered Systems – Real Time Systems – Handheld Systems - Hardware Protection - System Components – Operating System Services – System Calls – System Programs - Process Concept – Process Scheduling – Operations on Processes – Cooperating Processes – Inter-process Communication.</td></tr>
<tr><td>2</td><td colspan="5">PROCESS MANAGEMENT</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">Threads – Overview – Threading issues - CPU Scheduling – Basic Concepts – Scheduling Criteria – Scheduling Algorithms – Multiple-Processor Scheduling – Real Time Scheduling - The Critical-Section Problem – Synchronization Hardware – Semaphores – Classic problems of Synchronization – Critical regions – Monitors.</td></tr>
<tr><td>3</td><td colspan="5">PROCESS AND STORAGE MANAGEMENT</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">System Model – Deadlock Characterization – Methods for handling Deadlocks -Deadlock Prevention – Deadlock avoidance – Deadlock detection – Recovery from Deadlocks - Storage Management – Swapping – Contiguous Memory allocation – Paging – Segmentation – Segmentation with Paging.</td></tr>
<tr><td>4</td><td colspan="5">MEMEORY MANAGEMENT</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">Virtual Memory – Demand Paging – Process creation – Page Replacement – Allocation of frames – Thrashing - File Concept – Access Methods – Directory Structure – File System Mounting – File Sharing – Protection.</td></tr>
<tr><td>5</td><td colspan="5">FILE SYSTEM</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">File System Structure – File System Implementation – Directory Implementation – Allocation Methods – Free-space Management. - Disk Structure – Disk Scheduling – Disk Management – Swap-Space Management.- Design principles - Case Study Linux System Kernel Model.</td></tr>
<tr><td colspan="7">Total hours to be taught</td><td colspan="2">45</td></tr>
<tr><td colspan="9">Text book (s) :</td></tr>
<tr><td>1</td><td colspan="8">Abraham Silberschatz, Peter Baer Galvin and Greg Gagne, “Operating System Concepts”, Sixth Edition, John Wiley & Sons (ASIA) Pvt. Ltd, 2003.</td></tr>
<tr><td colspan="9">Reference(s):</td></tr>
<tr><td>1</td><td colspan="8">Harvey M. Deitel, “Operating Systems”, Second Edition, Pearson Education Pvt. Ltd, 2002.</td></tr>
<tr><td>2</td><td colspan="8">Andrew S. Tanenbaum, “Modern Operating Systems”, Prentice Hall of India Pvt. Ltd, 2003.</td></tr>
<tr><td>3</td><td colspan="8">William Stallings, “Operating System”, Prentice Hall of India, 4th Edition, 2003.</td></tr>
</table>

<table>
<tr><td colspan="8">K.S.Rangasamy College of Technology - Autonomous Regulation</td><td>R 2007</td></tr>
<tr><td colspan="2">Department</td><td colspan="2">Computer Science and Engineering</td><td colspan="2">Programme Code & Name</td><td colspan="3">14 : B.E. Computer Science and Engineering</td></tr>
<tr><td colspan="9">Semester III</td></tr>
<tr><td colspan="2" rowspan="2">Course Code</td><td rowspan="2">Course Name</td><td colspan="3">Hours/Week</td><td>Credit</td><td colspan="3">Maximum Marks</td></tr>
<tr><td>L</td><td>T</td><td>P</td><td>C</td><td>CA</td><td>ES</td><td>Total</td></tr>
<tr><td colspan="2">07140306C</td><td>SOFTWARE ENGINEERING</td><td>3</td><td>0</td><td>0</td><td>3</td><td>50</td><td>50</td><td>100</td></tr>
<tr><td colspan="2">Objective(s)</td><td colspan="7">To be aware of different life cycle models, Requirement dictation process, Analysis modeling and specification, Architectural and detailed design methods, Implementation and testing strategies, Verification and validation techniques, Project planning and management and Use of CASE tools.</td></tr>
<tr><td>1</td><td colspan="5">SOFTWARE PROCESS</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">Introduction –S/W Engineering Paradigm – life cycle models (water fall, incremental, spiral, WINWIN spiral, evolutionary, prototyping, object oriented) -system engineering hierarchy.</td></tr>
<tr><td>2</td><td colspan="5">SOFTWARE REQUIREMENTS</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">Requirement engineering task – Initiating the requirement Engineering process – Eliciting Requirement Analysis and modeling – data, functional, scenario based modeling, class based modeling and behavioral models.</td></tr>
<tr><td>3</td><td colspan="5">DESIGN CONCEPTS AND PRINCIPLES</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">Design process and concepts – design model. Architectural design – software architecture – data design – architectural design – transform and transaction mapping – user interface design – user interface design principles.</td></tr>
<tr><td>4</td><td colspan="5">TESTING</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">Taxonomy of software testing – levels – types of s/w test – black box testing – white box testing – basis path testing – testing boundary conditions – control flow structure testing - S/W testing strategies – strategic approach and issues - unit testing – integration testing – regression – validation testing – system testing.</td></tr>
<tr><td>5</td><td colspan="5">SOFTWARE CONFIGURATION MANAGEMENT</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">The SCM Repository-SCM process. Building block for CASE – A Taxonomy of CASE tools.</td></tr>
<tr><td colspan="7">Total hours to be taught</td><td colspan="2">45</td></tr>
<tr><td colspan="9">Text book (s) :</td></tr>
<tr><td>1</td><td colspan="8">Roger S.Pressman, Software engineering- A practitioner’s Approach, McGraw-Hill International Edition, 6th edition, 2001.</td></tr>
<tr><td colspan="9">Reference(s):</td></tr>
<tr><td>1</td><td colspan="8">Ian Sommerville, Software engineering, Pearson education Asia, 6th edition, 2000.</td></tr>
<tr><td>2</td><td colspan="8">Pankaj Jalote- An Integrated Approach to Software Engineering, Springer Verlag, 1997.</td></tr>
<tr><td>3</td><td colspan="8">James F Peters and Witold Pedryez, “Software Engineering – An Engineering Approach”, John Wiley and Sons, New Delhi, 2000.</td></tr>
</table>

<table>
<tr><td colspan="7">K.S.Rangasamy College of Technology - Autonomous Regulation</td><td>R 2007</td></tr>
<tr><td>Department</td><td colspan="2">Computer Science and Engineering</td><td colspan="2">Programme Code & Name</td><td colspan="3">14 : B.E. Computer Science and Engineering</td></tr>
<tr><td colspan="8">Semester III</td></tr>
<tr><td rowspan="2">Course Code</td><td rowspan="2">Course Name</td><td colspan="3">Hours/Week</td><td>Credit</td><td colspan="3">Maximum Marks</td></tr>
<tr><td>L</td><td>T</td><td>P</td><td>C</td><td>CA</td><td>ES</td><td>Total</td></tr>
<tr><td>07140307P</td><td>DATA STRUCTURES LABORATORY</td><td>0</td><td>0</td><td>3</td><td>2</td><td>50</td><td>50</td><td>100</td></tr>
<tr><td>Objective(s)</td><td colspan="7">To teach the students to write programs in C , various data structures as Abstract Data Types to solve problems using the ADTs.</td></tr>
<tr><td colspan="8">List of experiments</td></tr>
<tr><td colspan="8">1. Array implementation of List Abstract Data Type (ADT)
2. Linked list implementation of List ADT
3. Cursor implementation of List ADT
4. Array implementations of Stack ADT
5. Linked list implementations of Stack ADT
6. Implementation of stack applications:
(a) Program for ‘Balanced Paranthesis’
(b) Program for ‘Evaluating Postfix Expressions’
7. Queue ADT
8. Search Tree ADT - Binary Search Tree
9. Heap Sort
10. Quick Sort
11. Implement Doubly Linked List using C with the following operations:
i) Find ii) Insert iii) Delete iv) Display.
12. Write a C Program to Implement Insertion sort.
13. Write a C Program to Implement Shell sort.*
14. Write a C program to implement the following Binary tree Traversals.*
i) Inorder ii) Preorder iii) Postorder
15. Write a C program to implement the Linear search technique.*</td></tr>
</table>

<table>
<tr><td colspan="7">K.S.Rangasamy College of Technology - Autonomous Regulation</td><td>R 2007</td></tr>
<tr><td>Department</td><td colspan="2">Computer Science and Engineering</td><td colspan="2">Programme Code & Name</td><td colspan="3">14 : B.E. Computer Science and Engineering</td></tr>
<tr><td colspan="8">Semester III</td></tr>
<tr><td rowspan="2">Course Code</td><td rowspan="2">Course Name</td><td colspan="3">Hours/Week</td><td>Credit</td><td colspan="3">Maximum Marks</td></tr>
<tr><td>L</td><td>T</td><td>P</td><td>C</td><td>CA</td><td>ES</td><td>Total</td></tr>
<tr><td>07140308P</td><td>MICROPROCESSOR AND MICROCONTROLLERS LABORATORY</td><td>0</td><td>0</td><td>3</td><td>2</td><td>50</td><td>50</td><td>100</td></tr>
<tr><td>Objective(s)</td><td colspan="7">Develop an ALP and perform the Arithmetic operations in 8085,perform the Arithmetic operations in 8086,the Arithmetic operations in 8051,Implement the program for code conversions, stepped motor speed control using 8051.</td></tr>
<tr><td colspan="8">List of experiments</td></tr>
<tr><td colspan="8">1. Implement an ALP for adding/Subtraction two 8-bit numbers with carry and execute in 8085 kit.
2. Implement an ALP for multiplying and dividing Two 8-bit numbers and execute in 8085 kit.
3. Implement an ALP for adding/Subtraction two 16-bit numbers and execute in 8085 kit
4. Implement an ALP to convert Hexa decimal to BCD in 8085 microprocessor.
5. Implement an ALP to convert BCD to Hexa decimal in 8085 microprocessor
6. Implement an ALP for BCD addition /subtraction and execute in 8085 Kit.
7. Implement an ALP for sorting the given array in ascending order and execute in 8086 kit.
8. Implement an ALP for finding the smallest and largest element in the array and execute in 8086 kit.
9. Implement an ALP for finding the number of odd and even number in the array and execute n 8086 kit.
10. Implement an ALP for finding the number of positive and negative number in the array and execute in 8086 kit.
11. Implement an ALP for stepper motor control using 8085 kit
12. Implement an ALP to generate 1 KHz square wave in DAC using 8086 kit.
13. Implement an ALP for finding the largest element in the given array and execute in 8051 kit. *
14. Implement an ALP for adding/Subtraction two 8-bit numbers with carry and execute in 8051 kit.*
15. Implement an ALP for multiplication and division of two 8-bit numbers and execute in 8051 kit. *</td></tr>
</table>

K.S.Rangasamy College of Technology - Autonomous Regulation								R 2007
Department	Computer Science and Engineering	Programme Code & Name			14 : B.E. Computer Science and Engineering			
Semester III								
Course Code	Course Name	Hours/Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07140309P	OPERATING SYSTEM LABORATORY	0	0	3	2	50	50	100
Objective(s)	Provides a Knowledge in Unix. Understanding the concepts of OS and Implement in C through Unix.							

List of experiments

1. Shell programming
   - command syntax
   - write simple functions
   - basic tests
2. Shell programming
   - loops g
   - patterns
   - expansions
   - substitutions
3. Write programs using the following system calls of UNIX operating system:
   fork, exec, getpid, exit, wait, close, stat, opendir, readdir
4. Write programs using the I/O system calls of UNIX operating system (open, read, write, etc)
5. Write C programs to simulate UNIX commands like ls, grep, etc.
6. 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
7. 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
8. Implement the Producer – Consumer problem using semaphores.

K.S.Rangasamy College of Technology - Autonomous Regulation								R 2007
Department	Computer Science and Engineering	Programme Code & Name				14 : B.E. Computer Science and Engineering		
Semester III								
Course Code	Course Name	Hours / Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07140310P	COMPREHENSION II	0	0	3	0	100	00	100
Objective(s)	Comprehending the semester subjects studies and improving the technical knowledge of the students. Improving the skill level of Engineering, Technology and Applied Science students and improving the employability of students in placement interviews.							
1	For each subject 200 Keywords/important words or terms (5 units x 40 words) are to be prepared using the students.							
2	These 200 Keywords are to be printed in double column (2 x 50 words) and in 2 pages and is to be handled over each student for all the subjects.							
3	The staff who handled the subject in the current semester will handle their discussion period (3 periods / semester) as given below.							
4	The staff will question the students using 'W' and 'H' type questions linking the keywords.							
5	In a similar way the students have to prepare themselves for all the keywords.							
6	Each test will carry 100 questions and two hours duration. The questions will be of objective type: 'W' and 'H' type questions by attaching with keywords.							
7	Based on Test-I and Test-II, sessional marks (maximum 50 marks) will be awarded.							
8	Test-III will be held for all the units and all the subjects. The passing norms will be similar as other subjects (i.e. minimum 50/100 marks)							

Schedule for Conduct of Comprehension Subject		
Total No of weeks planned:10	Total No of subjects: 5 to 7	Total duration per week: 3 periods

Week No	Duration: 1½ period Subject No (No of units)	Duration: 1½ period Subject No (No of units)
W1	S1(3)	S2(3)
W2	S3(3)	S4(3)
W3	S5(3)	S6(3)
W4	Test-I (Portion: 3 units in each subject)	
W5	S1(2)	S2(2)
W6	S3(2)	S4(2)
W7	S5(2)	S6(2)
W8	Test-II (Portion: 2 units in each subject)	
W9	Discussion	
W10	Test-III (All 5 units and all the subjects)	

<table>
<tr><td colspan="7">K.S.Rangasamy College of Technology - Autonomous Regulation</td><td>R 2007</td></tr>
<tr><td>Department</td><td colspan="2">Computer Science and Engineering</td><td colspan="2">Programme Code & Name</td><td colspan="3">14 : B.E. Computer Science and Engineering</td></tr>
<tr><td colspan="8">Semester III</td></tr>
<tr><td rowspan="2">Course Code</td><td rowspan="2">Course Name</td><td colspan="3">Hours / Week</td><td>Credit</td><td colspan="3">Maximum Marks</td></tr>
<tr><td>L</td><td>T</td><td>P</td><td>C</td><td>CA</td><td>ES</td><td>Total</td></tr>
<tr><td>07140311P</td><td>CAREER COMPETENCY DEVELOPMENT I</td><td>0</td><td>0</td><td>2</td><td>0</td><td>100</td><td>00</td><td>100</td></tr>
<tr><td>Objective(s)</td><td colspan="7">Improving the skill level of students , making the students competent with facing Interviews and attending competitive exams thereby enhancing the employability of students</td></tr>
<tr><td>Skills sets to be improved</td><td colspan="7">a. Aptitude skills
• Arithmetic ability
• Verbal Reasoning
• Non verbal Reasoning
b. Programming skills
• C language (All Branches)
• OOPS concepts and C++ (Circuit Branches - EEE, ECE,CSE,IT and BT)
• Data Structures (Circuit Branches - EEE,ECE,CSE,IT and BT))
c. Written Communication Skills
• Comprehension
• Grammar
• Essay Writing
• Technical Report Writing
• Technical paper Writing
d. Oral Communication Skills
• News Reading
• Informing a News item
• Self introduction
• 2 minutes talk – Informed
• 2 minutes talk - Extempore
e. Technical Paper Presentation
• Presenting a paper on recent topics
f. Group Interaction
• Debate
• Group Discussion – Informed Topic
• Group Discussion – Topic on the spot
g. Technical Interview Skills
• Basic MPC knowledge
• Broad Knowledge of the branch
• Indepth knowledge on specific subjects of interest
h. HR Interview Skills
• Adoptability viii. Self development
• Creativity ix. Questioning
• Flexibility
• Achievement orientation
• Continuous learning
• Hardworking nature
• Decisiveness</td></tr>
<tr><td>Focus</td><td colspan="7">The focus of CCD is to develop these in three semesters (CCD-I, II and III) and reinforce them in another two semesters (CCD IV and V).</td></tr>
<tr><td>Execution</td><td colspan="7">Total No. of weeks : 12
3 Hrs/week and 2 credits
Only Continuous Assessment and No End Semester examination.
Evaluation based on written test, oral test and technical paper presentation.
Every 20 students should be engaged by a staff member during communication hour and oral test
Every 30 students should be monitored by a staff member to conduct written test.</td></tr>
</table>

Schedule	Week	Activity
	1	Training
	2	Training
	3	Evaluation I - Written
	4	Evaluation I - Oral
	5	Training
	6	Evaluation II - Written
	7	Evaluation II - Oral
	8	Training
	9	Evaluation III - Written
	10 - 12	Evaluation III - Oral
Evaluation	Evaluation I	60 marks(average of 3 tests)
	Evaluation II	20 marks
	Evaluation III	20 marks
	Total	100 marks

<table>
<tr><td colspan="8">K.S.Rangasamy College of Technology - Autonomous Regulation</td><td>R 2007</td></tr>
<tr><td colspan="2">Department</td><td colspan="3">Computer Science and Engineering</td><td colspan="2">Programme Code & Name</td><td colspan="2">14 : B.E. Computer Science and Engineering</td></tr>
<tr><td colspan="9">Semester IV</td></tr>
<tr><td colspan="2" rowspan="2">Course Code</td><td colspan="2" rowspan="2">Course Name</td><td colspan="3">Hours/Week</td><td>Credit</td><td colspan="3">Maximum Marks</td></tr>
<tr><td>L</td><td>T</td><td>P</td><td>C</td><td>CA</td><td>ES</td><td>Total</td></tr>
<tr><td colspan="2">07140401C</td><td colspan="2">DIGITAL SIGNAL PROCESSING</td><td>3</td><td>1</td><td>0</td><td>4</td><td>50</td><td>50</td><td>100</td></tr>
<tr><td colspan="2">Objective(s)</td><td colspan="7">To have an overview of signals and systems., study DFT & FFT, the design of IIR filters, the design of FIR filters , the effect of finite word lengths & applications of DSP.</td></tr>
<tr><td>1</td><td colspan="5">SIGNALS AND SYSTEMS</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">Basic elements of digital signal Processing –Concept of frequency in continuous time and discrete time signals –Sampling theorem –Discrete time signals. Discrete time systems –Analysis of Linear time invariant systems – Z transform –Convolution and correlation.</td></tr>
<tr><td>2</td><td colspan="5">FAST FOURIER TRANSFORMS</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">Introduction to DFT – Efficient computation of DFT Properties of DFT – FFT algorithms – Radix-2 – Decimation in Time – Decimation in Frequency algorithms.</td></tr>
<tr><td>3</td><td colspan="5">IIR FILTER DESIGN</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">Structure of IIR – System Design of Discrete time IIR filter from continuous time filter – IIR filter design by Impulse Invariance. Bilinear transformation – Approximation derivatives.</td></tr>
<tr><td>4</td><td colspan="5">FIR FILTER DESIGN</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">Symmetric & Antisymteric FIR filters – Linear phase filter – Windowing technique – Rectangular, Kaiser windows – Structure for FIR systems.</td></tr>
<tr><td>5</td><td colspan="5">FIXED WORD LENGTH EFFECTS IN DIGITAL FILTERS</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">Number representation – types, Quantization Noise – Truncation – Rounding – Error due to truncation and rounding, Input quantisation ever – steady state input noise power – steady state output noise power, Application of DSP – Model of speech wave form – Vocoders.</td></tr>
<tr><td colspan="8">Total hours to be taught</td><td>45</td></tr>
<tr><td colspan="9">Text book (s) :</td></tr>
<tr><td>1</td><td colspan="8">John G Proakis and Dimtris G Manolakis, “Digital Signal Processing Principles, Algorithms and Application”, PHI/Pearson Education, 2000, 3rd Edition.</td></tr>
<tr><td colspan="9">Reference(s):</td></tr>
<tr><td>1</td><td colspan="8">Alan V Oppenheim, Ronald W Schafer and John R Buck, “Discrete Time Signal Processing”, PHI/Pearson Education, 2000, 2nd Edition.</td></tr>
<tr><td>2</td><td colspan="8">Johny R.Johnson, “Introduction to Digital Signal Processing”, Prentice Hall of India/Pearson Education, 2002.</td></tr>
<tr><td>3</td><td colspan="8">Sanjit K.Mitra, “Digital Signal Processing: A Computer – Based Approach”, Tata McGraw-Hill, 2001, Second Edition.</td></tr>
</table>

K.S.Rangasamy College of Technology - Autonomous Regulation								R 2007
Department	Computer Science and Engineering		Programme Code & Name			14 : B.E. Computer Science and Engineering		
Semester IV								
Course Code	Course Name	Hours/Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07140402C	DISCRETE MATHEMATICS	3	2	0	4	50	50	100
Objective(s)	At the end of the course, students would have knowledge of the concepts needed to test the logic of a program, gain knowledge which has application in expert system, data base and a basic for the prolog language. An understanding in identifying patterns on many levels, be aware of a class of functions which transform a finite set into another finite set which relates to input output functions in computer science. Exposure to concepts and properties of algebraic structures such as semi groups, monoids and groups.							
1	PROPOSITIONAL CALCULUS				Total Hrs	12		
Propositions – Logical connectives – Compound propositions – Conditional and biconditional propositions – Truth tables – Tautologies and contradictions – Contrapositive – Logical equivalences and implications – DeMorgan's Laws - Normal forms – Principal conjunctive and disjunctive normal forms – Rules of inference – Arguments - Validity of arguments.								
2	PREDICATE CALCULUS				Total Hrs	12		
Predicates – Statement function – Variables – Free and bound variables – Quantifiers – Universe of discourse – Logical equivalences and implications for quantified statements – Theory of inference – The rules of universal specification and generalization – Validity of arguments.								
3	SET THEORY				Total Hrs	12		
Basic concepts – Notations – Subset – Algebra of sets – The power set – Ordered pairs and Cartesian product – Relations on sets –Types of relations and their properties – Relational matrix and the graph of a relation – Equivalence relations –functions – Classification of functions –Type of functions - Examples – Composition of functions – Inverse functions.								
4	LATTICE & BOOLEAN ALGEBRA				Total Hrs	12		
Partial ordering – Poset – Hasse diagram – Lattices and their properties – sublattices - Boolean Algebra – representation and minimization of Boolean function.								
5	GROUPS				Total Hrs	12		
Algebraic systems – Definitions – Examples – Properties – Semigroups – Monoids – Homomorphism – Sub semigroups and Submonoids - Cosets and Lagrange's theorem – Normal subgroups.								
Total hours to be taught						60		
Text book (s) :								
1	Trembly J.P and Manohar R, "Discrete Mathematical Structures with Applications to Computer Science", Tata McGraw–Hill Pub. Co. Ltd, New Delhi, 2003.							
2	Ralph. P. Grimaldi, "Discrete and Combinatorial Mathematics: An Applied Introduction", Fourth Edition, Pearson Education Asia, Delhi, 2002.							
Reference(s):								
1	Bernard Kolman, Robert C. Busby, Sharan Cutler Ross, "Discrete Mathematical Structures", Fourth Indian reprint, Pearson Education Pvt Ltd., New Delhi, 2003.							
2	Kenneth H.Rosen, "Discrete Mathematics and its Applications", Fifth Edition, Tata McGraw – Hill Pub. Co. Ltd., New Delhi, 2003.							
3	Richard Johnsonbaugh, "Discrete Mathematics", Fifth Edition, Pearson Education Asia, New Delhi, 2002.							

<table>
<tr><td colspan="7">K.S.Rangasamy College of Technology - Autonomous Regulation</td><td>R 2007</td></tr>
<tr><td colspan="2">Department</td><td colspan="2">Computer Science and Engineering</td><td colspan="2">Programme Code & Name</td><td colspan="2">14 : B.E. Computer Science and Engineering</td></tr>
<tr><td colspan="8">Semester IV</td></tr>
<tr><td colspan="2" rowspan="2">Course Code</td><td rowspan="2">Course Name</td><td colspan="3">Hours/Week</td><td>Credit</td><td colspan="2">Maximum Marks</td></tr>
<tr><td>L</td><td>T</td><td>P</td><td>C</td><td>CA</td><td>ES</td><td>Total</td></tr>
<tr><td colspan="2">07140403C</td><td>COMPUTER ARCHITECTURE</td><td>3</td><td>1</td><td>0</td><td>4</td><td>50</td><td>50</td><td>100</td></tr>
<tr><td colspan="2">Objective(s)</td><td colspan="7">To have a through understanding of the basic structure, operation of a digital computer, the operation of the arithmetic unit including the algorithms & implementation of fixed-point ,floating-point addition, subtraction, multiplication & division, the different types of control ,the concept of pipelining, the hierarchical memory system including cache memories and virtual memory, the different ways of communicating with I/O devices and standard I/O interfaces.</td></tr>
<tr><td>1</td><td colspan="4">BASIC STRUCTURE OF COMPUTERS</td><td colspan="2">Total Hrs</td><td colspan="2">10</td></tr>
<tr><td colspan="8">Functional units - Basic operational concepts - Bus structures - Software performance – Memory locations and addresses – Memory operations – Instruction and instruction sequencing – Addressing modes – Assembly language – Basic I/O operations – Stacks and queues.</td></tr>
<tr><td>2</td><td colspan="4">ARITHMETIC UNIT</td><td colspan="2">Total Hrs</td><td colspan="2">8</td></tr>
<tr><td colspan="8">Addition and subtraction of signed numbers – Design of fast adders – Multiplication of positive numbers - Signed operand multiplication and fast multiplication – Integer division – Floating point numbers and operations.</td></tr>
<tr><td>3</td><td colspan="4">BASIC PROCESSING UNIT</td><td colspan="2">Total Hrs</td><td colspan="2">9</td></tr>
<tr><td colspan="8">Fundamental concepts – Execution of a complete instruction – Multiple bus organization – Hardwired control – Microprogrammed control - Pipelining – Basic concepts – Data hazards – Instruction hazards – Influence on Instruction sets – Data path and control consideration – Superscalar operation.</td></tr>
<tr><td>4</td><td colspan="4">MEMORY SYSTEM</td><td colspan="2">Total Hrs</td><td colspan="2">9</td></tr>
<tr><td colspan="8">Basic concepts – Semiconductor RAMs - ROMs – Speed - size and cost – Cache memories - Performance consideration – Virtual memory- Memory Management requirements – Secondary storage.</td></tr>
<tr><td>5</td><td colspan="4">I/O ORGANIZATION</td><td colspan="2">Total Hrs</td><td colspan="2">9</td></tr>
<tr><td colspan="8">Accessing I/O devices – Interrupts – Direct Memory Access – Buses – Interface circuits – Standard I/O Interfaces (PCI, SCSI, USB).</td></tr>
<tr><td colspan="6">Total hours to be taught</td><td colspan="2">45</td></tr>
<tr><td colspan="8">Text book (s) :</td></tr>
<tr><td>1</td><td colspan="7">Carl Hamacher, Zvonko Vranesic and Safwat Zaky, 5th Edition “Computer Organization”, McGraw-Hill, 2002.</td></tr>
<tr><td colspan="8">Reference(s):</td></tr>
<tr><td>1</td><td colspan="7">William Stallings, “Computer Organization and Architecture – Designing for Performance”, 6th Edition, Pearson Education, 2003.</td></tr>
<tr><td>2</td><td colspan="7">David A.Patterson and John L.Hennessy, “Computer Organization and Design: The hardware / software interface”, 2nd Edition, Morgan Kaufmann, 2002.</td></tr>
<tr><td>3</td><td colspan="7">John P.Hayes, “Computer Architecture and Organization”, 3rd Edition, McGraw Hill, 1998.</td></tr>
</table>

K.S.Rangasamy College of Technology - Autonomous Regulation								R 2007
Department	Computer Science and Engineering	Programme Code & Name			14 : B.E. Computer Science and Engineering			
Semester IV								
Course Code	Course Name	Hours/Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07140404C	OBJECT ORIENTED PROGRAMMING AND C ++	3	1	0	4	50	50	100
Objective(s)	Students study and understand the concepts of Object oriented Programming and also designing classes in object oriented programming. It makes student to write simple applications using C++.							
1	INTRODUCTION				Total Hrs	8		
Object-oriented paradigm – Elements of object oriented programming – Merits and demerits of OO methodology – C++ fundamentals – Data types, Operators and expressions – Control flow – Arrays and strings.								
2	CLASSES AND OBJECTS				Total Hrs	10		
Functions – Function over loading – Structures and Unions – Pointers – Runtime binding – Classes and objects – Friend functions and friend classes – Static data and member functions.								
3	CONSTRUCTORS AND OPERATOR OVERLOADING				Total Hrs	9		
Constructors – Types of constructors – Destructors, Dynamic objects – Pointers to objects – this pointer, Operator overloading.								
4	INHERITANCE AND TEMPLATES				Total Hrs	9		
Inheritance – Types of inheritance, Virtual functions – Pure virtual functions – Abstract classes, Generic programming with templates – Function templates – Class templates.								
5	FILE HANDLING AND EXCEPTION HANDLING				Total Hrs	9		
C++ streams – Console streams – Console stream classes-Formatted and unformatted console I/O operations, manipulators, Files – File streams classes – File modes – File pointers and manipulations – Sequential and random access – Exception handling.								
Total hours to be taught						45		
Text book (s) :								
1	K.R.Venugopal, Rajkumar Buyya, T.Ravishankar, "Mastering C++", TMH, 2003.							
Reference(s):								
1	E.Balagurusamy " Object Oriented Programming with C++", TMH 2/e.							
2	Yashvanth Kanithkar, "Letus C++", PBP publications.							
3	Bjarne Stroustrup, "The C++ programming language", Addison Wesley, 2000.							

K.S.Rangasamy College of Technology - Autonomous Regulation								R 2007
Department	Computer Science and Engineering	Programme Code & Name			14 : B.E. Computer Science and Engineering			
Semester IV								
Course Code	Course Name	Hours/Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07140405C	MULTIMEDIA SYSTEMS	3	0	0	3	50	50	100
Objective(s)	The graphics techniques and algorithms. The multimedia concepts and various I/O technologies. The students to develop their creativity.							
1	OUTPUT PRIMITIVES				Total Hrs	9		
Introduction - Line - Curve and Ellipse Drawing Algorithms – Attributes – Two-Dimensional Geometric Transformations – Two-Dimensional Clipping and Viewing.								
2	THREE-DIMENSIONAL CONCEPTS				Total Hrs	9		
Three-Dimensional Object Representations – Three-Dimensional Geometric and Modeling Transformations – Three-Dimensional Viewing – Color models – Animation.								
3	MULTIMEDIA SYSTEMS DESIGN				Total Hrs	9		
An Introduction – Multimedia applications – Multimedia System Architecture – Evolving technologies for Multimedia – Defining objects for Multimedia systems – Multimedia Data interface standards – Multimedia Databases.								
4	MULTIMEDIA FILE HANDLING				Total Hrs	9		
Compression & Decompression – Data & File Format standards – Multimedia I/O technologies - Digital voice and audio – Video image and animation – Full motion video – Storage and retrieval Technologies.								
5	HYPERMEDIA				Total Hrs	9		
Multimedia Authoring & User Interface – Hypermedia messaging - Mobile Messaging – Hypermedia message component – Creating Hypermedia message – Integrated multimedia message standards – Integrated Document management – Distributed Multimedia Systems.								
Total hours to be taught						45		
Text book (s) :								
1	Donald Hearn and M.Pauline Baker, “Computer Graphics C Version”, Pearson Education, 2003. (UNIT I : Chapters 1 to 6; UNIT 2: Chapter 9 – 12, 15, 16).							
2	Prabat K Andleigh and Kiran Thakrar, “Multimedia Systems and Design”, PHI, 2003. (UNIT 3 to 5).							
Reference(s):								
1	Judith Jeffcoate, “Multimedia in practice technology and Applications”, PHI, 1998.							
2	Foley, Vandam, Feiner, Huges, “Computer Graphics: Principles & Practice”, Pearson Education, second edition 2003.							

<table>
<tr><td colspan="8">K.S.Rangasamy College of Technology - Autonomous Regulation</td><td>R 2007</td></tr>
<tr><td colspan="2">Department</td><td colspan="2">Computer Science and Engineering</td><td colspan="3">Programme Code & Name</td><td colspan="2">14 : B.E. Computer Science and Engineering</td></tr>
<tr><td colspan="9">Semester IV</td></tr>
<tr><td colspan="2" rowspan="2">Course Code</td><td colspan="2" rowspan="2">Course Name</td><td colspan="3">Hours/Week</td><td>Credit</td><td colspan="3">Maximum Marks</td></tr>
<tr><td>L</td><td>T</td><td>P</td><td>C</td><td>CA</td><td>ES</td><td>Total</td></tr>
<tr><td colspan="2">07140406C</td><td colspan="2">DESIGN AND ANALYSIS OF ALGORITHM</td><td>3</td><td>1</td><td>0</td><td>4</td><td>50</td><td>50</td><td>100</td></tr>
<tr><td colspan="2">Objective(s)</td><td colspan="7">To introduce basic concepts of algorithms, mathematical aspects and analysis of algorithms, sorting and searching algorithms, various algorithmic techniques and algorithm design methods.</td></tr>
<tr><td>1</td><td colspan="4">BASIC CONCEPTS OF ALGORITHMS</td><td colspan="2">Total Hrs</td><td colspan="3">8</td></tr>
<tr><td colspan="9">Introduction – Notion of Algorithm – Fundamentals of Algorithmic Solving – Important Problem types – Fundamentals of the Analysis Framework – Asymptotic Notations and Basic Efficiency Classes.</td></tr>
<tr><td>2</td><td colspan="4">MATHEMATICAL ASPECTS AND ANALYSIS OF ALGORITHMS</td><td colspan="2">Total Hrs</td><td colspan="3">8</td></tr>
<tr><td colspan="9">Mathematical Analysis of Non-recursive Algorithm – Mathematical Analysis of Recursive Algorithm – Example: Fibonacci Numbers – Empirical Analysis of Algorithms – Algorithm Visualization.</td></tr>
<tr><td>3</td><td colspan="4">ANALYSIS OF SORTING AND SEARCHING ALGORITHMS</td><td colspan="2">Total Hrs</td><td colspan="3">10</td></tr>
<tr><td colspan="9">Brute Force – Selection Sort and Bubble Sort – Sequential Search and Brute-force string matching – Divide and conquer – Merge sort – Quick Sort – Binary Search – Binary tree- Traversal and Related Properties – Decrease and Conquer – Insertion Sort – Depth first Search and Breadth First Search.</td></tr>
<tr><td>4</td><td colspan="4">ALGORITHMIC TECHNIQUES</td><td colspan="2">Total Hrs</td><td colspan="3">10</td></tr>
<tr><td colspan="9">Transform and conquer – Presorting – Balanced Search trees – AVL Trees – Heaps and Heap sort – Dynamic Programming – Warshall’s and Floyd’s Algorithm – Optimal Binary Search trees – Greedy Techniques – Prim’s Algorithm – Kruskal’s Algorithm – Dijkstra’s Algorithm – Huffman trees.</td></tr>
<tr><td>5</td><td colspan="4">ALGORITHM DESIGN METHODS</td><td colspan="2">‘</td><td colspan="3">9</td></tr>
<tr><td colspan="9">Backtracking – n-Queen’s Problem – Hamiltonian Circuit problem —- Branch and bound – Assignment problem – Knapsack problem – Traveling salesman problem.</td></tr>
<tr><td colspan="7">Total hours to be taught</td><td colspan="2">45</td></tr>
<tr><td colspan="9">Text book (s) :</td></tr>
<tr><td>1</td><td colspan="8">Anany Levitin, “Introduction to the Design and Analysis of Algorithm”, Pearson Education Asia, 2003.</td></tr>
<tr><td colspan="9">Reference(s):</td></tr>
<tr><td>1</td><td colspan="8">T.H. Cormen, C.E. Leiserson, R.L. Rivest and C. Stein, “Introduction to Algorithms”, PHI Pvt. Ltd., 2001.</td></tr>
<tr><td>2</td><td colspan="8">Sara Baase and Allen Van Gelder, “Computer Algorithms - Introduction to Design and Analysis”, Pearson Education Asia, 2003.</td></tr>
<tr><td>3</td><td colspan="8">A.V.Aho, J.E. Hopcroft and J.D.Ullman, “The Design and Analysis Of Computer Algorithms”, Pearson Education Asia, 2003.</td></tr>
</table>

K.S.Rangasamy College of Technology - Autonomous Regulation								R 2007
Department	Computer Science and Engineering	Programme Code & Name			14 : B.E. Computer Science and Engineering			
Semester IV								
Course Code	Course Name	Hours/Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07140407P	DIGITAL SIGNAL PROCESSING LABORATORY	0	0	3	2	50	50	100
Objective(s)	To learn Mat Lab commands, implement FFT and DFT algorithm, design filter using techniques, design IIR structure.							

List of experiments

1. Study of Matlab Commands.
2. Generation of standard signals.
3. Program on convolution.
4. Program on Correlation.
5. Program on Sampling Theorem.
6. Z & Inverse Z Transform.
7. Implementation of DFT and FFT.
8. IIR filter design by bilinear transformation.
9. IIR filter design by impulse invariant method.
10. Butterworth filter.
11. Chebyshev filter.
12. FIR filter design by rectangular window method.
13. IIR filter structure by direct I form. *
14. IIR filter structure by direct II form. *
15. IIR filter structure by Parallel form. *

* It will be executed and recorded through extra Lab.

K.S.Rangasamy College of Technology - Autonomous Regulation								R 2007
Department	Computer Science and Engineering	Programme Code & Name			14 : B.E. Computer Science and Engineering			
Semester IV								
Course Code	Course Name	Hours/Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07140408P	OBJECT ORIENTED PROGRAMMING LABORATORY	0	0	3	2	50	50	100
Objective(s)	Students to develop list of environment in C++ with object oriented concept							

List of experiments

1. Implementation of Functions
   - Implementation of Call by Value, Call by Address and Call by Reference.
   - Function overloading.
2. Implementation of Simple Classes for understanding objects and member functions.
3. Implementation of friend functions and friend classes.
4. Implementation of Static data and member functions.
5. Implementation of Constructors.
   - Constructor overloading.
   - Copy constructor.
6. Implementation of this pointer.
7. Implementation of operator overloading.
   - Unary operator.
   - Binary operator
8. Implementation of Inheritance.
9. Implementation of virtual functions.
10. Implementation of Templates.
11. Implementation of File handling.
    - Sequential access.
    - Random access.
12. Implementation of Exception handling.
13. Implementation of overloading of new and delete operator. *
14. Implementation of Abstract classes. *
15. Implementation of Exception in inheritance. *

(Or)

Mini Project instead of 13, 14, 15. *

* It will be executed and recorded through extra Lab.

K.S.Rangasamy College of Technology - Autonomous Regulation								R 2007
Department	Computer Science and Engineering	Programme Code & Name			14 : B.E. Computer Science and Engineering			
Semester IV								
Course Code	Course Name	Hours/Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07140409P	MULTIMEDIA AND GRAPHICS LABORATORY	0	0	3	2	50	50	100
Objective(s)	To understand the C graphics, to develop their creativity, to have a hands on experience in image editing and animation and to understand the graphics algorithms.							
List of experiments								

1. To implement Bresenham's algorithms for line, circle and ellipse drawing
2. To perform 2D Transformations such as translation, rotation, scaling, reflection and sharing.
3. To implement Cohen-Sutherland 2D clipping and window-viewport mapping
4. To perform 3D Transformations such as translation, rotation and scaling.
5. To visualize projections of 3D images.
6. To convert between color models.
7. To implement text compression algorithm
8. To implement image compression algorithm
9. To perform animation using any Animation software
10. To perform basic operations on image using any image editing software
11. To implement a mini project in the given area by individual student using flash and 3D Studio Max. *

* It will be executed and recorded through extra Lab.

K.S.Rangasamy College of Technology - Autonomous Regulation								R 2007
Department	Computer Science and Engineering	Programme Code & Name			14 : B.E. Computer Science and Engineering			
Semester IV								
Course Code	Course Name	Hours / Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07140410P	COMPREHENSION III	0	0	3	0	100	00	100
Objective(s)	Comprehending the semester subjects studies and improving the technical knowledge of the students. Improving the skill level of Engineering, Technology and Applied Science students and improving the employability of students in placement interviews.							
1	For each subject 200 Keywords/important words or terms (5 units x 40 words) are to be prepared using the students.							
2	These 200 Keywords are to be printed in double column (2 x 50 words) and in 2 pages and is to be handled over each student for all the subjects.							
3	The staff who handled the subject in the current semester will handle their discussion period (3 periods / semester) as given below.							
4	The staff will question the students using 'W' and 'H' type questions linking the keywords.							
5	In a similar way the students have to prepare themselves for all the keywords.							
6	Each test will carry 100 questions and two hours duration. The questions will be of objective type: 'W' and 'H' type questions by attaching with keywords.							
7	Based on Test-I and Test-II, sessional marks (maximum 50 marks) will be awarded.							
8	Test-III will be held for all the units and all the subjects. The passing norms will be similar as other subjects (i.e. minimum 50/100 marks)							

Schedule for Conduct of Comprehension Subject		
Total No of weeks planned:10	Total No of subjects: 5 to 7	Total duration per week: 3 periods

Week No	Duration: 1½ period Subject No (No of units)	Duration: 1½ period Subject No (No of units)
W1	S1(3)	S2(3)
W2	S3(3)	S4(3)
W3	S5(3)	S6(3)
W4	Test-I (Portion: 3 units in each subject)	
W5	S1(2)	S2(2)
W6	S3(2)	S4(2)
W7	S5(2)	S6(2)
W8	Test-II (Portion: 2 units in each subject)	
W9	Discussion	
W10	Test-III (All 5 units and all the subjects)	

<table>
<tr><td colspan="6">K.S.Rangasamy College of Technology - Autonomous Regulation</td><td colspan="3">R 2007</td></tr>
<tr><td>Department</td><td colspan="2">Computer Science and Engineering</td><td colspan="2">Programme Code & Name</td><td colspan="3">14 : B.E. Computer Science and Engineering</td></tr>
<tr><td colspan="8">Semester IV</td></tr>
<tr><td rowspan="2">Course Code</td><td rowspan="2">Course Name</td><td colspan="3">Hours / Week</td><td>Credit</td><td colspan="3">Maximum Marks</td></tr>
<tr><td>L</td><td>T</td><td>P</td><td>C</td><td>CA</td><td>ES</td><td>Total</td></tr>
<tr><td>07140411P</td><td>CAREER COMPETENCY DEVELOPMENT II</td><td>0</td><td>0</td><td>2</td><td>0</td><td>100</td><td>00</td><td>100</td></tr>
<tr><td>Objective(s)</td><td colspan="7">Improving the skill level of students , making the students competent with facing Interviews and attending competitive exams thereby enhancing the employability of students</td></tr>
<tr><td>Skills sets to be improved</td><td colspan="7">a. Aptitude skills
• Arithmetic ability
• Verbal Reasoning
• Non verbal Reasoning
b. Programming skills
• C language (All Branches)
• OOPS concepts and C++ (Circuit Branches - EEE, ECE,CSE,IT and BT)
• Data Structures (Circuit Branches - EEE,ECE,CSE,IT and BT))
c. Written Communication Skills
• Comprehension
• Grammar
• Essay Writing
• Technical Report Writing
• Technical paper Writing
d. Oral Communication Skills
• News Reading
• Informing a News item
• Self introduction
• 2 minutes talk – Informed
• 2 minutes talk - Extempore
e. Technical Paper Presentation
• Presenting a paper on recent topics
f. Group Interaction
• Debate
• Group Discussion – Informed Topic
• Group Discussion – Topic on the spot
g. Technical Interview Skills
• Basic MPC knowledge
• Broad Knowledge of the branch
• Indepth knowledge on specific subjects of interest
h. HR Interview Skills
• Adoptability
• Creativity
• Flexibility
• Achievement orientation
• Continuous learning
• Hardworking nature
• Decisiveness
• Self development
• Questioning</td></tr>
<tr><td>Focus</td><td colspan="7">The focus of CCD is to develop these in three semesters (CCD-I, II and III) and reinforce them in another two semesters (CCD IV and V).</td></tr>
</table>

<table>
<tr><td>Execution</td><td colspan="2">Total No. of weeks : 12
3 Hrs/week and 2 credits
Only Continuous Assessment and No End Semester examination.
Evaluation based on written test, oral test and technical paper presentation.
Every 20 students should be engaged by a staff member during communication hour and oral test
Every 30 students should be monitored by a staff member to conduct written test.</td></tr>
<tr><td rowspan="11">Schedule</td><td>Week</td><td>Activity</td></tr>
<tr><td>1</td><td>Training</td></tr>
<tr><td>2</td><td>Training</td></tr>
<tr><td>3</td><td>Evaluation I - Written</td></tr>
<tr><td>4</td><td>Evaluation I - Oral</td></tr>
<tr><td>5</td><td>Training</td></tr>
<tr><td>6</td><td>Evaluation II - Written</td></tr>
<tr><td>7</td><td>Evaluation II - Oral</td></tr>
<tr><td>8</td><td>Training</td></tr>
<tr><td>9</td><td>Evaluation III - Written</td></tr>
<tr><td>10 - 12</td><td>Evaluation III - Oral</td></tr>
<tr><td rowspan="4">Evaluation</td><td>Evaluation I</td><td>60 marks(average of 3 tests)</td></tr>
<tr><td>Evaluation II</td><td>20 marks</td></tr>
<tr><td>Evaluation III</td><td>20 marks</td></tr>
<tr><td>Total</td><td>100 marks</td></tr>
</table>

K.S.Rangasamy College of Technology - Autonomous Regulation							R 2007		
Department	Computer Science and Engineering		Program code & Name			14 : B.E. Computer Science and Engineering			
Semester V									
Course Code	Course Name	Hours / Week				Credit	Maximum Marks		
		L	T	P		C	CA	ES	Total
07140501S	PRINCIPLES OF MANAGEMENT (COMMON TO CSE, IT, ECE, BT)	3	0	0		3	50	50	100
Objective(s)	Knowledge on the principles of management is essential for all kinds of people in all kinds of organizations. After studying this course, students will be able to have a clear understanding of the managerial functions like planning, organizing, staffing, leading and controlling. Students will also gain some basic knowledge in international aspect of management.								
1.	HISTORICAL DEVELOPMENT					Total Hrs	9		
Definition of Management – Science or Art – Management and Administration – Development of Management Thought – Contribution of Taylor and Fayol – Functions of Management – Types of Business Organisation.									
2.	PLANNING					Total Hrs	9		
Nature & Purpose – Types of Plans – Steps involved in Planning – Objectives – Setting Objectives – process of Management by Objectives – Strategies, Policies & Planning Premises – Forecasting – Decision making.									
3.	ORGANISING					Total Hrs	9		
Nature and purpose – Formal and informal organization – Organization Chart – Structure and Process – Departmentation by difference strategies – Line and Staff authority – Benefits and limitations – De-Centralization and Delegation of Authority – Staffing – Selection process – Techniques – HRD – Managerial Effectiveness.									
4.	DIRECTING					Total Hrs	9		
Scope – Human Factors – Leadership – Types of Leadership – Motivation – Hierarchy of needs – Motivation Theories – Motivational Techniques – Job Enrichment – Communication – process of Communication – Barriers and Breakdown – Effective Communication – Electronic media in Communication.									
5.	CONTROLLING					Total Hrs	9		
System and process of Controlling – Requirements for effective control – the Budget as Control Technique – Information Technology in Controlling – Use of computers in handling the information – Productivity – Problems and Management – Control of Overall Performance – Direct and preventive Control – Reporting – The Global Environment – Globalization and Liberalization – International Management and Global theory of Management.									
Total hours to be taught							45		
Text book (s):									
1.	Harold Kooritz & Heinz Weihrich, “Essentials of Management”, Tata McGraw-Hill, 1998.								
2.	Joseph L Massie, “Essentials of Management”, Prentice Hall of India, (Pearson) Fourth Edition, 2003.								
Reference(s):									
1.	Tripathy PC And Reddy PN, “Principles of Management”, Tata McGraw Hill, 1999.								
2.	Decenzo David, Robbin Stephen A, “Personnel and Human Reasons Management”, Prentice Hall of India, 1996.								
3.	JAF Stomer, Freeman R. E and Daniel R “Gilbert Management”, Pearson Education, Sixth Edition, 2004.								
4.	Fraidoon Mazda, “Engineering Management”, Addison Wesley, 2000.								
5.	Prasad L.M, “Principles of Management”, Sultan Chand & Sons Ltd, 2003.								

K.S.Rangasamy College of Technology Autonomous Regulation								R 2007
Department	Computer Science and Engineering		Program code & Name			14 : B.E. Computer Science and Engineering		
Semester – V								
Course Code	Course Name	Hours/Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07140502C	COMPUTER NETWORKS	3	0	0	3	50	50	100
Objective(s)	To understand the concepts of data communications, functions of different layers, IEEE standards employed in computer networking, and to make the students to get familiarized with different protocols and network components.							
1	DATA COMMUNICATIONS				Total Hrs	8		
Networks – Components and Categories –Line Configuration – Topologies –Protocols and Standards – ISO / OSI model – Transmission Media – Coaxial Cable – Fiber Optics – Modems .								
2	DATA LINK LAYER				Total Hrs	10		
Error – detection and correction – Parity – LRC – CRC – Hamming code – Flow Control and Error control - Stop and wait – go back-N ARQ – selective repeat ARQ- sliding window – HDLC. - LAN - Ethernet IEEE 802.3 - IEEE 802.4 - IEEE 802.5 – FDDI – Bridges.								
3	NETWORK LAYER				Total Hrs	9		
Internetworks – Circuit Switching – Packet Switching– IP addressing methods – Subnetting –– Routers- Routing Algorithms – Distance Vector Routing – Link State Routing.								
4	TRANSPORT LAYER				Total Hrs	9		
Duties of transport layer – Multiplexing – Demultiplexing – Sockets – User Datagram Protocol (UDP) – Transmission Control Protocol (TCP) – Congestion Control – Quality of services (QOS).								
5	APPLICATION LAYER				Total Hrs	9		
Domain Name Space (DNS) – FTP – HTTP - WWW – Security - Symmetric Key Cryptography – Public Key Cryptography – Privacy Security – Digital Signature.								
Total hours to be taught						45		
Text book (s) :								
1	Behrouz A. Forouzan, “Data communication and Networking Update”, Tata McGraw-Hill, Third Edition, 2006.							
Reference (s) :								
1	James F. Kurose and Keith W. Ross, “Computer Networking: A Top-Down Approach Featuring the Internet”, Pearson Education, 2003.							
2	Larry L.Peterson and Peter S. Davie, “Computer Networks”, Harcourt Asia Pvt. Ltd., Second Edition.							
3	Andrew S. Tanenbaum, “Computer Networks”, PHI, Fourth Edition, 2003.							
4	William Stallings, “Data and Computer Communication”, Sixth Edition, Pearson Education, 2000.							

K.S.Rangasamy College of Technology Autonomous Regulation								R 2007
Department	Computer Science and Engineering		Program code & Name			14 : B.E. Computer Science and Engineering		
Semester – V								
Course Code	Course Name	Hours/Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07140503S	DATABASE MANAGEMENT SYSTEM (Common to CSE,IT)	3	1	0	4	50	50	100
Objective(s)	To learn the fundamentals of data models and to conceptualize, depict a database system using ER diagram and the study of SQL, relational database design techniques which will help in physical DB design and recovery procedure and to have an introductory knowledge about the emerging trends in the area of distributed DB- OO DB- Data mining and Data Warehousing and XML							
1	INTRODUCTION AND CONCEPTUAL MODELING				Total Hrs	9		
Introduction to File and Database systems- Database system structure – Data Models – ER model – Relational Model – Relational Algebra and Calculus.								
2	RELATIONAL MODEL				Total Hrs	9		
SQL – Data definition- Queries in SQL- Updates- Views – Integrity and Security – Relational Database design – Functional dependencies - Normalization for Relational Databases (up to BCNF).								
3	DATA STORAGE AND INDEXING CONCEPTS				Total Hrs	9		
Record storage and Primary file organization- Secondary storage Devices- Operations on Files- Heap File- Sorted Files- Hashing Techniques – Index Structure for files –Different types of Indexes- B-Tree - B+Tree								
4	TRANSACTION MANAGEMENT				Total Hrs	9		
Transaction Processing – Introduction- Need for Concurrency control- Desirable properties of Transaction- Schedule and Recoverability- Serializability – Concurrency Control – Types of Locks- Two Phase locking- Time stamp based concurrency control – Recovery Techniques – Concepts- Immediate Update- Deferred Update - Shadow Paging.								
5	CURRENT TRENDS				Total Hrs	9		
Object Oriented Databases – Need for Complex Data types - OO data Model- Nested relations - Complex Types- Inheritance Reference Types - Distributed databases- Homogenous and Heterogenous- Distributed data Storage – XML – Structure of XML- Data- XML Document- Schema- Querying and Transformation. – Data Mining and Data Warehousing.								
Total hours to be taught						45		
Text book (s) :								
1	Abraham Silberschatz, Henry F. Korth and S. Sudarshan - “Database System Concepts”, Fifth Edition, McGraw-Hill, 2002.							
Reference (s) :								
1	Ramez Elmasri and Shamkant B. Navathe, “Fundamental Database Systems”, Third Edition, Pearson Education, 2003.							
2	Raghu Ramakrishnan, “Database Management System”, Tata McGraw-Hill Publishing Company, 2003.							
3	Hector Garcia–Molina, Jeffrey D.Ullman and Jennifer Widom- “Database System Implementation”- Pearson Education- 2000.							
4	Peter Rob and Corlos Coronel- “Database System, Design, Implementation and Management”, Thompson Learning Course Technology- Fifth edition, 2003.							

<table>
<tr><td colspan="7">K.S.Rangasamy College of Technology - Autonomous Regulation</td><td>R 2007</td></tr>
<tr><td>Department</td><td colspan="2">Computer Science and Engineering</td><td colspan="2">Programme Code & Name</td><td colspan="3">14 : B.E. Computer Science and Engineering</td></tr>
<tr><td colspan="8">Semester V</td></tr>
<tr><td rowspan="2">Course Code</td><td rowspan="2">Course Name</td><td colspan="3">Hours/Week</td><td>Credit</td><td colspan="3">Maximum Marks</td></tr>
<tr><td>L</td><td>T</td><td>P</td><td>C</td><td>CA</td><td>ES</td><td>Total</td></tr>
<tr><td>07140504C</td><td>PROBABILITY AND QUEUING THEORY</td><td>3</td><td>2</td><td>0</td><td>4</td><td>50</td><td>50</td><td>100</td></tr>
<tr><td>Objective(s)</td><td colspan="7">A fundamental knowledge of the basic probability concepts. Have a well – found knowledge of standard distributions which can describe real life phenomena. Acquire skills in handling situations involving more than one random variable and functions of random variables. Understand and characterize phenomena which evolve with respect to time in a probabilistic manner. Be exposed to basic characteristic features of a queuing system and acquire skills in analyzing queuing models.</td></tr>
<tr><td>1</td><td colspan="5">PROBABILITY AND RANDOM VARIABLE</td><td colspan="2">Total Hrs</td><td>12</td></tr>
<tr><td colspan="8">Axioms of probability - Conditional probability - Total probability – Baye’s theorem- Random variable - Probability mass function - Probability density function - Properties.</td></tr>
<tr><td>2</td><td colspan="5">DISCRETE STANDARD DISTRIBUTIONS</td><td colspan="2">Total Hrs</td><td>12</td></tr>
<tr><td colspan="8">Moments - Moment generating functions and their properties, Binomial, Poisson, Geometric, Negative Binomial, and their properties.</td></tr>
<tr><td>3</td><td colspan="5">CONTINUOUS STANDARD DISTRIBUTIONS</td><td colspan="2">Total Hrs</td><td>12</td></tr>
<tr><td colspan="8">Uniform, Exponential, Gamma, Weibull and Normal distributions and their properties.</td></tr>
<tr><td>4</td><td colspan="5">TWO DIMENSIONAL RANDOM VARIABLES</td><td colspan="2">Total Hrs</td><td>12</td></tr>
<tr><td colspan="8">Joint distributions - Marginal and conditional distributions – Covariance - Correlation and regression - - Central limit theorem.</td></tr>
<tr><td>5</td><td colspan="5">QUEUEING THEORY</td><td colspan="2">Total Hrs</td><td>12</td></tr>
<tr><td colspan="8">Markovian models – M/M/1, M/M/C , finite and infinite capacity - M/M/∞ queues - Finite source model - M/G/1 queue (steady state solutions only) – Pollaczek – Khintchine formula – Special cases.</td></tr>
<tr><td colspan="7">Total hours to be taught</td><td>60</td></tr>
<tr><td colspan="8">Text book (s) :</td></tr>
<tr><td>1</td><td colspan="7">Taha, H. A., “Operations Research-An Introduction”, Seventh Edition, Pearson Education Edition Asia, Delhi, 2002.</td></tr>
<tr><td>2</td><td colspan="7">Veerarajan., T., “Probability, Statistics and Random Processes”, Tata McGraw-Hill, Second Edition, New Delhi, 2003.</td></tr>
<tr><td colspan="8">Reference(s):</td></tr>
<tr><td>1</td><td colspan="7">Allen., A.O., “Probability, Statistics and Queuing Theory”, Academic press, New Delhi, 1981.</td></tr>
<tr><td>2</td><td colspan="7">Gross, D. and Harris, C.M., “Fundamentals of Queuing theory”, John Wiley and Sons, Second Edition, New York, 1985.</td></tr>
<tr><td>3</td><td colspan="7">Ross, S., “A first course in probability”, Sixth Edition, Pearson Education, Delhi, 2002.</td></tr>
<tr><td>4</td><td colspan="7">Medhi J., “Stochastic Processes”, New Age Publishers, New Delhi, 1994. (Chapters 2, 3, & 4)</td></tr>
</table>

K.S.Rangasamy College of Technology - Autonomous Regulation								R 2007
Department	Computer Science and Engineering	Programme Code & Name			14 : B.E. Computer Science and Engineering			
Semester V								
Course Code	Course Name	Hours/Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07140505C	VISUAL PROGRAMMING	3	1	0	4	50	50	100
Objective(s)	Introduce the concepts of windows programming and GUI programming using Microsoft Foundation Classes, it helps to enable the students to develop programs and simple applications using Visual C++.							
1	WINDOWS PROGRAMMING				Total Hrs	9		
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 – device context – basic drawing – child window controls.								
2	VISUAL C++ PROGRAMMING – INTRODUCTION				Total Hrs	9		
Application Framework – MFC library – Visual C++ Components – Event Handling – Mapping modes – colors – fonts – modal and modeless dialog – windows common controls – bitmaps.								
3	THE DOCUMENT AND VIEW ARCHITECTURE				Total Hrs	9		
Menus – Keyboard accelerators – rich edit control – toolbars – status bars – reusable frame window base class – separating document from its view – reading and writing SDI and MDI documents – splitter window and multiple views – creating DLLs – dialog based applications.								
4	ACTIVEX AND OBJECT LINKING AND EMBEDDING (OLE)				Total Hrs	9		
ActiveX controls Vs. Ordinary Windows Controls – Installing ActiveX controls – Calendar Control – ActiveX control container programming – create ActiveX control at runtime – Component Object Model (COM) – containment and aggregation Vs. inheritance – OLE drag and drop – OLE embedded component and containers – sample applications.								
5	ADVANCED CONCEPTS				Total Hrs	9		
Database Management with Microsoft ODBC – Structured Query Language – MFC ODBC classes – sample database applications – filter and sort strings – DAO concepts – displaying database records in scrolling view – Threading – VC++ Networking issues – Winsock – WinInet – building a web client – Internet Information Server – ISAPI server extension – chat application – playing and multimedia (sound and video) files.								
Total hours to be taught						45		
Text book (s) :								
1	Charles Petzold, “Windows Programming”, Microsoft press, 1996 (Unit I – Chapter 1-9).							
2	David J.Kruglinski, George Shepherd and Scot Wingo, “Programming Visual C++”, Microsoft press, 1999 (Unit II – V).							
Reference(s):								
1	Steve Holtzner, “Visual C++ 6 Programming”, Wiley Dreamtech India Pvt. Ltd., 2003.							

<table>
<tr><td colspan="8">K.S.Rangasamy College of Technology Autonomous Regulation</td><td>R 2007</td></tr>
<tr><td colspan="2">Department</td><td colspan="2">Computer Science and Engineering</td><td colspan="2">Program code & Name</td><td colspan="3">14 : B.E. Computer Science and Engineering</td></tr>
<tr><td colspan="9">Semester V</td></tr>
<tr><td colspan="2" rowspan="2">Course Code</td><td colspan="2" rowspan="2">Course Name</td><td colspan="3">Hours/Week</td><td>Credit</td><td colspan="3">Maximum Marks</td></tr>
<tr><td>L</td><td>T</td><td>P</td><td>C</td><td>CA</td><td>ES</td><td>Total</td></tr>
<tr><td colspan="2">07140506C</td><td colspan="2">JAVA PROGRAMMING</td><td>3</td><td>0</td><td>0</td><td>3</td><td>50</td><td>50</td><td>100</td></tr>
<tr><td colspan="2">Objective(s)</td><td colspan="7">The student have to learn core java programming concept like class, inheritance etc., network programming in java and java multi threading, RMI, awt packages</td></tr>
<tr><td>1</td><td colspan="5">JAVA FUNDAMENTALS</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">An over view of java – fundamentals of OOPS – Java Features – Constant – Variables – Data types - Operators – Arrays – Strings - vectors – control statements – Class – object – methods -</td></tr>
<tr><td>2</td><td colspan="5">I/O STREAMS AND EXCEPTION HANDLING</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">IO Streams – Inheritance - Interfaces – Multiple Inheritances - Packages – Exception Handling.</td></tr>
<tr><td>3</td><td colspan="5">MULTI THREADING AND AWT</td><td colspan="2">Total Hrs</td><td>10</td></tr>
<tr><td colspan="9">Multi threading - Java Thread model – Main thread – creating thread – creating multiple thread – Thread priority – methods – synchronization – IPC – Applet Life cycle – Graphics and Applet – AWT – Windows Fundamentals – Frames – creating frame window in applet – AWT controls – Layout Manager – Menu – Event Handling.</td></tr>
<tr><td>4</td><td colspan="5">Java Networking and RMI</td><td colspan="2">Total Hrs</td><td>10</td></tr>
<tr><td colspan="9">Sockets – TCP Socket – UDP Socket – RMI – Basics – RMI Layer – Stub, Skeleton - RMI Implementation.</td></tr>
<tr><td>5</td><td colspan="5">Servlet and Swing Programming</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">Server Side Programming – Servlet Architecture – Servelet Get and Post Method – Servlet Life cycle – Container – Executing simple servlet –Java Swing</td></tr>
<tr><td colspan="7">Total hours to be taught</td><td colspan="2">47</td></tr>
<tr><td colspan="9">Text book (s) :</td></tr>
<tr><td>1</td><td colspan="8">Herbert Schildt, "the Java 2: Complete Reference", Fifth edition, TMH, 2002.</td></tr>
<tr><td colspan="9">Reference(s):</td></tr>
<tr><td>1</td><td colspan="8">Patrick Naughton “ Complete Reference Java 2” Tata McGraw Hill , 2003</td></tr>
<tr><td>2</td><td colspan="8">Elliotte Rustry Harold “ Java Network Programming” ‘O’ Ralley Publications, 2000</td></tr>
<tr><td>3</td><td colspan="8">E.Balagurusamy “Programming with Java” Tata McGraw Hill, 2rd Edition, 2007.</td></tr>
</table>

K.S.Rangasamy College of Technology - Autonomous Regulation								R 2007
Department	Computer Science and Engineering		Programme Code & Name		14 : B.E. Computer Science and Engineering			
Semester V								
Course Code	Course Name	Hours/Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07140507P	DATABASE MANAGEMENT SYSTEM LABORATORY	0	0	3	2	50	50	100
Objective(s)	To Improve the Storage Techniques							

List of experiments

1. Data Definition Language (DDL) commands in RDBMS.
2. Data Manipulation Language (DML) and Data Control Language (DCL) commands in RDBMS.
3. High-level language extension with Cursors.
4. High level language extension with Triggers
5. Procedures and Functions.
6. Embedded SQL.
7. Database design using E-R model and Normalization.
8. Design and implementation of Payroll Processing System.
9. Design and implementation of Banking System.
10. Design and implementation of Library Information System.
11. Representation of BCNF.
12. Utilization of view.
13. Representation of join (Inner, outer, cross – tab).*
14. SQL server based data base implementation. *
15. Embedding SQL server on .NET Applications. *

* It will be executed and recorded through extra Lab.

K.S.Rangasamy College of Technology Autonomous Regulation								R 2007
Department	Computer Science and Engineering	Program code & Name			14 : B.E. Computer Science and Engineering			
Semester V								
Course Code	Course Code	Hours/Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07140508P	JAVA PROGRAMMING LABORATORY	0	0	3	2	50	50	100
Objective(s)	Used to develop list of experiment in Java using object oriented concept							

List of experiments

1. Program to implement Simple Classes to understand objects, member functions and Constructors
   - Classes with primitive data members
   - Classes with arrays as data members
   - Classes with constant data members
   - Classes with static member functions
   - Classes with String functions

2. Program to implement various operations on vector class

3. Program to implement Simple Package creation.
   - Developing user defined packages in Java
4. Program to implement Interfaces
   - Developing user-defined interfaces and implementation
   - Use of predefined interfaces
5. Program to implement Threading
   - Creation of thread in Java applications
   - Multithreading
6. Program to implement Exception Handling Mechanism in Java
   - Handling pre-defined exceptions
   - Handling user-defined exceptions
7. Program to implement Network programming
   - TCP implementation
   - UDP implementation
8. Program to implement RMI
9. Program using layout in AWT and swing
10. Program to implement applet and servelet.
11. Develop a program in Java using awt and JDBC for any specified application.
12. Program using swing. *
13. Program to implement servelet.*
14. Develop the program in servelet and JDPC and for any applications. *
15. Develop a program to understand the concept of single level and multi level threading. *

* It will be executed and recorded through extra Lab.

K.S.Rangasamy College of Technology - Autonomous Regulation								R 2007
Department	Computer Science and Engineering		Programme Code & Name		14 : B.E. Computer Science and Engineering			
Semester V								
Course Code	Course Name	Hours/Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07140509P	VISUAL PROGRAMMING LABORATORY	0	0	3	2	50	50	100
Objective(s)	Introduce the windows programming and GUI programming using Microsoft foundation classes. It enables the students to develop programs and simple application using visual C++.							

List of experiments

Windows SDK / Visual C++

1. Writing code for keyboard and mouse events.
2. Dialog Based applications.
3. Creating MDI applications.

Visual C++

4. Threads.
5. Document view Architecture, Serialization.
6. Dynamic controls.
7. Menu, Accelerator, Tool tip, Tool bar.
8. Creating DLLs and using them.
9. Data access through ODBC.
10. Creating Active control and using it.
11. Creating Student record using database connectivity.
12. Creating a simple window.
13. Draw the Circle, Square and ellipse in the view window. *
14. Creating a Scroll box. *
15. Displaying new caret after text using VC++. *

* It will be executed and recorded through extra Lab.

<table>
<tr><td colspan="6">K.S.Rangasamy College of Technology - Autonomous Regulation</td><td colspan="2">R 2007</td></tr>
<tr><td>Department</td><td colspan="2">Computer Science and Engineering</td><td colspan="2">Programme Code & Name</td><td colspan="2">14 : B.E. Computer Science and Engineering</td></tr>
<tr><td colspan="8">Semester V</td></tr>
<tr><td rowspan="2">Course Code</td><td rowspan="2">Course Name</td><td colspan="3">Hours / Week</td><td>Credit</td><td colspan="2">Maximum Marks</td></tr>
<tr><td>L</td><td>T</td><td>P</td><td>C</td><td>CA</td><td>ES</td><td>Total</td></tr>
<tr><td>07140510P</td><td>COMPREHENSION IV</td><td>0</td><td>0</td><td>3</td><td>0</td><td>100</td><td>00</td><td>100</td></tr>
<tr><td>Objective(s)</td><td colspan="7">Comprehending the semester subjects studies and improving the technical knowledge of the students. Improving the skill level of Engineering, Technology and Applied Science students and improving the employability of students in placement interviews.</td></tr>
<tr><td>Methodology</td><td colspan="7">1. For each subject 200 Keywords / important words or terms (5 units x 40 words) are to be prepared.
2. These 200 Keywords are to be printed in double column (2 x 50 words) and in 2 pages and is to be handed over to each student for the subject.
3. The staff who is handling the subject in the current semester will handle the respective discussion period (3 periods / semester) as given below.
4. The staff will explain and question the students using ‘W’ and ‘H’ type questions linking the keywords.
5. In a similar way the students have to prepare themselves for all the keywords.</td></tr>
<tr><td rowspan="13">Execution</td><td colspan="7">The Schedule for Conduct of Comprehension Subject.</td></tr>
<tr><td rowspan="2">Week</td><td colspan="5">Activity</td></tr>
<tr><td colspan="2">First 1½ Period Subject (No. of units)</td><td colspan="2">Next 1½ Period Subject (No. of units)</td><td>Hours</td></tr>
<tr><td>W1</td><td colspan="2">S1 (2)</td><td colspan="2">S2 (2)</td><td>3</td></tr>
<tr><td>W2</td><td colspan="2">S3 (2)</td><td colspan="2">S4 (2)</td><td>3</td></tr>
<tr><td>W3</td><td colspan="2">S5 (2)</td><td colspan="2">S6 (2)</td><td>3</td></tr>
<tr><td>W4</td><td colspan="4">Test – I (Portion : 2 units in each subject)</td><td>1</td></tr>
<tr><td>W5</td><td colspan="2">S1 (3)</td><td colspan="2">S2 (3)</td><td>3</td></tr>
<tr><td>W6</td><td colspan="2">S3 (3)</td><td colspan="2">S4 (3)</td><td>3</td></tr>
<tr><td>W7</td><td colspan="2">S5 (3)</td><td colspan="2">S6 (3)</td><td>3</td></tr>
<tr><td>W8</td><td colspan="4">Test – II (Portion : 3 units in each subject)</td><td>1</td></tr>
<tr><td>W9</td><td colspan="4">Discussion</td><td>3</td></tr>
<tr><td>W10</td><td colspan="4">Test – III (All 5 units and all the subjects)</td><td>1</td></tr>
<tr><td colspan="5">Total</td><td>24</td></tr>
<tr><td rowspan="5">Evaluation</td><td colspan="6">▪ It is a two credit (3 hours / week) Laboratory type course
▪ Only Continuous Assessment (CA) and No End Semester examination.
▪ Each test will carry 100 questions distributed among the subjects in respective units.</td></tr>
<tr><td>Component</td><td colspan="5">Weight age</td></tr>
<tr><td>Test – I</td><td colspan="5">25</td></tr>
<tr><td>Test – II</td><td colspan="5">25</td></tr>
<tr><td>Test – III</td><td colspan="5">50</td></tr>
<tr><td></td><td>Total</td><td colspan="5">100</td></tr>
<tr><td colspan="7"></td></tr>
<tr><td>S1</td><td colspan="6">07140501G - Principles of Management</td></tr>
<tr><td>S2</td><td colspan="6">07140502S - Computer Networks</td></tr>
<tr><td>S3</td><td colspan="6">07140503S - Database Management System</td></tr>
<tr><td>S4</td><td colspan="6">07140504C - Probability and Queuing Theory</td></tr>
<tr><td>S5</td><td colspan="6">07140505C - Visual programming</td></tr>
<tr><td>S6</td><td colspan="6">07140506C - Java Programming</td></tr>
</table>

K.S.Rangasamy College of Technology - Autonomous Regulation								R 2007
Department	Computer Science and Engineering		Programme Code & Name		14 : B.E. Computer Science and Engineering			
Semester V								
Course Code	Course Name	Hours/Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07140511P	CAREER COMPETENCY DEVELOPMENT III	0	0	2	0	100	00	100
Objective(s)	Improving the skill level of students , making the students competent with facing Interviews and attending competitive exams thereby enhancing the employability of students							

1	Aptitude Skills	Hrs
a. Arithmetic ability : Partnership - Chain rule – Calendar – Permutation - Data Interpretation – Probability - Heights and Distance b. Verbal Reasoning : Logical Venn Diagrams - Logical Sequence of Words - Arithmetical reasoning - Data Sufficiency - Statement – Conclusion - Deriving condition from passages c. Nonverbal Reasoning : Rule detection - Cube and dice		8
2	Programming Skills	6
Data Structures : Tree - Graph Object Oriented Programming : Introduction to C++ - Classes and Objects – Constructors - Operator Overloading – Inheritance – Templates - File I/O		
3	Written Communication Skills	
Error correction in the usage of degrees of comparison, conditional clauses, numerical expressions and system international (SI) units. - Paragraph Writing.		4
Evaluation I – Written Test		2
4	Oral Communication Skills	
Group Discussion Demo - Listening comprehension Lab		2
Evaluation II – Group Discussion		2
5	Interview Skills (Association Session)	
Evaluation III - Technical Interview - **Technical Interview I (**Objective type questions from V th semester subjects)		4
Evaluation IV - HR Interview - **HR Interview I -** Adaptability, Self development, Creativity		4
	Total	32

Reference(s):	
1	R.S.Aggarwal , “Quantitative Aptitude”, S.Chand & Company Ltd., New Delhi, Reprint 2007 (Twice) (Ch – 13, 14, 27, 30, 31, 34, 36, 37, 38, & 39) (Unit – I)
2	R.S.Aggarwal , “A Modern Approach to verbal & Non–verbal Reasoning”, S.Chand & Company Ltd, New Delhi, 2008, Part I – Section I (Ch - 9,14,15 & 17) Part I–Section II (Ch – 5 & 6) Part II (Ch 12 & 14) (unit – I)
3	Mark Allen Weiss , “Data Structures and Algorithm Analysis in C”, Pearson Education 2002, Ch – 4, 9 (unit – II)
4	Herbert Schildt , “The Complete Reference C++” Tata MacGraw Hill, 2002 (Ch - 11, 12, 14, 15, 16,17, 18, 21)
5	CCD Guide by English Department of KSRCT, 2008 (Unit – III, IV & V)
6	HR Interview Guide by Training Cell, KSRCT, 2008.

EVALUATION CRITERIA

S.No.	Particular	Test Portion	Marks
1	Evaluation I Written Test	Unit I – OQ – 50, Unit II – OQ – 30 Unit III – OQ 20	50
2	Evaluation II - Group discussion	P – 5 Marks, C – 5 Marks, TS – 5 Marks	15
3	Evaluation III - Technical Interview	6 questions each 2½ Marks	15
4	Evaluation IV HR Interview	Creativity – 6 Marks (Adoptability – 7 Marks, Self development – 7 marks)	20
P–Presentation C–Content Q–Queries OQ–Objective type question T–Total TS–Team Skills			T = 100

Note :

1. Question paper and keys will be supplied by the training cell for written test for Evaluation I
2. Respective Departments will conduct Evaluation I, II, III & IV, correct and submit the marks obtained by the students to the Training Cell.
3. HoDs will display about 50 topics for oral communication.
4. All training & tests will be conducted on odd Saturdays, Session of 2 periods in FN & Session of 2 periods in AN & Association Session.
5. 66 students may be divided into 10 groups of 6 each. Each group may be evaluated in 10 Minutes for GD.
6. 60 objective type questions, 10 questions from each of 6 subjects are to be prepared. 1 question from each subject at random to be asked carrying 2½ marks each (6 x 2½ = 15 marks) for Technical Interview. Each section is divided into 3 groups of 22 each.

K.S.Rangasamy College of Technology - Autonomous Regulation								R 2007
Department	Computer Science and Engineering	Program code & Name			14 : B.E. Computer Science and Engineering			
Semester VI								
Course Code	Course Name	Hours / Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07140601S	PROFESSIONAL ETHICS	3	0	0	3	50	50	100
Objectives	To create an awareness on Ethics and Human Values and instill Moral and Social Values in Students.							
1	INTRODUCTION				Total Hrs	9		
Ethics defined – Engineering as a profession – Core qualities of professional practitioners – Theories of right action – Major ethical issues – Three types of inquiry – Kohlberg's stages of moral development – Carol Gilligan theory – Moral dilemmas – Moral autonomy – Value based ethics								
2	ENGINEERING AS SOCIAL EXPERIMENTATION				Total Hrs	9		
Comparison with standard experiments – Relevant information – Learning from the past – Engineers as managers, consultants and leaders – Accountability – Role of codes – Code of ethics for engineers; introduction, rules of practice and professional obligations – The space shuttle challenger case study.								
3	ENGINEERS RESPONSIBILITY FOR SAFETY AND RISK				Total hrs	9		
Safety and Risk – Types of risks – Safety and the engineer – Designing for safety – Risk Benefit analysis – Accidents - The three mile Island disaster case study – The Chernobyl disaster case study.								
4	RESPONSIBILITIES AND RIGHTS				Total Hrs	9		
Collegiality – Two senses of loyalty – Professional rights and responsibilities – Conflict of Interest – Collective Bargaining – Confidentiality – Acceptance of bribes / gifts – Occupational crimes – Whistle Blowing								
5	GLOBAL ISSUES				Total Hrs	9		
Gloabalization – Cross Cultural Issues – The Bhopal gas tragedy case study – Computer ethics – Weapons development – Intellectual property rights (IPR)								
Total hours to be taught						45		
Text book :								
1	Govindarajan M, Natarajan S, Senthil Kumar V.S, "Engineering Ethics", Prentice Hall of India (P) Ltd, New Delhi, 2005.							
References:								
1	Mike W. Martin and Roland Schinzinger, "Ethics in Engineering", Tata McGraw-Hill Publishing Company Limited, New Delhi, 2007.							
2	Govindan K.R., and Sendhil Kumar S., "Professional Ethics and Human Values", Anuradha Publications, Chennai, 2007.							

<table>
<tr><td colspan="8">K.S.Rangasamy College of Technology - Autonomous Regulation</td><td>R 2007</td></tr>
<tr><td>Department</td><td colspan="3">Computer Science and Engineering</td><td colspan="2">Programme Code & Name</td><td colspan="3">14 : B.E. Computer Science and Engineering</td></tr>
<tr><td colspan="9">Semester VI</td></tr>
<tr><td rowspan="2">Course Code</td><td colspan="2" rowspan="2">Course Name</td><td colspan="3">Hours/Week</td><td>Credit</td><td colspan="3">Maximum Marks</td></tr>
<tr><td>L</td><td>T</td><td>P</td><td>C</td><td>CA</td><td>ES</td><td>Total</td></tr>
<tr><td>07140602S</td><td colspan="2">NUMERICAL METHODS
(Common to CSE, IT)</td><td>3</td><td>1</td><td>0</td><td>4</td><td>50</td><td>50</td><td>100</td></tr>
<tr><td>Objective(s)</td><td colspan="8">When huge amounts of experimental data are involved, the methods discussed on interpolation will be useful in constructing approximate polynomial to represent the data and to find the intermediate values. The numerical different ion and integration find application when the function in the analytical form is too complicated or the huge amounts of data are given such as series of measurements, observations or some other empirical information.</td></tr>
<tr><td>1</td><td colspan="6">SOLUTION OF EQUATIONS AND EIGENVALUE PROBLEMS</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">Linear interpolation methods (method of false position) – Solution of linear system by Gaussian elimination and Gauss-Jordon methods- Iterative methods: Gauss Jacobi and Gauss-Seidel methods- Inverse of a matrix by Gauss Jordon method – Eigenvalue of a matrix by power method.</td></tr>
<tr><td>2</td><td colspan="6">INTERPOLATION AND APPROXIMATION</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">Lagrangian Polynomials – Divided differences – Interpolating with a cubic spline – Newton’s forward and backward difference formulas.</td></tr>
<tr><td>3</td><td colspan="6">NUMERICAL DIFFERENTIATION AND INTEGRATION</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">Derivatives from difference tables – Divided differences and finite differences –Numerical integration by trapezoidal and Simpson’s 1/3 and 3/8 rules – Romberg’s method – Two and Three point Gaussian quadrature formulas – Double integrals using trapezoidal and Simpson’s rules.</td></tr>
<tr><td>4</td><td colspan="6">INITIAL VALUE PROBLEMS FOR ORDINARY DIFFERENTIAL EQUATIONS</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">Single step methods: Taylor series method – Euler and modified Euler methods – Fourth order Runge – Kutta method for solving first other equations – Multistep methods: Milne’s and Adam’s predictor and corrector methods.</td></tr>
<tr><td>5</td><td colspan="6">BOUNDARY VALUE PROBLEMS IN ORDINARY AND PARTIAL DIFFERENTIAL EQUATIONS</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">Finite difference solution of second order ordinary differential equation – Finite difference solution of one dimensional heat equation by explicit and implicit methods – One dimensional wave equation and two dimensional Laplace and Poisson equations.</td></tr>
<tr><td colspan="8">Total hours to be taught</td><td>45</td></tr>
<tr><td colspan="9">Text book (s) :</td></tr>
<tr><td>1</td><td colspan="8">Kandasamy, P., Thilagavathy, K. and Gunavathy, K., “Numerical Methods”, S.Chand Co. Ltd., New Delhi, 2003.</td></tr>
<tr><td colspan="9">Reference (s) :</td></tr>
<tr><td>1</td><td colspan="8">Gerald, C.F, and Wheatley, P.O, “Applied Numerical Analysis”, Sixth Edition, Pearson Education Asia, New Delhi, 2002.</td></tr>
<tr><td>2</td><td colspan="8">Burden, R.L and Faires, T.D., “Numerical Analysis”, Seventh Edition, Thomson Asia Pvt. Ltd., Singapore, 2002.</td></tr>
</table>

K.S.Rangasamy College of Technology - Autonomous Regulation								R 2007
Department	Computer Science and Engineering			Programme Code & Name		14 : B.E. Computer Science and Engineering		
Semester VI								
Course Code	Course Name	Hours/Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07140603C	PRINCIPLES OF COMPILER DESIGN	3	1	0	4	50	50	100
Objective(s)	To understand the design the implementation of a lexical analyzer, a parser, code generation schemes, optimization of codes and runtime environment.							
1	INTRODUCTION TO COMPILING					Total Hrs		9
Compilers – Analysis of the source program – Phases of a compiler – Cousins of the Compiler – Grouping of Phases – Compiler construction tools – Lexical Analysis – Role of Lexical Analyzer – Input Buffering – Specification of Tokens.								
2	SYNTAX ANALYSIS					Total Hrs		9
Role of the parser –Writing Grammars –Context-Free Grammars – Top Down parsing – Recursive Descent Parsing – Predictive Parsing – Bottom-up parsing – Shift Reduce Parsing – Operator Precedent Parsing – LR Parsers – SLR Parser – Canonical LR Parser – LALR Parser.								
3	INTERMEDIATE CODE GENERATION					Total Hrs		9
Intermediate languages – Declarations – Assignment Statements – Boolean Expressions – Case Statements – Back patching – Procedure calls.								
4	CODE GENERATION					Total Hrs		9
Issues in the design of code generator – The target machine – Runtime Storage management – Basic Blocks and Flow Graphs – Next-use Information – A simple Code generator – DAG representation of Basic Blocks – Peephole Optimization.								
5	CODE OPTIMIZATION AND RUN TIME ENVIRONMENTS					Total Hrs		9
Introduction– Principal Sources of Optimization – Optimization of basic Blocks – Introduction to Global Data Flow Analysis – Runtime Environments – Source Language issues – Storage Organization – Storage Allocation strategies – Access to non-local names – Parameter Passing.								
Total hours to be taught								45
Text book (s) :								
1	Alfred Aho, Ravi Sethi, Jeffrey D Ullman, “Compilers Principles, Techniques and Tools”, Pearson Education Asia, 2003.							
Reference(s):								
1	Allen I. Holub “Compiler Design in C”, Prentice Hall of India, 2003.							
2	C. N. Fischer and R. J. LeBlanc, “Crafting a compiler with C”, Benjamin Cummings, 2003.							
3	J.P. Bennet, “Introduction to Compiler Techniques”, Second Edition, Tata McGraw-Hill, 2003.							
4	Henk Alblas and Albert Nymeyer, “Practice and Principles of Compiler Building with C”, PHI, 2001.							
5	Kenneth C. Louden, “Compiler Construction: Principles and Practice”, Thompson Learning, 2003.							

<table>
<tr><td colspan="8">K.S.Rangasamy College of Technology - Autonomous Regulation</td><td>R 2007</td></tr>
<tr><td colspan="2">Department</td><td colspan="3">Computer Science and Engineering</td><td colspan="2">Programme Code & Name</td><td colspan="2">14 : B.E. Computer Science and Engineering</td></tr>
<tr><td colspan="9">Semester VI</td></tr>
<tr><td colspan="2" rowspan="2">Course Code</td><td rowspan="2">Course Name</td><td colspan="3">Hours/Week</td><td>Credit</td><td colspan="3">Maximum Marks</td></tr>
<tr><td>L</td><td>T</td><td>P</td><td>C</td><td>CA</td><td>ES</td><td>Total</td></tr>
<tr><td colspan="2">07140604C</td><td>WEB TECHNOLOGY</td><td>3</td><td>1</td><td>0</td><td>4</td><td>50</td><td>50</td><td>100</td></tr>
<tr><td colspan="2">Objective(s)</td><td colspan="7">To describe basic web concepts and scripting languages. Students can learn how to program using HTML, XML and DHTML. They can study Server side programming in-depth.</td></tr>
<tr><td>1</td><td colspan="6">INTRODUCTION</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">Introduction – Web concepts – HTML – HTML Forms – Cascading Style Sheets – Scripting Languages: Javascript – Vbscript.</td></tr>
<tr><td>2</td><td colspan="6">COMMON GATEWAY INTERFACE</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">Programming CGI Scripts – PERL – Applications - Server Side Includes – DBI to connect to a database – Cookies and Perl – XML.</td></tr>
<tr><td>3</td><td colspan="6">DYNAMIC HTML</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">Dynamic HTML – introduction – object model and collections – event model – filters and transition – data binding – data control – ActiveX control – handling of multimedia data.</td></tr>
<tr><td>4</td><td colspan="6">SERVER SIDE PROGRAMMING</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">Server side Programming –Java server pages – Java Servlets: Introduction – Servlet overview and architecture – HTTP GET and POST requests – Redirecting requests – Session tracking – simple web applications – multitier applications.</td></tr>
<tr><td>5</td><td colspan="6">APPLICATIONS</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">e-Business Models – Building an e-Business – e-Marketing – Database connectivity – Online Payments – Security - XML and e-Commerce – m-Business.</td></tr>
<tr><td colspan="8">Total hours to be taught</td><td>45</td></tr>
<tr><td colspan="9">Text book (s) :</td></tr>
<tr><td>1</td><td colspan="8">H.M.Deitel, P.J.Deitel, A.B.Goldberg , “INTERNET and WORLD WIDE WEB – How to program”, Pearson education , Third Edition, 2004.</td></tr>
<tr><td colspan="9">Reference(s):</td></tr>
<tr><td>1</td><td colspan="8">D.Norton and H. Schildt, “Java 2: The complete Reference”, TMH, 2000.</td></tr>
<tr><td>2</td><td colspan="8">Eric Ladd and Jim O’Donnell, et al, “USING HTML 4, XML, and JAVA1.2”, PHI publications, 2003.</td></tr>
<tr><td>3</td><td colspan="8">Jeffy Dwight, Michael Erwin and Robert Nikes “USING CGI”, PHI Publications, 1997.</td></tr>
</table>

K.S.Rangasamy College of Technology - Autonomous Regulation								R 2007
Department	Computer Science and Engineering	Programme Code & Name			14 : B.E. Computer Science and Engineering			
Semester VI								
Course Code	Course Name	Hours/Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07140607P	COMPILER DESIGN LABORATORY	0	0	3	2	50	50	100
Objective(s)	To understand the design the implementation of a lexical analyzer, a parser, code generation schemes, optimization of codes and runtime environment.							

List of experiments

1. Implementation of Lexical analysis
2. Implementation of Syntax analysis
3. Construction of NFA from regular expression
4. Implementation of TOP DOWN Parser
5. Implementation of Operator Precedence parsing
6. Implementation of recognizer using regular expression
7. Implementation of Shift Reduce Parsing
8. Implementation of SLR Parsing
9. Implementation of Code Generator
10. Implementation of Code Optimization
11. Implementation to generate DAG for the given expression.
12. Implementation for constructing LR Pasiy Table.
13. Implementation for construction DFA Regular Expression. *
14. Implementation to find closure of the given grammar. *
15. Implementation to find leding and Trailing of the given grammar. *

* It will be executed and recorded through extra Lab.

K.S.Rangasamy College of Technology - Autonomous Regulation								R 2007
Department	Computer Science and Engineering	Programme Code & Name			14 : B.E. Computer Science and Engineering			
Semester VI								
Course Code	Course Name	Hours/Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07140608P	WEB TECHNOLOGY LABORATORY	0	0	3	2	50	50	100
Objective(s)	To design webpage using clientside and serverside programming and XML document structures to develop java program for Database connectivity							

List of experiments

1. Design a personal web page using HTML. and DHTML.
2. Design a data entry form in HTML.
3. Write a Java Script program using Window and document objects and their properties and various methods like alert (), eval (), Parselnt () etc. methods to give the dynamic functionality to HTML web pages.
4. Write a Java Script program which make use of Java Script's inbuilt as well as user defined objects like navigator, Date Array, Event, Number etc
5. Writing XML web Documents which make use of XML Declaration, Element Declaration, Attribute Declaration .
6. Design a web page using Vbscript .
7. Write a program in java to implement Database Connectivity
8. Write a program in java using servlets to invoke servlets from HTML forms.
9. Write a JSP program with JDBC.
10. Write a JSP program to implement online shopping.
11. Mini Project *

* It will be executed and recorded through extra Lab.

<table>
<tr><td colspan="7">K.S.Rangasamy College of Technology - Autonomous Regulation</td><td>R 2007</td></tr>
<tr><td>Department</td><td colspan="2">Computer Science and Engineering</td><td colspan="2">Programme Code & Name</td><td colspan="3">14 : B.E. Computer Science and Engineering</td></tr>
<tr><td colspan="8">Semester VI</td></tr>
<tr><td rowspan="2">Course Code</td><td rowspan="2">Course Name</td><td colspan="3">Hours/Week</td><td>Credit</td><td colspan="3">Maximum Marks</td></tr>
<tr><td>L</td><td>T</td><td>P</td><td>C</td><td>CA</td><td>ES</td><td>Total</td></tr>
<tr><td>07140609P</td><td>MINI PROJECT</td><td>0</td><td>0</td><td>3</td><td>2</td><td>100</td><td>00</td><td>100</td></tr>
<tr><td>Objective(s)</td><td colspan="7"></td></tr>
<tr><td>Aim</td><td colspan="7">• To Improve the problem solving skills
• To improve the programming skills</td></tr>
<tr><td>Guide Lines</td><td colspan="7">• 3 Reviews have to be conducted
• Zeroth review – Abstract and title submission (20 Marks)
• First Review – Presentation and work process (40 Marks)
• Second Review – Demonstration and Explanation (40 Marks)</td></tr>
<tr><td colspan="8">Mini Projects in Various Applications</td></tr>
</table>

<table>
<tr><td colspan="6">K.S.Rangasamy College of Technology - Autonomous Regulation</td><td colspan="3">R 2007</td></tr>
<tr><td>Department</td><td colspan="2">Computer Science and Engineering</td><td colspan="2">Programme Code & Name</td><td colspan="3">14 : B.E. Computer Science and Engineering</td></tr>
<tr><td colspan="8">Semester VI</td></tr>
<tr><td rowspan="2">Course Code</td><td rowspan="2">Course Name</td><td colspan="3">Hours / Week</td><td>Credit</td><td colspan="3">Maximum Marks</td></tr>
<tr><td>L</td><td>T</td><td>P</td><td>C</td><td>CA</td><td>ES</td><td>Total</td></tr>
<tr><td>07140610P</td><td>COMPREHENSION V</td><td>0</td><td>0</td><td>3</td><td>0</td><td>100</td><td>00</td><td>100</td></tr>
<tr><td>Objective(s)</td><td colspan="7">Comprehending the semester subjects studies and improving the technical knowledge of the students. Improving the skill level of Engineering, Technology and Applied Science students and improving the employability of students in placement interviews.</td></tr>
<tr><td>Methodology</td><td colspan="7">1. For each subject 200 Keywords / important words or terms (5 units x 40 words) are to be prepared.
2. These 200 Keywords are to be printed in double column (2 x 50 words) and in 2 pages and is to be handed over to each student for the subject.
3. The staff who is handling the subject in the current semester will handle the respective discussion period (3 periods / semester) as given below.
4. The staff will explain and question the students using ‘W’ and ‘H’ type questions linking the keywords.
5. In a similar way the students have to prepare themselves for all the keywords.</td></tr>
<tr><td rowspan="14">Execution</td><td colspan="7">The Schedule for Conduct of Comprehension Subject.</td></tr>
<tr><td rowspan="2">Week</td><td colspan="5">Activity</td></tr>
<tr><td colspan="2">First 1½ Period Subject (No. of units)</td><td colspan="2">Next 1½ Period Subject (No. of units)</td><td>Hours</td></tr>
<tr><td>W1</td><td colspan="2">S1 (2)</td><td colspan="2">S2 (2)</td><td>3</td></tr>
<tr><td>W2</td><td colspan="2">S3 (2)</td><td colspan="2">S4 (2)</td><td>3</td></tr>
<tr><td>W3</td><td colspan="2">S5 (2)</td><td colspan="2">S6 (2)</td><td>3</td></tr>
<tr><td>W4</td><td colspan="4">Test – I (Portion : 2 units in each subject)</td><td>1</td></tr>
<tr><td>W5</td><td colspan="2">S1 (3)</td><td colspan="2">S2 (3)</td><td>3</td></tr>
<tr><td>W6</td><td colspan="2">S3 (3)</td><td colspan="2">S4 (3)</td><td>3</td></tr>
<tr><td>W7</td><td colspan="2">S5 (3)</td><td colspan="2">S6 (3)</td><td>3</td></tr>
<tr><td>W8</td><td colspan="4">Test – II (Portion : 3 units in each subject)</td><td>1</td></tr>
<tr><td>W9</td><td colspan="4">Discussion</td><td>3</td></tr>
<tr><td>W10</td><td colspan="4">Test – III (All 5 units and all the subjects)</td><td>1</td></tr>
<tr><td colspan="5">Total</td><td>24</td></tr>
<tr><td rowspan="5">Evaluation</td><td colspan="6">▪ It is a two credit (3 hours / week) Laboratory type course
▪ Only Continuous Assessment (CA) and No End Semester examination.
▪ Each test will carry 100 questions distributed among the subjects in respective units.</td></tr>
<tr><td>Component</td><td colspan="5">Weight age</td></tr>
<tr><td>Test – I</td><td colspan="5">25</td></tr>
<tr><td>Test – II</td><td colspan="5">25</td></tr>
<tr><td>Test – III</td><td colspan="5">50</td></tr>
<tr><td></td><td>Total</td><td colspan="5">100</td></tr>
<tr><td colspan="7"></td></tr>
<tr><td>S1</td><td colspan="6">07140601G - Professional Ethics</td></tr>
<tr><td>S2</td><td colspan="6">07140602S - Numerical Methods</td></tr>
<tr><td>S3</td><td colspan="6">07140603C - Principles of Compiler Design</td></tr>
<tr><td>S4</td><td colspan="6">07140604C - Web Technology</td></tr>
<tr><td>S5</td><td colspan="6">071406**E - Elective-I</td></tr>
<tr><td>S6</td><td colspan="6">071406**E - Elective-II</td></tr>
</table>

K.S.Rangasamy College of Technology - Autonomous Regulation								R 2007
Department	Computer Science and Engineering		Programme Code & Name		14 : B.E. Computer Science and Engineering			
Semester VI								
Course Code	Course Name	Hours/Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07140611P	CAREER COMPETENCY DEVELOPMENT IV	0	0	2	0	100	00	100
Objective(s)	Improving the skill level of students , making the students competent with facing Interviews and attending competitive exams thereby enhancing the employability of students							

1	Company type written test in Aptitude, Written Communication Skills	Hrs
Company based questions – Questions from Aptitude, Written Communication and Comprehension. Evaluation I Written Test		6 2
2	Company type written test in Verbal and Non-verbal Reasoning Skills	
Company based Questions – Questions from Verbal and Non-verbal reasoning. Evaluation II Written Test		6 2
3	Programming Skills	
Company based questions from C language, Data structures and Object Oriented Programming. Evaluation III Written Test		6 2
4	Interview Skills (Association Session)	
Technical Interview – Questions from core subjects HR Interview – Flexibility, Achievement orientation, Decisiveness Evaluation IV – Technical & HR Interview.		4 + 4
	Total	32

Reference(s):	
1	R.S.Aggarwal , “Quantitative Aptitude”, S.Chand & Company Ltd., New Delhi, Reprint 2007 (Twice) (Unit – I)
2	CCD Guide by English Department of KSRCT, 2008 (Unit – I)
3	R.S.Aggarwal , “A Modern Approach to verbal & Non–verbal Reasoning”, S.Chand & Company Ltd, New Delhi, 2008, (Unit – II)
4	Yashavant Kanetkar, “ Let us ‘C’ “, BPB Publications, New Delhi, 2002 (Unit – III)
5	Herbert Schildt , “The Complete Reference C++” Tata MacGraw Hill, 2003 (Unit – III)
6	Mark Allen Weiss , “Data Structures and Algorithm Analysis in C”, Pearson Education 2002. (Unit – III)
7	Company question papers (Unit I – III)
8	HR Interview Guide by Training Cell (Unit IV)

EVALUATION CRITERIA

S.No.	Particular	Test Portion	Marks
1	Evaluation I Written Test	Unit I- Aptitude – 50 OQs, Written Communication & Comprehension – 50 OQs,	25
2	Evaluation II Written Test	Unit II – Verbal Reasoning – 50 OQs, Non-verbal Reasoning – 50OQs	25
3	Evaluation III Written Test	Unit III – C Language -50OQs, Data Structures - 25 OQs, OPs- 25 OQs	20
4	Evaluation IV Technical & HR Interview	Unit IV Technical Interview – 6 questions (each question 2.5 marks) HR interview – Flexibility (5 Marks), Achievement orientation (5 Marks), Decisiveness (5 Marks)	15 15
P–Presentation C–Content OQ–Objective type question T–Total			T = 100

Note :

1. Question paper and keys will be supplied by the training cell for written test for Evaluation I, II & III
2. Respective Departments will conduct Evaluation I, II, III & IV, correct and submit the marks obtained by the students to the Training Cell.
3. All training & Evaluation tests will be conducted on odd Saturdays, Session of 2 periods in FN & Session of 2 periods in AN & Association Session.
4. 60 Interview type questions, 10 questions from each of 6 subjects of VIth Semester are to be prepared. 1 question from each subject at random to be asked carrying 2½ marks each (6 x 2½ = 15 marks) for Technical Interview. Each section is divided into 3 groups of 22 each.

K.S.Rangasamy College of Technology - Autonomous Regulation								R 2007
Department	Computer Science and Engineering			Programme Code & Name		14 : B.E. Computer Science and Engineering		
Semester VII								
Course Code	Course Name	Hours/Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07140701G	TOTAL QUALITY MANAGEMENT	3	0	0	3	50	50	100
Objective(s)	Understanding the Total Quality Management concept and principles and the various tools available to achieve Total Quality Management, Understanding the statistical approach for quality control, creating awareness about the ISO and QS certification process and its need for the industries.							
1	INTRODUCTION				Total Hrs	9		
Definition of Quality, Dimensions of Quality, Quality Planning, Quality costs Analysis Techniques for Quality Costs, Basic concepts of Total Quality Management, Historical Review, Principles of TQM, Quality Council, Quality Statements, Deming Philosophy, Barriers to TQM Implementation.								
2	TQM PRINCIPLES				Total Hrs	9		
Customer satisfaction – Customer Perception of Quality, Customer Complaints, Service Quality, Customer Retention, Employee Involvement – Empowerment, Teams, Recognition and Reward, Performance Appraisal, Benefits, Continuous Process Improvement, Juran Trilogy, PDSA Cycle, 5S, Kaizen, Supplier Partnership – Partnering, sourcing, Supplier Selection, Supplier Rating, Relationship Development, Performance Measures-Basic Concepts, Strategy.								
3	STATISTICAL PROCESS CONTROL (SPC)				Total Hrs	9		
The tools of quality, Statistical Fundamentals – Measures of central Tendency and Dispersion, Population and Sample, Normal Curve, Control Charts for variables and attributes, Process capability, Concept of six sigma, New Management tools.								
4	TQM TOOLS				Total Hrs	9		
Benchmarking – Reasons to Benchmark, Benchmarking Process, Quality Function Deployment (QFD) – House of Quality, QFD Process, Benefits, Taguchi Quality Loss Function, Total Productive Maintenance (TPM) – Concept, Improvement Needs, FMEA – Stages, Types.								
5	QUALITY SYSTEMS				Total Hrs	9		
Need for ISO 9000 Quality Systems, ISO 9000:2000 ISO 14000 Quality Systems – Elements Concepts, Implementation, Documentation, Quality Auditing, – Requirements and Benefits, Non Conformance report.								
Total hours to be taught						45		
Text book (s) :								
1	Dale H.Besterfiled, et al., “Total Quality Management”, Pearson Education Asia, 1999. (Indian reprint 2002).							
Reference(s) :								
1	James R.Evans & William M.Lidsay, “The Management and Control of Quality”, (5th Edition), South-Western (Thomson Learning), 2002 (ISBN 0-324-06680-5).							
2	Feigenbaum.A.V. “Total Quality Management”, McGraw Hill, 1991.							
3	Jayakumar.V, Total Quality Management-Lakshmi Publications, 2006.							
4	Suburaj, Ramasamy “Total Quality Management”, TMH, 2005.							

K.S.Rangasamy College of Technology - Autonomous Regulation								R 2007
Department	Computer Science and Engineering			Programme Code & Name		14 : B.E. Computer Science and Engineering		
Semester VII								
Course Code	Course Name	Hours/Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07140702C	OBJECT ORIENTED ANALYSIS AND DESIGN	3	1	0	4	50	50	100
Objective(s)	Understanding the object oriented life cycle and knowing how to identify objects, relationships, services and attributes through UML and understanding the use-case diagrams and knowing the Object Oriented Design process about software quality and usability.							
1	INTRODUCTION					Total Hrs		8
An Overview of Object Oriented Systems Development - Object Basics – Object Oriented Systems Development Life Cycle.								
2	OBJECT ORIENTED METHODOLOGIES					Total Hrs		12
Rumbaugh Methodology - Booch Methodology - Jacobson Methodology - Patterns – Frameworks – Unified Approach – Unified Modeling Language – Use case - class diagram - Interactive Diagram - Package Diagram - Collaboration Diagram - State Diagram - Activity Diagram.								
3	OBJECT ORIENTED ANALYSIS					Total Hrs		9
Identifying use cases - Object Analysis - Classification – Identifying Object relationships - Attributes and Methods.								
4	OBJECT ORIENTED DESIGN					Total Hrs		8
Design axioms - Designing Classes – Access Layer - Object Storage - Object Interoperability.								
5	SOFTWARE QUALITY AND USABILITY					Total Hrs		8
Designing Interface Objects – Software Quality Assurance – System Usability - Measuring User Satisfaction.								
TUTORIAL								15
Total hours to be taught								60
Text book (s) :								
1	Ali Bahrami, “Object Oriented Systems Development”, Tata McGraw-Hill, 1999 (Unit I, III, IV, V).							
2	Martin Fowler, “UML Distilled”, Second Edition, PHI/Pearson Education, 2002. (UNIT II)							
Reference(s):								
1	Stephen R. Schach, “Introduction to Object Oriented Analysis and Design”, Tata McGraw-Hill, 2003.							
2	James Rumbaugh, Ivar Jacobson, Grady Booch “The Unified Modeling Language Reference Manual”, Addison Wesley, 1999.							
3	Hans-Erik Eriksson, Magnus Penker, Brain Lyons, David Fado, “UML Toolkit”, OMG Press Wiley Publishing Inc., 2004.							

K.S.Rangasamy College of Technology - Autonomous Regulation								R 2007
Department	Computer Science and Engineering			Programme Code & Name		14 : B.E. Computer Science and Engineering		
Semester VII								
Course Code	Course Name	Hours/Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07140703C	THEORY OF COMPUTATION	3	1	0	4	50	50	100
Objective(s)	To understand the types of finite automata, the relationship between finite automata and regular Expressions the Equivalence of pushdown automata and context free grammar, the programming techniques of Turing machine and undecidable problems.							
1	AUTOMATA					Total Hrs		9
Introduction to formal proof – Additional forms of proof – Inductive proofs –Finite Automata (FA) – Deterministic Finite Automata (DFA)– Non-deterministic Finite Automata (NFA) – Finite Automata with Epsilon transitions.								
2	REGULAR EXPRESSIONS AND LANGUAGES					Total Hrs		9
Regular Expression – FA and Regular Expressions – Proving languages not to be regular – Closure properties of regular languages – Equivalence and minimization of Automata.								
3	CONTEXT-FREE GRAMMAR AND LANGUAGES					Total Hrs		9
Context-Free Grammar (CFG) – Parse Trees – Ambiguity in grammars and languages – Definition of the Pushdown automata – Languages of a Pushdown Automata – Equivalence of Pushdown automata and CFG, Deterministic Pushdown Automata.								
4	PROPERTIES OF CONTEXT-FREE LANGUAGES					Total Hrs		9
Normal forms for CFG – Pumping Lemma for CFL - Closure Properties of CFL – Turing Machines – Programming Techniques for TM.								
5	UNDECIDABILITY					Total Hrs		9
A language that is not Recursively Enumerable (RE) – An undecidable problem that is RE – Undecidable problems about Turing Machine – Post's Correspondence Problem - The classes P and NP.								
TUTORIAL								15
Total hours to be taught								60
Text book (s) :								
1	J.E.Hopcroft, R.Motwani and J.D Ullman, "Introduction to Automata Theory, Languages and Computations", Second Edition, Pearson Education, 2003.							
Reference(s):								
1	H.R.Lewis and C.H.Papadimitriou, "Elements of The theory of Computation", Second Edition, Pearson Education/PHI, 2003							
2	J.Martin, "Introduction to Languages and the Theory of Computation", Third Edition, TMH, 2003.							
3	Micheal Sipser, "Introduction of the Theory and Computation", Thomson Brokecole, 1997.							

<table>
<tr><td colspan="8">K.S.Rangasamy College of Technology - Autonomous Regulation</td><td>R 2007</td></tr>
<tr><td colspan="2">Department</td><td colspan="2">Computer Science and Engineering</td><td colspan="2">Programme Code & Name</td><td colspan="3">14 : B.E. Computer Science and Engineering</td></tr>
<tr><td colspan="9">Semester VII</td></tr>
<tr><td rowspan="2">Course Code</td><td rowspan="2" colspan="2">Course Name</td><td colspan="3">Hours/Week</td><td>Credit</td><td colspan="2">Maximum Marks</td><td></td></tr>
<tr><td>L</td><td>T</td><td>P</td><td>C</td><td>CA</td><td>ES</td><td>Total</td></tr>
<tr><td>07140704C</td><td colspan="2">SYSTEM SOFTWARE</td><td>3</td><td>0</td><td>0</td><td>3</td><td>50</td><td>50</td><td>100</td></tr>
<tr><td>Objective(s)</td><td colspan="8">Understanding the relationship between system software and machine architecture. The design and implementation of assemblers, Implementation of linkers and loaders, Macro processors, System software tools.</td></tr>
<tr><td>1</td><td colspan="6">INTRODUCTION</td><td colspan="2">Total Hrs</td><td>8</td></tr>
<tr><td colspan="9">System software and machine architecture – The Simplified Instructional Computer (SIC) - Machine architecture - Data and instruction formats - addressing modes - instruction sets - I/O and programming.</td></tr>
<tr><td>2</td><td colspan="6">ASSEMBLERS</td><td colspan="2">Total Hrs</td><td>10</td></tr>
<tr><td colspan="9">Basic assembler functions - A simple SIC assembler – Assembler algorithm and data structures - Machine dependent assembler features - Instruction formats and addressing modes – Program relocation - Machine independent assembler features - Literals – Symbol-defining statements – Expressions - One pass assemblers and Multi pass assemblers - Implementation example - MASM assembler.</td></tr>
<tr><td>3</td><td colspan="6">LOADERS AND LINKERS</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">Basic loader functions - Design of an Absolute Loader – A Simple Bootstrap Loader - Machine dependent loader features - Relocation – Program Linking – Algorithm and Data Structures for Linking Loader - Machine-independent loader features - Automatic Library Search – Loader Options - Loader design options - Linkage Editors – Dynamic Linking – Bootstrap Loaders - Implementation example - MSDOS linker.</td></tr>
<tr><td>4</td><td colspan="6">MACRO PROCESSORS</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">Basic macro processor functions - Macro Definition and Expansion – Macro Processor Algorithm and data structures - Machine-independent macro processor features - Concatenation of Macro Parameters – Generation of Unique Labels – Conditional Macro Expansion – Keyword Macro Parameters-Macro within Macro-Implementation example - MASM Macro Processor – ANSI C Macro language.</td></tr>
<tr><td>5</td><td colspan="6">SYSTEM SOFTWARE TOOLS</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">Text editors - Overview of the Editing Process - User Interface – Editor Structure. - Interactive debugging systems - Debugging functions and capabilities – Relationship with other parts of the system – User-Interface Criteria.</td></tr>
<tr><td colspan="8">Total hours to be taught</td><td>45</td></tr>
<tr><td colspan="9">Text book (s) :</td></tr>
<tr><td>1</td><td colspan="8">Leland L. Beck, “System Software – An Introduction to Systems Programming”, 3rd Edition, Pearson Education, sixth Impression 2009.</td></tr>
<tr><td colspan="9">Reference(s):</td></tr>
<tr><td>1</td><td colspan="8">D. M. Dhamdhere, “Systems Programming and Operating Systems”, Second Revised Edition, Tata McGraw-Hill, 1999.</td></tr>
<tr><td>2</td><td colspan="8">John J. Donovan “Systems Programming”, Tata McGraw-Hill Edition, 1991</td></tr>
</table>

K.S.Rangasamy College of Technology - Autonomous Regulation								R 2007
Department	Computer Science and Engineering	Programme Code & Name			14 : B.E. Computer Science and Engineering			
Semester VII								
Course Code	Course Name	Hours/Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07140707P	SYSTEM SOFTWARE LABORATORY	0	0	3	2	50	50	100
Objective(s)	Understanding the concept of Single and two pass assembler , loader, linker, editor and implementing them using programs							

List of experiments

1. **Implement a symbol table with functions to create, insert, modify, search, and display.**
2. **Implement pass one of a two pass assembler.**
3. **Implement pass two of a two pass assembler.**
4. **Implement a single pass assembler.**
5. **Implement a macro processor.**
6. **Implement an absolute loader.**
7. **Implement a relocating loader.**
8. **Implement pass one of a direct-linking loader.**
9. **Implement pass two of a direct-linking loader.**
10. **Implement a simple text editor with features like insertion / deletion of a character, word, sentence.**
11. **Implement a Programme to read the file and copy the content into another file.**
12. **Implement preprocessor directives.**
13. **Implement a programme to debug the given programme.***
14. Implement single pass direct linking loader.*
15. Implement a multipass assembler.*

* It will be executed and recorded through extra Lab.

K.S.Rangasamy College of Technology - Autonomous Regulation								R 2007
Department	Computer Science and Engineering	Programme Code & Name			14 : B.E. Computer Science and Engineering			
Semester VII								
Course Code	Course Name	Hours/Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07140708P	CASE TOOLS LABORATORY	0	0	3	2	50	50	100
Objective(s)	Understanding the concept of UML diagrams and developing the program using UML representation							

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.
3. Thorough study of the problem – Identify project scope, Objectives, Infrastructure.
4. Software requirement Analysis
5. Describe the individual Phases / Modules of the project, Identify deliverables.
6. Data Modeling

   Use work products – Data dictionary, Use diagrams and activity diagrams, build and test lass diagrams, Sequence diagrams and add interface to class diagrams.
7. Software Development and Debugging
8. 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. Hostel management*
12. Hospital management*

* It will be executed and recorded through extra Lab.

<table>
<tr><td colspan="7">K.S.Rangasamy College of Technology - Autonomous Regulation</td><td>R 2007</td></tr>
<tr><td>Department</td><td colspan="2">Computer Science and Engineering</td><td colspan="2">Programme Code & Name</td><td colspan="3">14 : B.E. Computer Science and Engineering</td></tr>
<tr><td colspan="8">Semester VII</td></tr>
<tr><td rowspan="2">Course Code</td><td rowspan="2">Course Name</td><td colspan="3">Hours / Week</td><td>Credit</td><td colspan="3">Maximum Marks</td></tr>
<tr><td>L</td><td>T</td><td>P</td><td>C</td><td>CA</td><td>ES</td><td>Total</td></tr>
<tr><td>07140709P</td><td>PROJECT WORK – PHASE I</td><td>0</td><td>0</td><td>4</td><td>2</td><td>100</td><td>00</td><td>100</td></tr>
<tr><td>Objective(s)</td><td colspan="7">To impart the practical knowledge to the students and also to make them to carry out the technical procedures in their project work. To provide an exposure to the students to refer, read and review the research articles, journals and conference proceedings rele4vant to their project work and placing this as their beginning stage for their final presentation.</td></tr>
<tr><td>Methodology</td><td colspan="7">• Three reviews have to be conducted by the committee of minimum of three members one of which should be the guide
• Problem should be selected
• Students have to collect about 20 papers related to their work
• Reports has to be prepared by the students as per the format in Annexure – 1
• Preliminary implementation can be done if possible
• Internal evaluation has to be done for 100 Marks</td></tr>
</table>

K.S.Rangasamy College of Technology - Autonomous Regulation								R 2007
Department	Computer Science and Engineering		Programme Code & Name		14 : B.E. Computer Science and Engineering			
Semester VII								
Course Code	Course Name	Hours / Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07140710P	CAREER COMPETENCY DEVELOPMENT V	0	0	2	0	100	00	100
Objective(s)	Improving the skill level of students , making the students competent with facing Interviews and attending competitive exams thereby enhancing the employability of students							
1	Company type written test in Aptitude, Written Communication Skills							1
Company based questions – Questions from Aptitude, Written Communication and Comprehension. Evaluation I Written Test								6 2
2	Company type written test in Verbal and Non-verbal Reasoning Skills							2
Company based Questions – Questions from Verbal and Non-verbal reasoning. Evaluation II Written Test								6 2
3	Programming Skills							3
Company based questions from C language, Data structures and Object Oriented Programming. Evaluation III Written Test								6 2
4	Interview Skills (Association Session)							4
Technical Interview – Questions from core subjects HR Interview – Flexibility, Achievement orientation, Decisiveness Evaluation IV – Technical & HR Interview.								4 + 4
Total								32
Reference(s):								
1	R.S.Aggarwal , "Quantitative Aptitude", S.Chand & Company Ltd., New Delhi, Reprint 2007 (Twice) (Unit – I)							
2	CCD Guide by English Department of KSRCT, 2008 (Unit – I)							
3	R.S.Aggarwal , "A Modern Approach to verbal & Non–verbal Reasoning", S.Chand & Company Ltd, New Delhi, 2008, (Unit – II)							
4	Yashavant Kanetkar, " Let us 'C' ", BPB Publications, New Delhi, 2002 (Unit – III)							
5	Herbert Schildt , "The Complete Reference C++" Tata MacGraw Hill, 2003 (Unit – III)							
6	Mark Allen Weiss , "Data Structures and Algorithm Analysis in C", Pearson Education 2002. (Unit – III)							
7	Company question papers (Unit I – III)							
8	HR Interview Guide by Training Cell (Unit IV)							

EVALUATION CRITERIA

S.No.	Particular	Test Portion	Marks
1	Evaluation I Written Test	Unit I- Aptitude – 50 OQs, Written Communication & Comprehension – 50 OQs,	25
2	Evaluation II Written Test	Unit II – Verbal Reasoning – 50 OQs, Non-verbal Reasoning – 50OQs	25
3	Evaluation III Written Test	Unit III – C Language -50OQs, Data Structures -25 OQs, OPs- 25 OQs	20
4	Evaluation IV Technical & HR Interview	Unit IV Technical Interview – 6 questions (each question 2.5 marks) HR interview – Flexibility (5 Marks), Achievement orientation (5 Marks), Decisiveness (5 Marks)	15 15
P–Presentation C–Content OQ–Objective type question T–Total			T = 100
Note :			

1. Question paper and keys will be supplied by the training cell for written test for Evaluation I, II & III
2. Respective Departments will conduct Evaluation I, II, III & IV, correct and submit the marks obtained by the students to the Training Cell.
3. All training & Evaluation tests will be conducted on odd Saturdays, Session of 2 periods in FN & Session of 2 periods in AN & Association Session.
4. 60 Interview type questions, 10 questions from each of 6 subjects of VIth Semester are to be prepared. 1 question from each subject at random to be asked carrying 2½ marks each (6 x 2½ = 15 marks) for Technical Interview. Each section is divided into 3 groups of 22 each.

K.S.Rangasamy College of Technology - Autonomous Regulation								R 2007
Department	Computer Science and Engineering			Programme Code & Name		14 : B.E. Computer Science and Engineering		
Semester VIII								
Course Code	Course Name	Hours/Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07140801C	NETWORK SECURITY	3	0	0	3	50	50	100
Objective(s)	Knowing the methods of conventional encryption, understanding the concepts of public key encryption and number theory , understanding authentication and Hash functions, knowing the network security tools and applications and understanding the system level security used.							
1	INTRODUCTION					Total Hrs		10
OSI Security Architecture - Classical Encryption techniques – Cipher Principles – Data Encryption Standard – Block Cipher Design Principles and Modes of Operation - Evaluation criteria for AES – AES Cipher – Triple DES – Placement of Encryption Function – Traffic Confidentiality								
2	PUBLIC KEY CRYPTOGRAPHY					Total Hrs		10
Key Management - Diffie-Hellman key Exchange – Elliptic Curve Architecture and Cryptography - Introduction to Number Theory – Confidentiality using Symmetric Encryption – Public Key Cryptography and RSA.								
3	AUTHENTICATION AND HASH FUNCTION					Total Hrs		9
Authentication requirements – Authentication functions – Message Authentication Codes – Hash Functions – Security of Hash Functions and MACs – MD5 message Digest algorithm - Secure Hash Algorithm – RIPEMD – HMAC Digital Signatures – Authentication Protocols – Digital Signature Standard								
4	NETWORK SECURITY					Total Hrs		8
Authentication Applications: Kerberos – X.509 Authentication Service – Electronic Mail Security – PGP – S/MIME - IP Security – Web Security.								
5	SYSTEM LEVEL SECURITY					Total Hrs		8
Intrusion detection – password management – Viruses and related Threats – Virus Counter measures – Firewall Design Principles – Trusted Systems.								
Total hours to be taught								45
Text book (s) :								
1	William Stallings, “Cryptography And Network Security – Principles and Practices”, Prentice Hall of India, Third Edition, 2003.							
Reference(s):								
1	Atul Kahate, “Cryptography and Network Security”, Tata McGraw-Hill, 2003.							
2	Bruce Schneier, “Applied Cryptography”, John Wiley & Sons Inc, 2001.							
3	Charles B. Pfleeger, Shari Lawrence Pfleeger, “Security in Computing”, Third Edition, Pearson Education, 2003.							

<table>
<tr><td colspan="7">K.S.Rangasamy College of Technology - Autonomous Regulation</td><td>R 2007</td></tr>
<tr><td>Department</td><td colspan="2">Computer Science and Engineering</td><td colspan="2">Programme Code & Name</td><td colspan="3">14 : B.E. Computer Science and Engineering</td></tr>
<tr><td colspan="8">Semester VIII</td></tr>
<tr><td rowspan="2">Course Code</td><td rowspan="2">Course Name</td><td colspan="3">Hours/Week</td><td>Credit</td><td colspan="3">Maximum Marks</td></tr>
<tr><td>L</td><td>T</td><td>P</td><td>C</td><td>CA</td><td>ES</td><td>Total</td></tr>
<tr><td>07140803P</td><td>PROJECT WORK – PHASE II</td><td>0</td><td>0</td><td>40</td><td>20</td><td>50</td><td>50</td><td>100</td></tr>
<tr><td>Objective(s)</td><td colspan="7">To enables and strengthens the students to carry out the project on their own and to implement their innovative ideas to forefront the risk issues and to retrieve the hazards by adopting suitable assessment methodologies and stating it to global.</td></tr>
<tr><td>Methodology</td><td colspan="7">• Three reviews have to be conducted by the committee of minimum of three members one of which should be the guide
• Each review has to be evaluated for 100 Marks
• Attendance is compulsory for all reviews. If a student fails to attend review for some valid reason, one or more chance may be given
• They should publish the paper preferably in the journals / conference
• Final review will be done by the committee that consists of minimum of three members one of which should be the guide (If possible include one external expert examiner with in the college)
• The Report should be submitted by the students around at the end of may.</td></tr>
</table>

<table>
<tr><td colspan="8">K.S.Rangasamy College of Technology - Autonomous Regulation</td><td>R 2007</td></tr>
<tr><td colspan="2">Department</td><td colspan="2">Computer Science and Engineering</td><td colspan="2">Programme Code & Name</td><td colspan="3">14 : B.E. Computer Science and Engineering</td></tr>
<tr><td colspan="9">Elective - I</td></tr>
<tr><td colspan="2" rowspan="2">Course Code</td><td rowspan="2">Course Name</td><td colspan="3">Hours/Week</td><td>Credit</td><td colspan="3">Maximum Marks</td></tr>
<tr><td>L</td><td>T</td><td>P</td><td>C</td><td>CA</td><td>ES</td><td>Total</td></tr>
<tr><td colspan="2">07140641E</td><td>RESOURCE MANAGEMENT TECHNIQUES</td><td>3</td><td>0</td><td>0</td><td>3</td><td>50</td><td>50</td><td>100</td></tr>
<tr><td colspan="2">Objective(s)</td><td colspan="7">To know the attitude of various department of business organization, Operation is a problem solving decision making science to know the optimal allocation of limited resources</td></tr>
<tr><td>1</td><td colspan="5">LINEAR PROGRAMMING:</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">Principal components of decision problem – Modeling phases – LP Formulation and graphic solution – Resource allocation problems – Simplex method – Two Phase simplex method.</td></tr>
<tr><td>2</td><td colspan="5">DUALITY AND NETWORKS:</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">Definition of dual problem – Primal – Dual relation ships – Dual simplex methods –revised simplex method - Transportation and assignment model shortest route problem.</td></tr>
<tr><td>3</td><td colspan="5">INTEGER PROGRAMMING:</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">Cutting plan algorithm – Gomory’s constraint method - Branch and bound methods, Multistage (Dynamic) programming.</td></tr>
<tr><td>4</td><td colspan="5">INVENTORY THEORY</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">Costs involved in inventory problems – Single item deterministic models – Economic lot size models without shortage and with shortage having production rate infinite and finite.</td></tr>
<tr><td>5</td><td colspan="5">OBJECT SCHEDULING:</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">Network diagram representation – Critical path method – Time charts and resource leveling – PERT.</td></tr>
<tr><td colspan="8">Total hours to be taught</td><td>45</td></tr>
<tr><td colspan="9">Text book (s) :</td></tr>
<tr><td>1</td><td colspan="8">Taha, H. A., “Operations Research-An Introduction”, Seventh Edition, Pearson Education Edition Asia, Delhi, 2002.</td></tr>
<tr><td colspan="9">Reference(s):</td></tr>
<tr><td>1</td><td colspan="8">Anderson ‘Quantitative Methods for Business’, 8th Edition, Thomson Learning, 2002.</td></tr>
<tr><td>2</td><td colspan="8">Winston ‘Operation Research’, Thomson Learning, 2003.</td></tr>
<tr><td>3</td><td colspan="8">Vohra, ‘Quantitative Techniques in Management’, Tata McGraw Hill, 2002.</td></tr>
<tr><td>4</td><td colspan="8">Anand Sarma, ‘Operation Research’, Himalaya Publishing House, 2003.</td></tr>
</table>

<table>
<tr><td colspan="8">K.S.Rangasamy College of Technology - Autonomous Regulation</td><td>R 2007</td></tr>
<tr><td>Department</td><td colspan="3">Computer Science and Engineering</td><td colspan="2">Programme Code & Name</td><td colspan="3">14 : B.E. Computer Science and Engineering</td></tr>
<tr><td colspan="9">Elective - I</td></tr>
<tr><td rowspan="2">Course Code</td><td rowspan="2" colspan="2">Course Name</td><td colspan="3">Hours/Week</td><td>Credit</td><td colspan="3">Maximum Marks</td></tr>
<tr><td>L</td><td>T</td><td>P</td><td>C</td><td>CA</td><td>ES</td><td>Total</td></tr>
<tr><td>07140642E</td><td colspan="2">UNIX INTERNALS</td><td>3</td><td>0</td><td>0</td><td>3</td><td>50</td><td>50</td><td>100</td></tr>
<tr><td>Objective(s)</td><td colspan="8">Students study and understand the kernel, I/O & files, process control, know the various system calls, scheduling and memory management policies in UNIX.</td></tr>
<tr><td>1</td><td colspan="5">GENERAL OVERVIEW OF THE SYSTEM</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">History – System structure – User perspective – Operating system services – Assumptions about hardware. Introduction to the Kernel: Architecture of the UNIX operating system – Introduction to system concepts.</td></tr>
<tr><td>2</td><td colspan="5">BUFFER CACHE</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">Buffer headers – Structure of the buffer pool – Reading and writing disk blocks – Advantages and disadvantages of the buffer cache. Internal representation of files: Inodes – Structure of a regular file – Directories – Conversion of a path name to an Inode – Super block –Allocation of disk blocks.</td></tr>
<tr><td>3</td><td colspan="5">SYSTEM CALLS FOR FILE SYSTEM</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">Open – Read – Write – File and record locking – Adjusting the position of file I/O –LSEEK – Close – File creation – Creation of special files – Pipes – Dup – Mounting and unmounting file systems – Link – Unlink.</td></tr>
<tr><td>4</td><td colspan="5">PROCESSES</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">Process states and transitions – Layout of system memory – The context of a process – Saving the context of a process. Process Control: Process creation – Signals – Process termination – Awaiting process termination – Invoking other programs – The shell – System boot and the INIT process.</td></tr>
<tr><td>5</td><td colspan="5">PROCESS SCHEDULING AND MEMORY MANAGEMENT</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">Process Scheduling – Memory Management Policies: Swapping – Demand paging. The I/O Subsystem: Driver Interfaces– Disk Drivers-Terminal Drivers – Streams.</td></tr>
<tr><td colspan="7">Total hours to be taught</td><td colspan="2">45</td></tr>
<tr><td colspan="9">Text book (s):</td></tr>
<tr><td>1</td><td colspan="8">Maurice J. Bach, “The Design of the Unix Operating System”, Prentice Hall of India, 2006.</td></tr>
<tr><td colspan="9">Reference(s):</td></tr>
<tr><td>1</td><td colspan="8">Vahalia, “Unix Internals: The New Frontiers”, Pearson Education Inc, 2003.</td></tr>
<tr><td>2</td><td colspan="8">Rebecca Thomas & jean Yates: “A user guide to the Unix System”, Tata McGraw-Hill Edition, 1999.</td></tr>
<tr><td>3</td><td colspan="8">Kenneth Rosen, Douglas host, James Farber & Richard Rosingki: “UNIX: The complete Reference, Tata McGraw Hill Edition, 2000.</td></tr>
</table>

<table>
<tr><td colspan="6">K.S.Rangasamy College of Technology - Autonomous Regulation</td><td colspan="3">R 2007</td></tr>
<tr><td>Department</td><td colspan="2">Computer Science and Engineering</td><td colspan="2">Programme Code & Name</td><td colspan="3">14 : B.E. Computer Science and Engineering</td></tr>
<tr><td colspan="9">Elective - I</td></tr>
<tr><td rowspan="2">Course Code</td><td rowspan="2" colspan="2">Course Name</td><td colspan="3">Hours/Week</td><td>Credit</td><td colspan="2">Maximum Marks</td></tr>
<tr><td>L</td><td>T</td><td>P</td><td>C</td><td>CA</td><td>ES</td><td>Total</td></tr>
<tr><td>07140643E</td><td colspan="2">CLIENT SERVER COMPUTING</td><td>3</td><td>0</td><td>0</td><td>3</td><td>50</td><td>50</td><td>100</td></tr>
<tr><td>Objective(s)</td><td colspan="8">At the end of the course the students would, to study the client server techniques and concepts, to enable the students to develop their creativity.</td></tr>
<tr><td>1</td><td colspan="4">INTRODUCTION</td><td colspan="2">Total Hrs</td><td colspan="2">9</td></tr>
<tr><td colspan="9">Client Server Computing era - Real Client/Server - Fat Servers or fat clients - 2 tier Vs 3 tier - Intergalactic client server - client server for different models - building blocks.</td></tr>
<tr><td>2</td><td colspan="4">CLIENT/SERVER OPERATING SYSTEMS</td><td colspan="2">Total Hrs</td><td colspan="2">9</td></tr>
<tr><td colspan="9">Anatomy of Server programs - Server needs from OS - Server scalability - Client anatomy - Client needs from OS - Client OS trends - MAC OS - Linux OS - Win OS - Server OS trends - NetWare - Win 2000 Server - OS/2 warp server.</td></tr>
<tr><td>3</td><td colspan="4">CLIENT SERVER MIDDLEWARE</td><td colspan="2">Total Hrs</td><td colspan="2">9</td></tr>
<tr><td colspan="9">NOS Middleware - global directory services - X.500 - LDAP - distributed time services - distributed security services - RPC messaging and peer to peer - Sockets - NetWare - NetBIOS - remote procedure call - messaging and queuing - MOM Vs RPC - Evolution of the NOS - DCE - The enterprise NOS - the internet as NOS.</td></tr>
<tr><td>4</td><td colspan="4">CLIENT SERVER TRANSACTION PROCESSING</td><td colspan="2">Total Hrs</td><td colspan="2">9</td></tr>
<tr><td colspan="9">ACID Properties - Transaction Models - TP Monitor - TP Monitor and OS - TP Monitor and Transaction Management - TP Monitor Client/ Server Interaction types - Transactional RPC - Queues - TP Lite or TP Heavy - TP Lite versus TP Heavy – Managing Heterogeneous networks - Process Management - client/server invocations - Performance.</td></tr>
<tr><td>5</td><td colspan="4">CLIENT SERVER AND INTERNET</td><td colspan="2">Total Hrs</td><td colspan="2">9</td></tr>
<tr><td colspan="9">Client server and internet - Web client server - 3 tier client server web style - CGI - the server side of web - CGI and State - SQL database servers - Middleware and federated databases - data warehouses - EIS/DSS to data mining - GroupWare Server - what is GroupWare - components of GroupWare.</td></tr>
<tr><td colspan="7">Total hours to be taught</td><td colspan="2">45</td></tr>
<tr><td colspan="9">Text book (s) :</td></tr>
<tr><td>1</td><td colspan="8">Robert Orfali, Dan Harkey & Jeri Edwards, “Essential Client/Server Survival Guide”, John Wiley & Sons, Singapore, 2003.</td></tr>
<tr><td>2</td><td colspan="8">James E. Goldman, Phillip T. Rawles, Julie R. Mariga, “Client/Server Information Systems, A Business Oriented Approach”, John Wiley & Sons, Singapore, 2000.</td></tr>
<tr><td colspan="9">Reference(s):</td></tr>
<tr><td>1</td><td colspan="8">Jeri Edwards, " Three tier client server at work", John Wiley & Sons, Singapore, 2003.</td></tr>
<tr><td>2</td><td colspan="8">Smith & Guengerich, “ Client/Server Computing”, Prentice Hall of India, New Delhi, 2002.</td></tr>
</table>

<table>
<tr><td colspan="8">K.S.Rangasamy College of Technology - Autonomous Regulation</td><td>R 2007</td></tr>
<tr><td colspan="2">Department</td><td colspan="3">Computer Science and Engineering</td><td colspan="2">Programme Code & Name</td><td colspan="2">14 : B.E. Computer Science and Engineering</td></tr>
<tr><td colspan="9">Elective - I</td></tr>
<tr><td colspan="2" rowspan="2">Course Code</td><td rowspan="2">Course Name</td><td colspan="3">Hours/Week</td><td>Credit</td><td colspan="3">Maximum Marks</td></tr>
<tr><td>L</td><td>T</td><td>P</td><td>C</td><td>CA</td><td>ES</td><td>Total</td></tr>
<tr><td colspan="2">07140644E</td><td>DATA WAREHOUSING AND MINING</td><td>3</td><td>0</td><td>0</td><td>3</td><td>50</td><td>50</td><td>100</td></tr>
<tr><td colspan="2">Objective(s)</td><td colspan="7">Introduce the concept of data mining with in detail coverage of basic tasks, metrics, issues, and implication. Core topics like classification, clustering and association rules are exhaustively dealt with the concept of data warehousing with special emphasis on architecture and design.</td></tr>
<tr><td>1</td><td colspan="5">INTRODUCTION AND DATA WAREHOUSING</td><td colspan="2">Total Hrs</td><td>8</td></tr>
<tr><td colspan="9">Introduction, Data Warehouse, Multidimensional Data Model, Data Warehouse Architecture, Implementation, Further Development, Data Warehousing to Data Mining</td></tr>
<tr><td>2</td><td colspan="5">DATA PREPROCESSING, LANGUAGE, ARCHITECTURES, CONCEPT DESCRIPTION</td><td colspan="2">Total Hrs</td><td>8</td></tr>
<tr><td colspan="9">Why Preprocessing, Cleaning, Integration, Transformation, Reduction, Discretization, Concept Hierarchy Generation, Data Mining Primitives, Query Language, Graphical User Interfaces, Architectures, Concept Description, Data Generalization, Characterizations, Class Comparisons, Descriptive Statistical Measures.</td></tr>
<tr><td>3</td><td colspan="5">ASSOCIATION RULES</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">Association Rule Mining, Single-Dimensional Boolean Association Rules from Transactional Databases, Multi-Level Association Rules from Transaction Databases.</td></tr>
<tr><td>4</td><td colspan="5">CLASSIFICATION AND CLUSTERING</td><td colspan="2">Total Hrs</td><td>12</td></tr>
<tr><td colspan="9">Classification and Prediction, Issues, Decision Tree Induction, Bayesian Classification, Association Rule Based, Other Classification Methods, Prediction, Classifier Accuracy, Cluster Analysis.</td></tr>
<tr><td>5</td><td colspan="5">RECENT TRENDS</td><td colspan="2">Total Hrs</td><td>8</td></tr>
<tr><td colspan="9">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</td></tr>
<tr><td colspan="7">Total hours to be taught</td><td colspan="2">45</td></tr>
<tr><td colspan="9">Text book (s) :</td></tr>
<tr><td>1</td><td colspan="8">J. Han, M. Kamber, “Data Mining: Concepts and Techniques”, Harcourt India / Morgan Kauffman, 2001.</td></tr>
<tr><td colspan="9">Reference(s):</td></tr>
<tr><td>1</td><td colspan="8">Margaret H.Dunham, “Data Mining: Introductory and Advanced Topics”, Pearson Education 2004.</td></tr>
<tr><td>2</td><td colspan="8">Sam Anahory, Dennis Murry, “Data Warehousing in the real world”, Pearson Education 2003.</td></tr>
<tr><td>3</td><td colspan="8">David Hand, Heikki Manila, Padhraic Symth, “Principles of Data Mining”, PHI 2004.</td></tr>
<tr><td>4</td><td colspan="8">W.H.Inmon, “Building the Data Warehouse”, 3rd Edition, Wiley, 2003.</td></tr>
<tr><td>5</td><td colspan="8">Alex Bezon, Stephen J.Smith, “Data Warehousing, Data Mining & OLAP”, MeGraw-Hill Edition, 2001.</td></tr>
<tr><td>6</td><td colspan="8">Paulraj Ponniah, “Data Warehousing Fundamentals”, Wiley-Interscience Publication, 2003.</td></tr>
</table>

K.S.Rangasamy College of Technology - Autonomous Regulation								R 2007
Department	Computer Science and Engineering		Programme Code & Name		14 : B.E. Computer Science and Engineering			
Elective - I								
Course Code	Course Name	Hours/Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07140645E	ADVANCED JAVA PROGRAMMING	3	0	0	3	50	50	100
Objective(s)	The students learn advanced Java programming concepts like reflection, native code interface, threads, etc, network programs in Java Concepts needed for distributed and multi-tier applications to understand issues in enterprise applications development.							
1	JAVA FUNDAMENTALS				Total Hrs	9		
Java I/O streaming – filter and pipe streams – Byte Code interpretation - reflection – Dynamic Reflexive Classes – Threading – Java Native Interfaces- Swing.								
2	NETWORK PROGRAMMING IN JAVA				Total Hrs	9		
Sockets – secure sockets – custom sockets – UDP datagram – multicast sockets – URL classes – Reading Data from the server – writing data – configuring the connection – Reading the header – telnet application – Java Messaging services.								
3	APPLICATIONS IN DISTRIBUTED ENVIRONMENT				Total Hrs	9		
Remote method Invocation – activation models – RMI custom sockets – Object Serialization – RMI – IIOP implementation – CORBA – IDL technology – Naming Services – CORBA programming Models - JAR file creation.								
4	MULTI-TIER APPLICATION DEVELOPMENT				Total Hrs	9		
Server side programming – servlets – Java Server Pages - Applet to Applet communication – applet to Servlet communication - JDBC – Using BLOB and CLOB objects – storing Multimedia data into databases – Multimedia streaming applications – Java Media Framework								
5	ENTERPRISE APPLICATIONS				Total Hrs	9		
Server Side Component Architecture – Introduction to J2EE – Session Beans – Entity Beans – Persistent Entity Beans – Transactions.								
Total hours to taught						45		
Text book (s) :								
1	Elliotte Rusty Harold, " Java Network Programming", O'Reilly publishers, 2000 (UNIT II)							
2	Ed Roman, "Mastering Enterprise Java Beans", John Wiley & Sons Inc., 1999. (UNIT III and UNIT V)							
3	Hortsmann & Cornell, "CORE JAVA 2 ADVANCED FEATURES, VOL II", Pearson Education, 2002. (UNIT I and UNIT IV).							
Reference(s):								
1	Patrick Naughton, "COMPLETE REFERENCE: JAVA2", Tata McGraw-Hill, 2003.							
2	Web reference: http://java.sun.com.							

<table>
<tr><td colspan="8">K.S.Rangasamy College of Technology - Autonomous Regulation</td><td>R 2007</td></tr>
<tr><td>Department</td><td colspan="2">Computer Science and Engineering</td><td colspan="2">Programme Code & Name</td><td colspan="4">14 : B.E. Computer Science and Engineering</td></tr>
<tr><td colspan="9">Elective - I</td></tr>
<tr><td rowspan="2">Course Code</td><td colspan="2" rowspan="2">Course Name</td><td colspan="3">Hours/Week</td><td>Credit</td><td colspan="2">Maximum Marks</td><td></td></tr>
<tr><td>L</td><td>T</td><td>P</td><td>C</td><td>CA</td><td>ES</td><td>Total</td></tr>
<tr><td>07140646E</td><td colspan="2">NEURAL NETWORKS AND APPLICATIONS</td><td>3</td><td>0</td><td>0</td><td>3</td><td>50</td><td>50</td><td>100</td></tr>
<tr><td>Objective(s)</td><td colspan="8">To understand the basic algorithms of neural networks and basic functions of neural network and study about the applications of neural networks.</td></tr>
<tr><td>1</td><td colspan="5">BASIC LEARNING ALGORITHMS</td><td colspan="2">Total Hrs</td><td>8</td></tr>
<tr><td colspan="9">Biological Neuron – Artificial Neural Model– Architecture: Feedforward and Feedback – Salient properties and application domains of neural networks-Learning Process: Error Correction Learning – Supervised and Unsupervised Learning – Learning Tasks: Pattern Space – Weight Space –Perceptron Learning Algorithm – Perceptron Convergence Theorem – α-Least Mean Square Learning Algorithm.</td></tr>
<tr><td>2</td><td colspan="5">RADIAL-BASIS FUNCTION NETWORKS AND SUPPORT VECTOR MACHINES</td><td colspan="2">Total Hrs</td><td>10</td></tr>
<tr><td colspan="9">Radial Basis Function Networks - Regularization Theory – Generalized Radial Basis Function Networks - Learning in RBFN's - Image Classification – Other models for valid generation – Learning from examples and generalization – Statistical learning theory briefer - Support Vector Machine.</td></tr>
<tr><td>3</td><td colspan="5">NEURODYNAMICS SYSTEMS AND ADAPTIVE RESONANCE THEORY</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">Dynamical Systems – Attractors and Stability – Non-linear Dynamical Systems- Lyapunov Stability – Neurodynamical Systems – The Cohen-Grossberg Theorem - Noise-Saturation Dilemma - Solving Noise-Saturation Dilemma – Recurrent On-center –Off-surround Networks – Building Blocks of Adaptive Resonance.</td></tr>
<tr><td>4</td><td colspan="5">ATTRACTOR NEURAL NETWORKS</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">Associative Learning – Attractor Neural Network Associative Memory – Linear Associative Memory – Hopfield Network – Content Addressable Memory – Error Performance of Hopfield Networks - Applications of Hopfield Networks – Simulated Annealing – Boltzmann Machine – Bidirectional Associative Memory.</td></tr>
<tr><td>5</td><td colspan="5">SELF ORGANISING MAPS</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">Self-organizing Map – Maximal Eigenvector Filtering – Sanger's Rule – Generalized Learning Law – Competitive Learning - Vector Quantization – Mexican Hat Networks - Self-organizing Feature Maps – Applications.</td></tr>
<tr><td colspan="7">Total hours to be taught</td><td colspan="2">45</td></tr>
<tr><td colspan="9">Text book (s) :</td></tr>
<tr><td>1</td><td colspan="8">Satish Kumar, "Neural Networks: A Classroom Approach", Tata McGraw-Hill Publishing Company Limited, New Delhi 2004.</td></tr>
<tr><td colspan="9">Reference(s):</td></tr>
<tr><td>1</td><td colspan="8">James A. Freeman and David M. Skapura, "Neural Networks Algorithms, Applications, and Programming Techniques, Pearson Education (Singapore) Private Limited, Delhi, 2003.</td></tr>
<tr><td>2</td><td colspan="8">Simon Haykin, "Neural Networks: A Comprehensive Foundation", 2ed., Addison Wesley Longman (Singapore) Private Limited, Delhi, 2001</td></tr>
<tr><td>3</td><td colspan="8">Martin T.Hagan, Howard B. Demuth, and Mark Beale, "Neural Network Design", Thomson Learning, New Delhi, 2003</td></tr>
</table>

K.S.Rangasamy College of Technology - Autonomous Regulation								R 2007
Department	Computer Science and Engineering	Programme Code & Name			14 : B.E. Computer Science and Engineering			
Elective - I								
Course Code	Course Name	Hours/Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07140647E	KNOWLEDGE BASED DECISION SUPPORT SYSTEM	3	0	0	3	50	50	100
Objective(s)	The course has been designed to Development support system and also includes Methods for managing knowledge and Intelligent decision system development							

1	INTRODUCTION	Total Hrs	9

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 makers - Case applications.

2	DECISION SUPPORT SYSTEM DEVELOPMENT	Total Hrs	9

Decision Support System Development: Introduction - 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.

3	KNOWLEDGE MANAGEMENT	Total Hrs	9

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.

4	INTELLIGENT SYSTEM DEVELOPMENT	Total Hrs	9

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 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.

5	MANAGEMENT SUPPORT SYSTEMS	Total Hrs	9

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 – 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.

Total hours to be taught	45

Text book (s) :

1	Efrain Turban, Jay E.Aronson, "Decision Support Systems and Intelligent Systems" 6th Edition, Pearson Education, 2001.

Reference(s):

1	Ganesh Natarajan, Sandhya Shekhar, "Knowledge management – Enabling Business Growth", TataMcGraw-Hill, 2002.
2	George M.Marakas, "Decision Support System", Prentice Hall, India, 2003.
3	Efrem A.Mallach, "Decision Support and Data Warehouse Systems", Tata McGraw-Hill, 2002.

<table>
<tr><td colspan="8">K.S.Rangasamy College of Technology - Autonomous Regulation</td><td>R 2007</td></tr>
<tr><td colspan="2">Department</td><td colspan="3">Computer Science and Engineering</td><td colspan="2">Programme Code & Name</td><td colspan="2">14 : B.E. Computer Science and Engineering</td></tr>
<tr><td colspan="9">Elective – II</td></tr>
<tr><td colspan="2" rowspan="2">Course Code</td><td colspan="2" rowspan="2">Course Name</td><td colspan="3">Hours/Week</td><td>Credit</td><td colspan="3">Maximum Marks</td></tr>
<tr><td>L</td><td>T</td><td>P</td><td>C</td><td>CA</td><td>ES</td><td>Total</td></tr>
<tr><td colspan="2">07140651E</td><td colspan="2">C# AND .NET FRAMEWORK</td><td>3</td><td>0</td><td>0</td><td>3</td><td>50</td><td>50</td><td>100</td></tr>
<tr><td colspan="2">Objective(s)</td><td colspan="7">The student will gain knowledge in the concepts of the .NET framework as a whole and the technologies that constitute the framework and they will gain programming skills in C# both in basic and advanced levels. By building sample applications, the student will get experience and be ready for large-scale projects.</td></tr>
<tr><td>1</td><td colspan="5">INTRODUCTION TO C#</td><td colspan="2">Total Hrs</td><td>8</td></tr>
<tr><td colspan="9">Introducing C#, Understanding .NET, Overview of C#, Literals, Variables, Data Types, Operators, Expressions, Branching, Looping, Methods, Arrays, Strings, Structures, and Enumerations.</td></tr>
<tr><td>2</td><td colspan="5">OBJECT ORIENTED ASPECTS OF C#</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">Classes, Objects, Inheritance, Polymorphism, Interfaces, Operator Overloading, Delegates, Events, Errors and Exceptions.</td></tr>
<tr><td>3</td><td colspan="5">APPLICATION DEVELOPMENT ON .NET</td><td colspan="2">Total Hrs</td><td>8</td></tr>
<tr><td colspan="9">Building Windows Applications, Accessing Data with ADO.NET.</td></tr>
<tr><td>4</td><td colspan="5">WEB BASED APPLICATION DEVELOPMENT ON .NET</td><td colspan="2">Total Hrs</td><td>8</td></tr>
<tr><td colspan="9">Programming Web Applications with Web Forms, Programming Web Services.</td></tr>
<tr><td>5</td><td colspan="5">THE CLR AND THE .NET FRAMEWORK</td><td colspan="2">Total Hrs</td><td>12</td></tr>
<tr><td colspan="9">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 the Client, Using Single Call, Threads.</td></tr>
<tr><td colspan="8">Total hours to be taught</td><td>45</td></tr>
<tr><td colspan="9">Text book (s) :</td></tr>
<tr><td>1</td><td colspan="8">E. Balagurusamy, “Programming in C#”, Tata McGraw-Hill, 2004. (Unit I, II)</td></tr>
<tr><td>2</td><td colspan="8">J. Liberty, “Programming C#”, 2nd ed., O’Reilly, 2002. (Unit III, IV, V)</td></tr>
<tr><td colspan="9">Reference(s):</td></tr>
<tr><td>1</td><td colspan="8">Herbert Schildt, “The Complete Reference: C#”, Tata McGraw-Hill, 2004.</td></tr>
<tr><td>2</td><td colspan="8">Robinson et al, “Professional C#”, 2nd ed., Wrox Press, 2002.</td></tr>
<tr><td>3</td><td colspan="8">Andrew Troelsen, “C# and the .NET Platform”, A! Press, 2003.</td></tr>
<tr><td>4</td><td colspan="8">Thamarai Selvi, R. Murugesan, “A Textbook on C#”, Pearson Education, 2003.</td></tr>
</table>

<table>
<tr><td colspan="8">K.S.Rangasamy College of Technology - Autonomous Regulation</td><td>R 2007</td></tr>
<tr><td>Department</td><td colspan="3">Computer Science and Engineering</td><td colspan="2">Programme Code & Name</td><td colspan="2">14 : B.E. Computer Science and Engineering</td></tr>
<tr><td colspan="8">Elective – II</td></tr>
<tr><td rowspan="2">Course Code</td><td colspan="3" rowspan="2">Course Name</td><td colspan="3">Hours/Week</td><td>Credit</td><td colspan="3">Maximum Marks</td></tr>
<tr><td>L</td><td>T</td><td>P</td><td>C</td><td>CA</td><td>ES</td><td>Total</td></tr>
<tr><td>07140652E</td><td colspan="3">PRINCIPLES OF PROGRAMMING LANGUAGES</td><td>3</td><td>0</td><td>0</td><td>3</td><td>50</td><td>50</td><td>100</td></tr>
<tr><td>Objective(s)</td><td colspan="10">To improve the ability to develop effective algorithm, to design a new language and the use of existing programming language.</td></tr>
<tr><td>1</td><td colspan="6">INTRODUCTION</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">The study of programming languages – History of programming Languages – Role of Programming Languages – The Operation of a Computer.</td></tr>
<tr><td>2</td><td colspan="6">DATA TYPES</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">Syntax – Translation – Translation Models – Properties of Types and objects – Elementary data types – Structured data types – Abstract data types.</td></tr>
<tr><td>3</td><td colspan="6">CONTROL</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">Implicit and explicit sequence control – sequencing with arithmetic and non-arithmetic expressions- sequencing control between statements.</td></tr>
<tr><td>4</td><td colspan="6">SUBPROGRAM</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">Encapsulation by subprogram – sequence control – attributes of data control - shared data in sub programs.</td></tr>
<tr><td>5</td><td colspan="6">PROGRAMMING PARADIGMS</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">Procedural Languages-C, Object based Languages-C++, Functional Languages - Lisp.</td></tr>
<tr><td colspan="8">Total hours to be taught</td><td>45</td></tr>
<tr><td colspan="9">Text book (s) :</td></tr>
<tr><td>1</td><td colspan="8">Pratt, T.W. and Zelkowitz, M.V. Programming Languages, Design and implementation, 4th Edition, Pearson Education, New Delhi (2001).</td></tr>
<tr><td colspan="9">Reference(s):</td></tr>
<tr><td>1</td><td colspan="8">Sebesta, R.W. Concepts of Programming Languages, Pearson Education, New Delhi (2001).</td></tr>
<tr><td>2</td><td colspan="8">Ravi Sethii, Programming Languages, 2nd Edition, Addison-Wesley, Singapore, 1996.</td></tr>
</table>

<table>
<tr><td colspan="8">K.S.Rangasamy College of Technology - Autonomous Regulation</td><td>R 2007</td></tr>
<tr><td>Department</td><td colspan="3">Computer Science and Engineering</td><td colspan="2">Programme Code & Name</td><td colspan="3">14 : B.E. Computer Science and Engineering</td></tr>
<tr><td colspan="9">Elective – II</td></tr>
<tr><td rowspan="2">Course Code</td><td colspan="3" rowspan="2">Course Name</td><td colspan="3">Hours/Week</td><td>Credit</td><td colspan="3">Maximum Marks</td></tr>
<tr><td>L</td><td>T</td><td>P</td><td>C</td><td>CA</td><td>ES</td><td>Total</td></tr>
<tr><td>07140653E</td><td colspan="3">ADVANCED COMPUTER ARCHITECTURE</td><td>3</td><td>0</td><td>0</td><td>3</td><td>50</td><td>50</td><td>100</td></tr>
<tr><td>Objective(s)</td><td colspan="8">To expose the students the concepts of computer architecture to exploit parallelism at the instruction level in a computer system, the ILP concept for memory design and to exploit parallelism in multi processors.</td></tr>
<tr><td>1</td><td colspan="5">FUNDAMENTALS OF COMPUTER DESIGN</td><td colspan="2">Total Hrs</td><td colspan="2">12</td></tr>
<tr><td colspan="9">Introduction-measuring and reporting performance- Quantitative principles of computer design-Instruction set principles and examples- classifying instructions- set architectures-memory addressing-addressing modes for signal processing-type and size of operands.</td></tr>
<tr><td>2</td><td colspan="5">INSTRUCTION LEVEL PARALLELISM</td><td colspan="2">Total Hrs</td><td colspan="2">12</td></tr>
<tr><td colspan="9">Concepts and challenges – overcoming data hazards with dynamic scheduling – examples- reducing branch costs with dynamic hardware prediction- high performance instruction delivery- taking advantages of ILP with multiple issues-limitations of ILP.</td></tr>
<tr><td>3</td><td colspan="5">ILP WITH SOFTWARE APPROACHES</td><td colspan="2">Total Hrs</td><td colspan="2">12</td></tr>
<tr><td colspan="9">Basic compiler techniques for exposing ILP- static branch prediction- static multiple issues: VLIW approach-Advanced compiler support for exposing and exploiting ILP-Hardware support-cross cutting issues- Intel IA64 architecture.</td></tr>
<tr><td>4</td><td colspan="5">MEMORY HIERARCHY DESIGN</td><td colspan="2">Total Hrs</td><td colspan="2">12</td></tr>
<tr><td colspan="9">Introduction- review of caches- cache performance- reducing cache miss penalty-reducing miss rate- miss rate via parallelism –reducing hit time – main memory and organizations for improving performance- memory technology- virtual memory.</td></tr>
<tr><td>5</td><td colspan="5">MULTIPROCESSORS AND THREAD LEVEL PARALLELISM</td><td colspan="2">Total Hrs</td><td colspan="2">12</td></tr>
<tr><td colspan="9">Symmetric shared memory architectures-performance of symmetric shared memory multiprocessors – Distributed shared memory architectures-synchronization- storage systems – types of storage devices- buses-reliability-availability and dependability- RAID – errors and failures in real systems- IO performance measures-Introduction to queuing theory.</td></tr>
<tr><td colspan="7">Total hours to be taught</td><td colspan="2">60</td></tr>
<tr><td colspan="9">Text book (s) :</td></tr>
<tr><td>1</td><td colspan="8">John L. Hennessey and David A. Patterson,” Computer Architecture: A Quantitative Approach”, Morgan Kaufmann, 2006.</td></tr>
<tr><td colspan="9">Reference(s):</td></tr>
<tr><td>1</td><td colspan="8">D. Sima, T. Fountain and P. Kacsuk, “Advanced Computer Architectures: A Design Space Approach”, Addison Wesley, 2000.</td></tr>
<tr><td>2</td><td colspan="8">Kai Hwang “Advanced Computer Architecture: Parallelism, Scalability, Programmability” Tata McGraw Hill Edition, 2001.</td></tr>
</table>

<table>
<tr><td colspan="8">K.S.Rangasamy College of Technology - Autonomous Regulation</td><td>R 2007</td></tr>
<tr><td colspan="2">Department</td><td colspan="3">Computer Science and Engineering</td><td colspan="2">Programme Code & Name</td><td colspan="2">14 : B.E. Computer Science and Engineering</td></tr>
<tr><td colspan="9">Elective – II</td></tr>
<tr><td colspan="2" rowspan="2">Course Code</td><td colspan="2" rowspan="2">Course Name</td><td colspan="3">Hours/Week</td><td>Credit</td><td colspan="3">Maximum Marks</td></tr>
<tr><td>L</td><td>T</td><td>P</td><td>C</td><td>CA</td><td>ES</td><td>Total</td></tr>
<tr><td colspan="2">07140654E</td><td colspan="2">NETWORK PROGRAMMING</td><td>3</td><td>0</td><td>0</td><td>3</td><td>50</td><td>50</td><td>100</td></tr>
<tr><td colspan="2">Objective(s)</td><td colspan="7">To learn the basics of socket programming using TCP Sockets, basics of UDP sockets, raw sockets and to develop knowledge of threads for developing high performance scalable applications.</td></tr>
<tr><td>1</td><td colspan="5">ELEMENTARY TCP SOCKETS</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">Introduction to Socket Programming –Introduction to Sockets – Socket address Structures – Byte ordering functions – address conversion functions – Elementary TCP Sockets – socket, connect, bind, listen, accept, read, write, close functions – Iterative Server – Concurrent Server.</td></tr>
<tr><td>2</td><td colspan="5">TCP Client-Server Example</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">TCP Echo Server – TCP Echo Client – Posix Signal handling – Server process Crashes, Server host Crashes, Server Crashes and reboots, Server Shutdown – I/O multiplexing – I/O Models – select function – shutdown function – TCP echo Server (with multiplexing) – poll function – TCP echo Client (with Multiplexing) SIGPIPE Signal.</td></tr>
<tr><td>3</td><td colspan="5">SOCKET OPTIONS</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">Socket options – getsocket and setsocket functions – generic socket options – IP socket options – ICMP socket options – TCP socket options. Sockets for clients-sockets for servers-secure sockets-Multicast sockets.</td></tr>
<tr><td>4</td><td colspan="5">ELEMENTARY UDP SOCKETS</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">Elementary UDP sockets – UDP echo Server – UDP echo Client – Multiplexing TCP and UDP sockets – Domain name system – gethostbyname function – Ipv6 support in DNS – gethostbyadr function – getservbyname and getservbyport functions.</td></tr>
<tr><td>5</td><td colspan="5">ADVANCED SOCKETS</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">IPv4 Client, IPv6 Server- IPv6 Client, IPv4 Server- IPv6 Address Testing Macros- IPv6 _ADDRFORM Socket Option- Socket Timeouts, recy and send Function- ready and writev Functions-Ancillary Data-T/TCP: TCP for Transactions.</td></tr>
<tr><td colspan="7">Total hours to be taught</td><td colspan="2">45</td></tr>
<tr><td colspan="9">Text book (s) :</td></tr>
<tr><td>1</td><td colspan="8">W. Richard Stevens, “UNIX NETWORK PROGRAMMING Vol-I” Second Edition, PHI / Pearson Education, 1998. (Chapter – 1-10, 23, 25).</td></tr>
<tr><td colspan="9">Reference(s):</td></tr>
<tr><td>1</td><td colspan="8">D.E. Comer, “Intrenetworking with TCP/IP Vo l- III”, (BSD Sockets Version), second Edition, PHI, 2003.</td></tr>
</table>

K.S.Rangasamy College of Technology - Autonomous Regulation								R 2007
Department	Computer Science and Engineering		Programme Code & Name		14 : B.E. Computer Science and Engineering			
Elective – II								
Course Code	Course Name	Hours/ Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07140655E	HARDWARE TROUBLESHOOTING AND MAINTAINANCE	3	0	0	3	50	50	100
Objective(s)	This subject gives the knowledge and competency too diagnoses the faults for trouble shooting for systematic repair and maintenance of computers and computer peripherals.							

1	REPAIR, SERVICING AND MAINTENANCE CONCEPTS	Total Hrs	9
Introduction to servicing and maintenance concepts. Meantime between failure (NTBF) meantime the repair maintenance policy, potential problems preventive maintenance and corrective maintenance. Circuit tracing techniques. Concept of shielding grounding and power supply requirements and considerations of computers and its its peripherals.			
2	FUNDAMENTAL TROUBLE SHOOTING PROCEDURES	Total Hrs	9
Fault location, Fault finding aids Service, Manuals Test and measuring instruments, Special tools.			
3	HARDWARE AND SOFTWARE FAULTS	Total Hrs	9
Trouble shooting techniques. Different trouble shooting techniques and methods , Functional area approach, Split half method,- Divergent, convergent and feedback path circuits, analysis measured techniques.			
4	TROUBLE SHOOTING OF COMPUTERS, COMPONENT AND PERIPHERALS	Total Hrs	9
Mother Board, FDD, HDD, CD ROM / DBD, Printers, Modems, Monitors, SMPs			
5	GENERAL TESTING SPECIFICATIONS	Total Hrs	9
Specification, Maintenance and Repair of CVTs and UPS, Environmental requirements of computer system and peripherals, Sight preparation and design of computer rooms. Testing specifications and installation of computer systems and peripherals.			
Total hours to be taught			45

Text book (s) :	
1	Trouble shooting computer system by Robert C Benner
Reference(s):	
1	Electronic test equipment by RS Khandpur
2	IBM PC and Clones Govinda Rajalu
3	Computer Maintenance and Repair – Scholi Muller
4	Upgrading your PC by Mark Minersi

<table>
<tr><td colspan="7">K.S.Rangasamy College of Technology - Autonomous Regulation</td><td>R 2007</td></tr>
<tr><td>Department</td><td colspan="2">Computer Science and Engineering</td><td colspan="2">Programme Code & Name</td><td colspan="3">14 : B.E. Computer Science and Engineering</td></tr>
<tr><td colspan="8">Elective – II</td></tr>
<tr><td rowspan="2">Course Code</td><td rowspan="2">Course Name</td><td colspan="3">Hours/Week</td><td>Credit</td><td colspan="2">Maximum Marks</td></tr>
<tr><td>L</td><td>T</td><td>P</td><td>C</td><td>CA</td><td>ES</td><td>Total</td></tr>
<tr><td>07140656E</td><td>USER INTERFACE DESIGN</td><td>3</td><td>0</td><td>0</td><td>3</td><td>50</td><td>50</td><td>100</td></tr>
<tr><td>Objective(s)</td><td colspan="7">To study the concept of menus, windows, interfaces, about business functions, characteristics and components of windows, various controls for the windows, various problems in windows design with color, text, graphics and testing methods</td></tr>
<tr><td>1</td><td colspan="5">HUMAN COMPUTER INTERFACE</td><td>Total Hrs</td><td>9</td></tr>
<tr><td colspan="8">Introduction-Importance-Human-Computer interface-characteristics of graphics interface-Direct manipulation graphical system - web user interface-popularity-characteristic & principles.</td></tr>
<tr><td>2</td><td colspan="5">USER INTERFACE DESIGN PROCESS</td><td>Total Hrs</td><td>9</td></tr>
<tr><td colspan="8">User interface design process- obstacles-usability-human characteristics in design - Human interaction speed-business functions-requirement analysis-Direct-Indirect methods-basic business functions-Design standards-system timings-Human consideration in screen design.</td></tr>
<tr><td>3</td><td colspan="5">DESIGNING OF MENUS AND WINDOWS</td><td>Total Hrs</td><td>9</td></tr>
<tr><td colspan="8">Menus: Structures of menus - functions of menus-contents of menu-formatting -phrasing the menu - selecting menu choice-navigating menus-graphical menus. Windows: Characteristics-components-presentation styles-types-managements-organizations -
Operations - web systems.</td></tr>
<tr><td>4</td><td colspan="5">DESIGNING OF CONTROLS</td><td>Total Hrs</td><td>9</td></tr>
<tr><td colspan="8">Device-based controls: characteristics-selecting the proper device based controls. Screen -based controls: operate control - text boxes-selection control-combination control-custom control-presentation control.</td></tr>
<tr><td>5</td><td colspan="5">DESIGNING OF WEB PAGES</td><td>Total Hrs</td><td>9</td></tr>
<tr><td colspan="8">Text for web pages - effective feedback-guidance & assistance-Internationalization-accesssibility-Icons-Image-Multimedia -coloring. Windows layout-test: prototypes - kinds of tests – retest.</td></tr>
<tr><td colspan="7">Total hours to be taught</td><td>45</td></tr>
<tr><td colspan="8">Text book (s) :</td></tr>
<tr><td>1</td><td colspan="7">Wilbert. O. Galitz, “The Essential Guide to User Interface Design”, John Wiley& Sons, 2001.</td></tr>
<tr><td colspan="8">Reference(s):</td></tr>
<tr><td>1</td><td colspan="7">Ben Sheiderman, “Design the User Interface”, Pearson Education, 1998.</td></tr>
<tr><td>2</td><td colspan="7">Jacob Nielsen, “Usability Engineering ", Academic Press, 1993.</td></tr>
<tr><td>3</td><td colspan="7">Alan Cooper, “The Essential of User Interface Design”, Wiley – Dream Tech Ltd., 2002.</td></tr>
</table>

<table>
<tr><td colspan="7">K.S.Rangasamy College of Technology - Autonomous Regulation</td><td>R 2007</td></tr>
<tr><td colspan="2">Department</td><td colspan="2">Computer Science and Engineering</td><td colspan="2">Programme Code & Name</td><td colspan="2">14 : B.E. Computer Science and Engineering</td></tr>
<tr><td colspan="8">Elective – II</td></tr>
<tr><td colspan="2" rowspan="2">Course Code</td><td rowspan="2">Course Name</td><td colspan="3">Hours/Week</td><td>Credit</td><td colspan="2">Maximum Marks</td></tr>
<tr><td>L</td><td>T</td><td>P</td><td>C</td><td>CA</td><td>ES</td><td>Total</td></tr>
<tr><td colspan="2">07140657E</td><td>ADVANCED DATABASES</td><td>3</td><td>0</td><td>0</td><td>3</td><td>50</td><td>50</td><td>100</td></tr>
<tr><td colspan="2">Objective(s)</td><td colspan="6">To understand about different data models that can be used for the databases. the students to get familiarized with transaction management of the database and develop in-depth knowledge about web and intelligent database.</td></tr>
<tr><td>1</td><td colspan="4">DATABASE MANAGEMENT</td><td colspan="2">Total Hrs</td><td colspan="2">9</td></tr>
<tr><td colspan="8">Relational Data Models- SQL- Database Design- Entity-Relationship Model- Relational Normalization- Embedded SQL- Dynamic SQL.</td></tr>
<tr><td>2</td><td colspan="4">QUERY AND TRANSACTION PROCESSING</td><td colspan="2">Total Hrs</td><td colspan="2">9</td></tr>
<tr><td colspan="8">Query processing Basics- Heuristic Optimization- Cost, Size Estimation- Models of Transaction- Architecture- Transaction Processing in a Centralized and Distributed System.</td></tr>
<tr><td>3</td><td colspan="4">IMPLEMENTING AND ISOLATION</td><td colspan="2">Total Hrs</td><td colspan="2"></td></tr>
<tr><td colspan="8">Schedules- Concurrency Control- Objects and Semantic Commutative - Locking- Crash, Distributed Deadlock- Global Serialization- Replicated Databases- Distributed Transactions in Real World.</td></tr>
<tr><td>4</td><td colspan="4">OBJECT ORIENTED DATABASES</td><td colspan="2">Total Hrs</td><td colspan="2">9</td></tr>
<tr><td colspan="8">Object Oriented Databases-Introduction- Object Oriented Data Models - OODBMS Perspectives- Issues in OODBMS- Advantages and Disadvantages of OODBMS - OODBMS Design-OODBMS Standards and Systems.</td></tr>
<tr><td>5</td><td colspan="4">CURRENT TRENDS</td><td colspan="2">Total Hrs</td><td colspan="2">9</td></tr>
<tr><td colspan="8">XML and Web Data- XML Schema- Distributed Databases- Data Mining and Data Warehousing - Multimedia Database-Parallel Database.</td></tr>
<tr><td colspan="6">Total hours to be taught</td><td colspan="2">45</td></tr>
<tr><td colspan="8">Text book (s) :</td></tr>
<tr><td>1</td><td colspan="7">Abraham Silberschatz, henry.f. korth, S,Sudharsan, Database System Concepts, 4th Edition., Tata mcgraw hill, 2004.</td></tr>
<tr><td colspan="8">Reference(s):</td></tr>
<tr><td>1</td><td colspan="7">Philip M.Lewis, Arthur berntein, Michael Kifer, “Databases and Transaction Processing:An Application – Oriented Approach”, Addison-Wesley, 2002.</td></tr>
<tr><td>2</td><td colspan="7">R. Elmasri and S.B. Navathe, Fundamentals of Database Systems, 3rd Edition, Addison Wesley, 2004.</td></tr>
<tr><td>3</td><td colspan="7">C.S.R.Prabhu, “Object Oriented Database Systems”, PHI, 2003.</td></tr>
</table>

K.S.Rangasamy College of Technology Autonomous Regulation								R 2007
Department	Computer Science and Engineering	Program code & Name			14 : B.E. Computer Science and Engineering			
Elective – III								
Course Code	Course Name	Hours/Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07140761E	EMBEDDED SYSTEMS	3	0	0	3	50	50	100
Objective(s)	Introduce students to the embedded systems, its hardware and software, introduce devices and buses used for embedded networking, explain programming concepts and embedded programming in C and C++, explain real time operating systems, inter-task communication.							
1	INTRODUCTION TO EMBEDDED SYSTEMS				Total Hrs	9		
Definition and Classification – Overview of Processors and hardware units in an embedded system – Software embedded into the system – Exemplary Embedded Systems – Embedded Systems on a Chip (SOC) and the use of VLSI designed circuits								
2	DEVICES AND BUSES FOR DEVICES NETWORK				Total Hrs	9		
I/O Devices - Device I/O Types and Examples – Synchronous - ISO-synchronous and Asynchronous Communications from Serial Devices - Examples of Internal Serial-Communication Devices - UART and HDLC - Parallel Port Devices - Sophisticated interfacing features in Devices/Ports- Timer and Counting Devices - '12C', 'USB', 'CAN' and advanced I/O Serial high speed buses- ISA, PCI, PCI-X, CPCI and advanced buses.								
3	EMBEDDED PROGRAMMING				Total Hrs	9		
Programming in assembly language (ALP) vs. High Level Language - C Program Elements, Macros and functions -Use of Pointers - NULL Pointers - Use of Function Calls – Multiple function calls in a Cyclic Order in the Main Function Pointers – Function Queues and Interrupt Service Routines Queues Pointers – Concepts of EMBEDDED PROGRAMMING in C++ - Objected Oriented Programming – Embedded Programming in C++, 'C' Program compilers – Cross compiler.								
4	REAL-TIME CHARACTERISTICS				Total Hrs	9		
Clock driven Approach, weighted round robin Approach, Priority driven Approach, Dynamic Versus Static systems, effective release times and deadlines, Optimality of the Earliest deadline first (EDF) algorithm, challenges in validating timing constraints in priority driven systems.								
5	SYSTEM DESIGN TECHNIQUES				Total Hrs	9		
Design Methodologies, Requirement Analysis, Specification, System Analysis and Architecture Design, Quality Assurance, Design Example: Telephone PBX- System Architecture, Ink jet printer- Hardware Design and Software Design, Personal Digital Assistants, Set-top Boxes.								
Total hours to be taught						45		
Text book (s) :								
1.	Rajkamal, Embedded Systems Architecture, Programming and Design, TATA McGraw Hill, First reprint 2003							
Reference(s):								
1	Jane.W.S. Liu Real-Time systems, Pearson Education Asia, 2000							
2	C. M. Krishna and K. G. Shin , Real-Time Systems, ,McGraw-Hill, 1997							
3	David E.Simon, An Embedded Software Primer, Pearson Education Asia, First Indian Reprint 2000.							
4	Wayne Wolf, Computers as Components: Principles of Embedded Computing System Design, Morgan Kaufman Publishers, 2001.							

K.S.Rangasamy College of Technology Autonomous Regulation									R 2007
Department	Computer Science and Engineering		Program code & Name			14 : B.E. Computer Science and Engineering			
Elective – III									
Course Code	Course Name	Hours/Week			Credit	Maximum Marks			
		L	T	P	C	CA	ES	Total	
07140762E	SOFTWARE QUALITY MANAGEMENT	3	0	0	3	50	50	100	
Objective(s)	Software quality models. Quality measurement and metrics, Quality plan, implementation and documentation, Quality tools including CASE tools, Quality control and reliability of quality process, Quality management system models, Complexity metrics and Customer Satisfaction, International quality standards – ISO, CMM								
1	INTRODUCTION TO SOFTWARE QUALITY				Total Hrs	9			
Software Quality – Hierarchical models of Boehm and McCall – Quality measurement – Metrics measurement and analysis – Gilb's approach – GQM Model									
2	SOFTWARE QUALITY ASSURANCE				Total Hrs	9			
Quality tasks – SQA plan – Teams – Characteristics – Implementation – Documentation – Reviews and Audits									
3	QUALITY CONTROL AND RELIABILITY				Total Hrs	9			
Tools for Quality – Ishikawa's basic tools – CASE tools – Defect prevention and removal – Reliability models – Rayleigh model – Reliability growth models for quality assessment									
4	QUALITY MANAGEMENT SYSTEM				Total Hrs	9			
Elements of QMS – Rayleigh model framework – Reliability Growth models for QMS – Complexity metrics and models – Customer satisfaction analysis.									
5	QUALITY STANDARDS				Total Hrs	9			
Need for standards – ISO 9000 Series – ISO 9000-3 for software development – CMM and CMMI – Six Sigma concepts.									
Total hours to be taught						45			
Text book (s) :									
1	Allan C. Gillies, "Software Quality: Theory and Management", Thomson Learning, 2003. (UI : Ch 1-4 ; UV : Ch 7-8)								
2	Stephen H. Kan, "Metrics and Models in Software Quality Engineering", Pearson Education (Singapore) Pte Ltd., 2002. (UI : Ch 3-4; UIII : Ch 5-8 ; UIV : Ch 9-11)								
Reference(s):									
1	Norman E. Fenton and Shari Lawrence Pfleeger, "Software Metrics" Thomson, 2003								
2	Mordechai Ben – Menachem and Garry S.Marliss, "Software Quality", Thomson Asia Pte Ltd, 2003.								
3	Mary Beth Chrissis, Mike Konrad and Sandy Shrum, "CMMI", Pearson Education (Singapore) Pte Ltd, 2003.								
4	ISO 9000-3 "Notes for the application of the ISO 9001 Standard to software development".								

<table>
<tr><td colspan="8">K.S.Rangasamy College of Technology Autonomous Regulation</td><td>R 2007</td></tr>
<tr><td>Department</td><td colspan="3">Computer Science and Engineering</td><td colspan="2">Program code & Name</td><td colspan="2">14 : B.E. Computer Science and Engineering</td></tr>
<tr><td colspan="9">Elective – III</td></tr>
<tr><td rowspan="2">Course Code</td><td rowspan="2" colspan="2">Course Name</td><td colspan="3">Hours/Week</td><td>Credit</td><td colspan="2">Maximum Marks</td></tr>
<tr><td>L</td><td>T</td><td>P</td><td>C</td><td>CA</td><td>ES</td><td>Total</td></tr>
<tr><td>07140763E</td><td colspan="2">ADVANCED OPERATING SYSTEMS</td><td>3</td><td>0</td><td>0</td><td>3</td><td>50</td><td>50</td><td>100</td></tr>
<tr><td>Objective(s)</td><td colspan="8">Get a comprehensive knowledge of the architecture of distributed systems and understand the deadlock and shared memory issues and their solutions in distributed environments. To know the security issues and protection mechanisms for distributed environments and get knowledge of multiprocessor operating system and database operating systems.</td></tr>
<tr><td>1</td><td colspan="5">ARCHITECTURES OF DISTRIBUTED SYSTEMS</td><td>Total Hrs</td><td colspan="2">9</td></tr>
<tr><td colspan="9">System Architecture types - issues in distributed operating systems - communication networks – communication primitives. Theoretical Foundations - inherent limitations of a distributed system.</td></tr>
<tr><td>2</td><td colspan="5">DISTRIBUTED DEADLOCK DETECTION</td><td>Total Hrs</td><td colspan="2">9</td></tr>
<tr><td colspan="9">Introduction - deadlock handling strategies in distributed systems – issues in deadlock detection and resolution – control organizations for distributed deadlock detection – centralized and distributed deadlock detection algorithms –hierarchical deadlock detection algorithms. Agreement protocols – introduction-the system model, a classification of agreement problems - Applications of agreement algorithms.</td></tr>
<tr><td>3</td><td colspan="5">DISTRIBUTED SHARED MEMORY</td><td>Total Hrs</td><td colspan="2">9</td></tr>
<tr><td colspan="9">Architecture– algorithms for implementing DSM – memory coherence and protocols – design issues. Distributed Scheduling – introduction – issues in load distributing – components of a load distributing algorithm – stability – load distributing algorithm – performance comparison – selecting a suitable load sharing algorithm – requirements for load distributing -task migration.</td></tr>
<tr><td>4</td><td colspan="5">PROTECTION AND SECURITY</td><td>Total Hrs</td><td colspan="2">9</td></tr>
<tr><td colspan="9">The access matrix model and its implementations-safety in matrix model- advanced models of protection. Data security – cryptography: Model of cryptography, conventional cryptography- modern cryptography, private key cryptography - public key cryptography.</td></tr>
<tr><td>5</td><td colspan="5">MULTIPROCESSOR OPERATING SYSTEM</td><td>Total Hrs</td><td colspan="2">9</td></tr>
<tr><td colspan="9">Multiprocessor operating systems - basic multiprocessor system architectures – inter connection networks for multiprocessor systems – caching – hypercube architecture. Multiprocessor Operating System - structures of multiprocessor operating system, operating system design issues- threads- process synchronization and scheduling.</td></tr>
<tr><td colspan="7">Total hours to be taught</td><td colspan="2">45</td></tr>
<tr><td colspan="9">Text book (s) :</td></tr>
<tr><td>1.</td><td colspan="8">Mukesh Singhal, Niranjan G.Shivaratri, "Advanced concepts in operating systems: Distributed, Database and multiprocessor operating systems", TMH, 2001</td></tr>
<tr><td colspan="9">Reference(s):</td></tr>
<tr><td>1</td><td colspan="8">Andrew S.Tanenbaum, "Modern operating system", PHI, 2003</td></tr>
<tr><td>2</td><td colspan="8">Pradeep K.Sinha, "Distributed operating system-Concepts and design", PHI, 2003</td></tr>
<tr><td>3</td><td colspan="8">Andrew S.Tanenbaum, "Distributed operating system", Pearson education, 2003</td></tr>
</table>

<table>
<tr><td colspan="6">K.S.Rangasamy College of Technology Autonomous Regulation</td><td colspan="3">R 2007</td></tr>
<tr><td>Department</td><td colspan="2">Computer Science and Engineering</td><td colspan="2">Program code & Name</td><td colspan="3">14 : B.E. Computer Science and Engineering</td></tr>
<tr><td colspan="9">Elective – III</td></tr>
<tr><td rowspan="2">Course Code</td><td rowspan="2" colspan="2">Course Name</td><td colspan="3">Hours/Week</td><td>Credit</td><td colspan="2">Maximum Marks</td></tr>
<tr><td>L</td><td>T</td><td>P</td><td>C</td><td>CA</td><td>ES</td><td>Total</td></tr>
<tr><td>07140764E</td><td colspan="2">REAL TIME SYSTEMS</td><td>3</td><td>0</td><td>0</td><td>3</td><td>50</td><td>50</td><td>100</td></tr>
<tr><td>Objective(s)</td><td colspan="8">To know about the specification and design techniques of a Real Time System and understand about real time task communication and synchronization, vast knowledge of queuing models and Real Time System integration</td></tr>
<tr><td>1</td><td colspan="5">BASIC REAL TIME CONCEPTS</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">Basic computer architecture – some terminology - real time design issues – example real time systems – input and output – other devices – language features.</td></tr>
<tr><td>2</td><td colspan="5">REAL TIME SPECIFICATION AND DESIGN TECHNIQUES</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">Natural languages – mathematical specification – flow charts – structured charts – pseudocode and programming design languages – finite state automata – data flow diagrams – petri nets – Warnier Orr notation – state charts – polled loop systems – phase / sate driven code – coroutines – interrupt – driven systems – foreground/background system – full featured real time operating systems</td></tr>
<tr><td>3</td><td colspan="5">INTERTASK COMMUNICATION AND SYNCHRONIZATION</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">Buffering data – mailboxes – critical regions – semaphores – deadlock – process stack management – dynamic allocation – static schemes – response time calculation – interrupt latency – time loading and its measurement – scheduling is NP complete – reducing response times and time loading – analysis of memory requirements – reducing memory loading – I/O performance</td></tr>
<tr><td>4</td><td colspan="5">QUEUING MODELS</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">Probability functions – discrete- basic buffering calculation – classical queuing theory – little’s law – erlong’s formula – faults, failures, bugs and effects – reliability-testing – fault tolerance – classification of architecture – distributing systems – Non Von Neuman architecture</td></tr>
<tr><td>5</td><td colspan="5">HARDWARE/SOFTWARE INTEGRATION</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="9">Goals of real time system integration – tools - methodology -software Heinsberg uncertainty principle – real time applications</td></tr>
<tr><td colspan="8">Total hours to be taught</td><td>45</td></tr>
<tr><td colspan="9">Text book (s) :</td></tr>
<tr><td>1</td><td colspan="8">Philip A.Laplante, “Real time system design and analysis – an engineer’s handbook”, PHI, 2005.</td></tr>
<tr><td colspan="9">Reference(s):</td></tr>
<tr><td>1</td><td colspan="8">C.M.Krishna and Kang G Shin, "Real time systems", TMH, 1997</td></tr>
<tr><td>2</td><td colspan="8">Stuart Bennelt, "Real time computer control – and introduction", Pearson education, 2003.</td></tr>
<tr><td>3</td><td colspan="8">Allen Burns, Andy Wellings, “Real Time Systems and Programming Languages”, Pearson Education, 2003.</td></tr>
</table>

K.S.Rangasamy College of Technology Autonomous Regulation								R 2007
Department	Computer Science and Engineering	Program code & Name			14 : B.E. Computer Science and Engineering			
Elective – III								
Course Code	Course Name	Hours/Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07140765E	COMPONENT BASED TECHNOLOGY	3	0	0	3	50	50	100
Objective(s)	Introduces in depth JAVA, Corba and .Net Components, Deals with Fundamental properties of components, technology and architecture and middleware, Component Frameworks and Development are covered indepth.							
1	BASIC CONCEPTS				Total Hrs	9		
Software Components – objects – modules – interfaces – callbacks – directory services – component architecture – components and middleware.								
2	JAVA BASED COMPONENT TECHNOLOGIES				Total Hrs	9		
Threads – Java Beans – Events and connections – properties – introspection – JAR files – reflection – object serialization – Enterprise Java Beans – Distributed Object models – RMI								
3	CORBA COMPONENT TECHNOLOGIES				Total Hrs	9		
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								
4	. NET BASED COMPONENT TECHNOLOGIES				Total Hrs	9		
COM – Distributed COM – object reuse – interfaces and versioning – dispatch interfaces – connectable objects – OLE containers and servers – Active X controls – .NET components – assemblies.								
5	COMPONENT FRAMEWORKS AND DEVELOPMENT				Total Hrs	9		
Connectors – contexts – EJB containers – CLR contexts and channels – Black Box component framework – directory objects – cross-development environment – component-oriented programming.								
Total hours to be taught						45		
Text book (s) :								
1.	Clemens Szyperski, “Component Software: Beyond Object-Oriented Programming”, Pearson Education publishers, 2002							
Reference(s):								
1	Ed Roman, “Mastering Enterprise Java Beans”, John Wiley & Sons Inc., 1999							
2	“Mowbray, “Inside CORBA”, Pearson Education, 2003.							
3	Freeze, “Visual Basic Development Guide for COM & COM+”, BPB Publication, 2001.							
4	Hortsamann, Cornell, “CORE JAVA Vol-II” Sun Press, 2002.							

K.S.Rangasamy College of Technology Autonomous Regulation								R 2007
Department	Computer Science and Engineering		Program code & Name		14: B.E. Computer Science and Engineering			
Elective – III								
Course Code	Course Name	Hours/Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07140766E	NATURAL LANGUAGE PROCESSING	3	0	0	3	50	50	100
Objective(s)	Learn about speech recognition and synthesis, and learn about syntax and semantics of speech recognition process.							
1	INTRODUCTION				Total Hrs	9		
Speech and Language Processing – Ambiguity – Models and algorithms – Language – Thought – Understanding – Brief history – Regular Expressions – Automata – Morphology and Finite State Transducers – Computational Phonology and Text-to-Speech.								
2	PROBABILISTIC MODELS AND SPEECH RECOGNITION				Total Hrs	10		
Spelling – Bayesian method – Weighted Automata – N-grams – Smoothing – Entropy – HMMs and Speech Recognition – Speech Recognition Architecture – Hidden Markov models – Decoding – Acoustic processing – Speech recognizer – Speech synthesis								
3	SYNTAX				Total Hrs	8		
Word classes and Part-of-Speech Tagging – Tagsets – Transformation based tagging – Context free rules and trees – The noun Phrase – Co-ordination – Verb phrase – Finite state and context free grammars – Parsing with context free grammars								
4	UNIFICATION AND PROBALISTIC PARSING				Total Hrs	8		
Features – Implementing unification – Unification constraints – Probabilistic context free grammars – Problems – Lexicalized context free grammars – Dependency grammars – Human parsing – Language and Complexity								
5	SEMANTICS				Total Hrs	10		
epresenting meaning – First order predicate calculus – Semantic analysis – Attachments – Idioms – Compositionality – Robust semantic analysis – Lexical semantics – Selectional restrictions – Machine learning approaches – Dictionary based approaches – Information retrieval								
Total hours to be taught						45		
Text book (s) :								
1	Daniel Jurafsky and James H. Martin, " Speech and Language Processing", Pearson Education 2002							
Reference(s):								
1	Miechael W. Berry, "Survey of Text Mining: Clustering, Classification and Retrieval Systems", Springer Verlilag, 2003							
2	James Allen, "Natural Language Understanding", Benjamin Cummings Publishing Co. 1995							

K.S.Rangasamy College of Technology Autonomous Regulation								R 2007
Department	Computer Science and Engineering		Program code & Name			14 : B.E. Computer Science and Engineering		
Elective – III								
Course Code	Course Name	Hours/Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07140767E	INFORMATION SECURITY	3	0	0	3	50	50	100
Objective(s)	Understand the basics of Information Security, and to know the legal, ethical and professional issues in Information Security, the aspects of risk management and to become aware of various standards in this area, to know the technological aspects of Information Security							
1	INTRODUCTION				Total Hrs	9		
History, What is Information Security?, Critical Characteristics of Information, NSTISSC Security Model, Components of an Information System, Securing the Components, Balancing Security and Access, The SDLC, The Security SDLC, Security professionals and the organization.								
2	SECURITY INVESTIGATION				Total Hrs	9		
Need for Security, Business Needs, Threats, Attacks, law and ethics in information security – types of law – international laws and legal bodies – Ethics and information security.								
3	SECURITY ANALYSIS				Total Hrs	9		
Risk Management: Identifying and Assessing Risk, Assessing and Controlling Risk – selecting a risk control strategy.								
4	LOGICAL DESIGN				Total Hrs	9		
Blueprint for Security, Information Security Poicy, Standards and Practices, ISO 17799/BS 7799, NIST Models, VISA International Security Model, Design of Security Architecture – Continuity strategies.								
5	PHYSICAL DESIGN				Total Hrs	9		
Security Technology: IDS – scanning and analysis tools – Access control devices – Honey pots – Honey nets and Padded cell systems.								
Total hours to be taught						45		
Text book (s) :								
1.	Michael E Whitman and Herbert J Mattord, “Principles of Information Security”, Thomson / Vikas Publishing House, New Delhi, 2003							
Reference(s):								
1	Micki Krause, Harold F. Tipton, “Handbook of Information Security Management”, Vol 1-3 CRC Press LLC, 2004.							
2	Stuart Mc Clure, Joel Scrambray, George Kurtz, “Hacking Exposed”, Tata McGraw-Hill, 2003							
3	Matt Bishop, “Computer Security Art and Science”, Pearson/PHI, 2002.							

<table>
<tr><td colspan="7">K.S.Rangasamy College of Technology Autonomous Regulation</td><td>R 2007</td></tr>
<tr><td colspan="2">Department</td><td colspan="2">Computer Science and Engineering</td><td colspan="2">Program code & Name</td><td colspan="2">14 : B.E. Computer Science and Engineering</td></tr>
<tr><td colspan="8">Elective – IV</td></tr>
<tr><td colspan="2" rowspan="2">Course Code</td><td rowspan="2">Course Name</td><td colspan="3">Hours/Week</td><td>Credit</td><td colspan="2">Maximum Marks</td></tr>
<tr><td>L</td><td>T</td><td>P</td><td>C</td><td>CA</td><td>ES</td><td>Total</td></tr>
<tr><td colspan="2">07140771E</td><td>ADVANCED NETWORKS</td><td>3</td><td>0</td><td>0</td><td>3</td><td>50</td><td>50</td><td>100</td></tr>
<tr><td colspan="2">Objective(s)</td><td colspan="6">Provide advanced topics on current and emerging high performance LAN and WAN technologies, practical and theoretical knowledge required for job market and graduate studies, Foster student ability to communicate technical knowledge.</td></tr>
<tr><td>1</td><td colspan="5">INTRODUCTION</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="8">Introduction: Overview of Computer Networks and protocols Wireless Transmission - Ethernet: Switched – Fast – Gigabit – VLAN - FDDI.</td></tr>
<tr><td>2</td><td colspan="5">BROAD BAND NETWORKS</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="8">Circuit – switched Networks – ADSL - ISDN and cable modem.</td></tr>
<tr><td>3</td><td colspan="5">WIDE AREA NETWORKS</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="8">Packet – switched networks - Frame Relay - ATM - MPLS.</td></tr>
<tr><td>4</td><td colspan="5">Voice and Data Networks</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="8">VOIP - ATM Vs. Ethernet - VPN.</td></tr>
<tr><td>5</td><td colspan="5">WIRELESS NETWORKS</td><td colspan="2">Total Hrs</td><td>9</td></tr>
<tr><td colspan="8">.WLAN - WIFI - WIMAX - Mobile IP.</td></tr>
<tr><td colspan="7">Total hours to be taught</td><td>45</td></tr>
<tr><td colspan="8">Text Books</td></tr>
<tr><td>1</td><td colspan="7">Data Communication and networking, Behrov2. Forovzan, McGraw – Hill 2007.</td></tr>
<tr><td>2</td><td colspan="7">Jonathan Davidson, James Peters, Manof Bhatia, Satish Kalidindi and Sudipto Mukherjee, Voice Over IP Fundamentals, 2/E, CISCO Press, 2007.</td></tr>
<tr><td>3</td><td colspan="7">Jeffrey G.Andrews, Arunabha Ghosh, Rias Mohamed, Fundamental of WIMAY Premfia Hall</td></tr>
<tr><td colspan="8">Reference(s):</td></tr>
<tr><td>1</td><td colspan="7">Clint Smith, John Meyer, 3g Wireless with wimar and WI-FI.</td></tr>
<tr><td>2</td><td colspan="7">High – Speed Networks and Internets, 2002.</td></tr>
<tr><td>3</td><td colspan="7">Data and Computer Communications, 6/e, William Stallings, Prentice Hall, 2000.</td></tr>
</table>

K.S.Rangasamy College of Technology Autonomous Regulation								R 2007
Department	Computer Science and Engineering		Program code & Name			14 : B.E. Computer Science and Engineering		
Elective – IV								
Course Code	Course Name	Hours/Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07140772E	GRAPH THEORY	3	0	0	3	50	50	100
Objective(s)	Understand basic notions of Graph Theory and Knowing Fundamental Theorems in Graph Theory, Study of algorithmic Graph Theory.							
1	BASIC OF GRAPH					Total Hrs		9
Graphs – Introduction – Isomorphism – Sub graphs – Walks, Paths, Circuits – Connectedness – Components – Euler Graphs – Hamiltonian Paths and Circuits – Trees – Properties of trees – Distance and Centers in Tree – Rooted and Binary Trees.								
2	TREES					Total Hrs		9
Spanning trees – Fundamental Circuits –Spanning Trees in a Weighted Graph – Cut Sets – Properties of Cut Set – All Cut Sets – Fundamental Circuits and Cut Sets – Connectivity and Separability – Network flows – 1-Isomorphism – 2-Isomorphism –Planer Graphs.								
3	GRAPH MATRIX AND DIRECTED GRAPH					Total Hrs		9
Incidence matrix – Submatrices – Circuit Matrix – Path Matrix – Adjacency Matrix – Chromatic Number – Chromatic partitioning – Chromatic polynomial - Matching - Covering – Four Color Problem – Directed Graphs – Types of Directed Graphs – Digraphs and Binary Relations – Directed Paths and Connectedness – Euler Graphs – Adjacency Matrix of a Digraph.								
4	FUNDAMENTAL CIRCUITS					Total Hrs		9
Connectedness and Components – Spanning tree – Finding all Spanning Trees of a Graph –Set of Fundamental Circuits – Cut Vertices and Separability – Directed Circuits.								
5	SHORTEST PATH					Total Hrs		9
Shortest Path Algorithm – Planarity Testing – Isomorphism								
Total hours to be taught								45
Text book (s) :								
1	Narsingh Deo, “Graph Theory: With Application to Engineering and Computer Science”, PHI, 2003.							
Reference(s):								
1	R.J. Wilson, “Introduction to Graph Theory”, Fourth Edition, Pearson Education, 2003.							

K.S.Rangasamy College of Technology Autonomous Regulation									R 2007
Department	Computer Science and Engineering		Program code & Name			14 : B.E. Computer Science and Engineering			
Elective – IV									
Course Code	Course Name	Hours/Week			Credit	Maximum Marks			
		L	T	P	C	CA	ES	Total	
07140773E	PARALLEL COMPUTING	3	0	0	3	50	50	100	
Objective(s)	To study the scalability and clustering issues and the technology necessary for them, understand the technologies enabling parallel computing, to study the different types of interconnection networks, and study the different parallel programming models, to study the software support needed for shared memory programming.								
1	INTRODUCTION				Total Hrs	9			
Parallel computing- parallel architectures- Architecture classification schemes- performance of parallel computers- parallel algorithms.									
2	PIPELINE PROCESSING				Total Hrs	9			
Introduction- Steady state analysis of pipelines- Arithmetic pipelines- Pipelined Instruction Processing- Pipeline Stage Design- Interlocks- Data Driven Execution through Internal forwarding- Memory Systems used in pipelined Processors- Pipeline Scheduling Theory									
3	SYNCHRONOUS PARALLEL PROCESSING				Total Hrs	9			
Introduction- Example SIMD Architecture and Programming Principles- Data Mapping and Memory an Array Processors- ICL Distributed Array Processor(DAP)- ILLIAC IV Computer									
4	INTERCONNECTION NETWORKS				Total Hrs	9			
Elementary Permutations used in Interconnection Networks- Network Classifications- Complete(Nonblocking) Networks- Commonly used Interconnection Networks									
5	FUTURE DIRECTIONS				Total Hrs	9			
Technology and Architecture- Applications and System Software- Evolutionary Scenario- Hitting a wall- Potential Breakthroughs.									
Total hours to be taught						45			
Text book (s) :									
1	Moreshwar R. Bhujade, “Prallel Computing”,New Age International Publishers,1995.								
Reference(s):									
1	David E. Culler & Jaswinder Pal Singh, “Parallel Computing Architecture: A Hardware/Software Approach”, Morgan Kaufman Publishers, 1999.								
2	Michael J. Quinn, “Parallel Programming in C with MPI & OpenMP”, Tata McGraw-Hill, New Delhi, 2003								
3	Kai Hwang, “Advanced Computer Architecture” Tata McGraw-Hill, New Delhi, 2003								
4	Kai Hwang and Zhi.Wei Xu, “Scalable Parallel Computing”, Tata McGraw-Hill, New Delhi, 2003.								

K.S.Rangasamy College of Technology Autonomous Regulation								R 2007
Department	Computer Science and Engineering		Program code & Name		14 : B.E. Computer Science and Engineering			
Elective – IV								
Course Code	Course Name	Hours/Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07140774E	XML AND WEB SERVICES	3	0	0	3	50	50	100
Objective(s)	Learn xml and web services thoroughly							
1	INTRODUCTION				Total Hrs	10		
XML Language Basics – SOAP – Web Services – Service Oriented Architecture (SOA).								
2	XML TECHNOLOGY				Total Hrs	10		
XML – Name Spaces – Structuring With Schemas and DTD – Presentation Techniques – Transformation – XML Infrastructure.								
3	SOAP				Total Hrs	10		
Overview Of SOAP – HTTP – XML-RPC – SOAP: Protocol – Message Structure – Intermediaries – Actors – Design Patterns And Faults – SOAP With Attachments.								
4	WEB SERVICES				Total Hrs	10		
Overview – Architecture – Key Technologies - UDDI – WSDL – ebXML – SOAP And Web Services In E-Com – Overview Of .NET And J2EE.								
5	XML SECURITY				Total Hrs	10		
Security Overview – Canonicalization – XML Security Framework – XML Encryption – XML Digital Signature.								
Total hours to be taught						50		
Text book								
1	Frank. P. Coyle, XML, Web Services And The Data Revolution, Pearson Education, 2002.							
Reference(s):								
2	Ramesh Nagappan , Robert Skoczylas and Rima Patel Sriganesh, " Developing Java Web Services", Wiley Publishing Inc., 2004.							
3	Sandeep Chatterjee, James Webber, "Developing Enterprise Web Services", Pearson Education, 2004.							
4	McGovern, et al., "Java Web Services Architecture", Morgan Kaufmann Publishers, 2005.							

K.S.Rangasamy College of Technology Autonomous Regulation								R 2007
Department	Computer Science and Engineering		Program code & Name			14 : B.E. Computer Science and Engineering		
Elective – IV								
Course Code	Course Name	Hours/Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07140775E	SOFT COMPUTING	3	0	0	3	50	50	100
Objective(s)	Introduce the ideas of fuzzy sets and fuzzy logic, to become familiar with neural networks that can learn from available examples and to become familiar with genetic algorithms							
1	BASICS OF ARTIFICIAL NEURAL NETWORKS				Total Hrs	9		
Fundamentals of ANN: The Biological Neural Network, Artificial Neural Networks - Building Blocks of ANN and ANN terminologies: architecture, setting of weights, activation functions - McCulloch-pitts Neuron Model, Hebbian Learning rule, Perception learning rule, Delta learning rule.								
2	MODELS OF ANN				Total Hrs	10		
Single layer perception, Architecture, Algorithm, application procedure - Feedback Networks: Hopfield Net and BAM - Feed Forward Networks: Back Propogation Network (BPN) and Radial Basis Function Network (RBFN) – Self Organizing Feature Maps: SOM and LVQ								
3	FUZZY SETS AND RELATIONS				Total Hrs	8		
Fuzzy Sets, properties and operations - Fuzzy relations, cardinality, operations and properties of fuzzy relations, fuzzy composition.								
4	FUZZY RULES AND INFERENCE SYSTEMS				Total Hrs	9		
Fuzzy variables - Types of membership functions - fuzzy rules: Takagi and Mamdani – fuzzy inference systems: fuzzification, inference, rulebase, defuzzification.								
5	GENETIC ALGORITHM				Total Hrs	9		
Genetic Algorithm (GA): Biological terminology – elements of GA: encoding, types of selection, types of crossover, mutation, reinsertion – a simple genetic algorithm – Theoretical foundation: schema, fundamental theorem of GA, building block hypothesis.								
Total hours to be taught						45		
Text book (s) :								
1	S.N.Sivanandam, M.Paulraj, “Introduction to Artificial Neural Networks”, Vikas Publishing House Pvt. Ltd., 2003.							
2	Timothy J.Ross, “Fuzzy Logic with Engineering Applications”, McGraw-Hill, 1995							
Reference(s):								
1	S. Rajasekaran and G.A.V.Pai, “Neural Networks, Fuzzy Logic and Genetic Algorithms”, PHI, 2003.							
2	J.S.R.Jang, C.T.Sun and E.Mizutani, “Neuro-Fuzzy and Soft Computing”, PHI,Pearson Education 2004.							
3	Davis E.Goldberg, “Genetic Algorithms: Search, Optimization and Machine Learning”, Addison Wesley, N.Y., 1989.							

K.S.Rangasamy College of Technology Autonomous Regulation								R 2007
Department	Computer Science and Engineering	Program code & Name			14 : B.E. Computer Science and Engineering			
Elective – IV								
Course Code	Course Name	Hours/Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07140776E	HIGH SPEED NETWORKS	3	0	0	3	50	50	100
Objective(s)	To highlight the features of different technologies involved in High Speed Networking and their performance. Students will get an introduction about ATM and Frame relay, and will be provided with an up-to-date survey of developments in High Speed Networks, enable the students to know techniques involved to support real-time traffic and congestion control, students will be provided with different levels of quality of service (Q.S) to different applications.							
1	HIGH SPEED NETWORKS				Total Hrs	9		
Frame Relay Networks – Asynchronous transfer mode – ATM Protocol Architecture, ATM logical Connection, ATM Cell – ATM Service Categories – AAL. High Speed LAN's: Fast Ethernet, Gigabit Ethernet, Fibre Channel – Wireless LAN's: applications, requirements – Architecture of 802.11								
2	CONGESTION AND TRAFFIC MANAGEMENT				Total Hrs	9		
Queuing Analysis- Queuing Models – Single Server Queues – Effects of Congestion – Congestion Control – Traffic Management – Congestion Control in Packet Switching Networks – Frame Relay Congestion Control.								
3	TCP AND ATM CONGESTION CONTROL				Total Hrs	9		
TCP Flow control – TCP Congestion Control – Retransmission – Timer Management – Exponential RTO backoff – KARN's Algorithm – Window management – Performance of TCP over ATM. Traffic and Congestion control in ATM – Requirements – Attributes – Traffic Management Frame work, Traffic Control – ABR traffic Management – ABR rate control								
4	INTEGRATED AND DIFFERENTIATED SERVICES				Total Hrs	9		
Integrated Services Architecture – Approach, Components, Services- Queuing Discipline, FQ, PS, BRFQ, GPS, WFQ – Random Early Detection.								
5	PROTOCOLS FOR QOS SUPPORT				Total Hrs	9		
RSVP – Goals & Characteristics, Data Flow, RSVP operations, Protocol Mechanisms – Multiprotocol Label Switching – Operations, Label Stacking, Protocol details – RTP – Protocol Architecture, Data Transfer Protocol, RTCP.								
Total hours to be taught						45		
Text book (s) :								
1	William Stallings, "HIGH SPEED NETWORKS AND INTERNET", Pearson Education, Second Edition, 2002.							
Reference(s):								
1	Warland & Pravin Varaiya, "HIGH PERFORMANCE COMMUNICATION NETWORKS", Jean Harcourt Asia Pvt. Ltd., II Edition, 2001.							
2	Irvan Pepelnjk, Jim Guichard and Jeff Apcar, "MPLS and VPN architecture", Cisco Press, Volume 1 and 2, 2003							

K.S.Rangasamy College of Technology Autonomous Regulation								R 2007
Department	Computer Science and Engineering	Program code & Name			14 : B.E. Computer Science and Engineering			
Elective – IV								
Course Code	Course Name	Hours/Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07140777E	DIGITAL IMAGE PROCESSING	3	0	0	3	50	50	100
Objective(s)	To study the image fundamentals and mathematical transforms necessary for image processing, study the image enhancement techniques, study image restoration procedures, study the image compression procedures and to study the image segmentation and representation techniques.							
1	DIGITAL IMAGE FUNDAMENTALS AND TRANSFORMS				Total Hrs	9		
Elements of visual perception – Image sampling and quantization Basic relationship between pixels – Basic geometric transformations-Introduction to Fourier Transform and DFT – Properties of 2D Fourier Transform – FFT – Separable Image Transforms: Walsh – Hadamard – Discrete Cosine Transform, Haar, Slant – Karhunen – Loeve transforms.								
2	IMAGE ENHANCEMENT TECHNIQUES				Total Hrs	9		
Spatial Domain methods: Basic grey level transformation – Histogram equalization – Image subtraction – Image averaging –Spatial filtering: Smoothing filters, sharpening filters – Laplacian filters – Frequency domain filters : Smoothing – Sharpening filters – Homomorphic filtering								
3	IMAGE RESTORATION				Total Hrs	9		
Model of Image Degradation/restoration process – Noise models – Inverse filtering -Least mean square filtering – Constrained least mean square filtering – Blind image restoration – Pseudo inverse – Singular value decomposition.								
4	IMAGE COMPRESSION				Total Hrs	9		
Lossless compression: Variable length coding – LZW coding – Bit plane coding- predictive coding-DPCM. Lossy Compression: Transform coding – Wavelet coding – Basics of Image compression standards: JPEG, MPEG,Basics of Vector quantization								
5	IMAGE SEGMENTATION AND REPRESENTATION				Total Hrs	9		
Edge detection – Thresholding - Region Based segmentation – Boundary representation schemes: chain codes- Polygonal approximation – Boundary segments – boundary descriptors: Simple descriptors-Fourier descriptors - Regional descriptors: Simple descriptors- Texture								
Total hours to be taught						45		
Text book (s) :								
1	Rafael C Gonzalez, Richard E Woods 2nd Edition, Digital Image Processing - Pearson Education 2003.							
Reference(s):								
1	William K Pratt, Digital Image Processing John Willey (2001).							
2	Image Processing Analysis and Machine Vision – Millman Sonka, Vaclav hlavac, Roger Boyle, Broos/colic, Thompson Learniy (1999).							
3	A.K. Jain, PHI, New Delhi (1995)-Fundamentals of Digital Image Processing.							
4	Chanda Dutta Magundar – Digital Image Processing and Applications, Prentice Hall of India, 2000							

K.S.Rangasamy College of Technology Autonomous Regulation									R 2007
Department	Computer Science and Engineering		Program code & Name			14 : B.E. Computer Science and Engineering			
Elective – V									
Course Code	Course Name	Hours/Week			Credit	Maximum Marks			
		L	T	P	C	CA	ES	Total	
07140881E	QUANTUM COMPUTING	3	0	0	3	50	50	100	
Objective(s)	Understand the building blocks of a quantum computer, and to understand the principles, quantum information and limitation of quantum operations formalizing, understand the quantum error and its correction.								
1	FUNDAMENTAL CONCEPTS				Total Hrs	8			
Global Perspectives, Quantum Bits, Quantum Computation, Quantum Algorithms, Quantum Information, Postulates of Quantum Mechanisms.									
2	QUANTUM COMPUTATION				Total Hrs	10			
Quantum Circuits – Quantum algorithms, Single Orbit operations, Control Operations, Measurement, Universal Quantum Gates, Simulation of Quantum Systems, Quantum Fourier transform, Phase estimation, Applications, Quantum search algorithms – Quantum counting – Speeding up the solution of NP complete problems – Quantum Search for an unstructured database.									
3	QUANTUM COMPUTERS				Total Hrs	9			
Guiding Principles, Conditions for Quantum Computation, Harmonic Oscillator Quantum Computer, Optical Photon Quantum Computer – Optical cavity Quantum electrodynamics, Ion traps, Nuclear Magnetic resonance.									
4	QUANTUM INFORMATIONS				Total Hrs	9			
Quantum noise and Quantum Operations – Classical Noise and Markov Processes, Quantum Operations, Examples of Quantum noise and Quantum Operations – Applications of Quantum operations, Limitations of the Quantum operations formalism, Distance Measures for Quantum information.									
5	QUANTUM ERROR CORRECTION				Total Hrs	9			
Introduction, Shor code, Theory of Quantum Error –Correction, Constructing Quantum Codes, Stabilizer codes, Fault – Tolerant Quantum Computation, Entropy and information – Shannon Entropy, Basic properties of Entropy, Von Neumann, Strong Sub Additivity, Data Compression, Entanglement as a physical resource.									
Total hours to be taught						45			
Text book (s) :									
1	Micheal A. Nielsen. & Issac L. Chiang, “Quantum Computation and Quantum Information”, Cambridge University Press, Fint South Asian edition, 2002.								
Reference(s):									
1	R.B.Griffits,”Quantum theory”, Cambridge University, edition, 2002.								
2	N.D.Mermin,”Quantum computer science Cambridge University Press, edition, 2002.								
3	C.Macchiavello,G.M.Palma & A.Zeilinger “Quantum Computation and Quantum Information”,World Scientific publication, edition 2000.								

K.S.Rangasamy College of Technology Autonomous Regulation								R 2007
Department	Computer Science and Engineering		Program code & Name			14 : B.E. Computer Science and Engineering		
Elective – V								
Course Code	Course Name	Hours/Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07140882E	GRID COMPUTING	3	0	0	3	50	50	100
Objective(s)	Understand the genecise of grid computing, and to know the application of grid computing, understanding the technology and tool kits to facilitated the grid computing							
1	INTRODUCTION				Total Hrs	9		
Early Grid Activities – Current Grid Activities – Over View of Grid Business Areas – Grid Application – Grid Infrastructure								
2	GRID COMPUTING INITIALIVES				Total Hrs	9		
Grid Computing Organizations and their roles: Organization Developing Grid Computing Tool Kids – Organization Building and using Grid Based Solutions – Commercial Organization - Grid Computing Anatomy : Grid Problem – Architecture -Grid Computing road map.								
3	GRID COMPUTING APPLICATIONS				Total Hrs	9		
Service Oriented Architecture – Web Service Architecture – XML message and Enveloping – Service message description mechanism – Web Service inter Operability.								
4	OPEN GRID SERVICE ARCHITECTURE				Total Hrs	9		
OGSA Architecture and Goal - Sample use cases – OGSA platform components: Native Platform service OGSA hosting environment, infrastructure, basic services - OGSI.								
5	GRID COMPUTING TOOL KITS				Total Hrs	9		
Globus GT 3 Toolkit – Architecture, Programming model, High level services – OGSI .Net middleware Solutions.								
Total hours to be taught						45		
Text book (s) :								
1	Joshy Joseph & Craig Fellenstein, “Grid Computing”, Pearson/PHI PTR-2003.							
Reference(s):								
1	Ahmar Abbas, “Grid Computing: A Practical Guide to technology and Applications”, Charles River media – 2003.							

K.S.Rangasamy College of Technology Autonomous Regulation								R 2007
Department	Computer Science and Engineering	Program code & Name			14: B.E. Computer Science and Engineering			
Elective – V								
Course Code	Course Name	Hours/Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07140883E	MOBILE COMPUTING	3	0	0	3	50	50	100
Objective(s)	Learn the basics of Wireless voice and data communications technologies build working knowledge on various telephone and satellite networks, to study the working principles of wireless LAN and its standards, build knowledge on various Mobile Computing algorithms and to build skills in working with Wireless application Protocols to develop mobile content applications.							
1	WIRELESS COMMUNICATION FUNDAMENTALS				Total Hrs	9		
Introduction – Wireless transmission – Frequencies for radio transmission – Signals – Antennas – Signal Propagation – Multiplexing – Modulations – Spread spectrum – MAC – SDMA – FDMA – TDMA – CDMA – Cellular Wireless Networks.								
2	TELECOMMUNICATION NETWORKS				Total Hrs	11		
Telecommunication systems – GSM – GPRS – DECT – UMTS – IMT-2000 – Satellite Networks - Basics – Parameters and Configurations – Capacity Allocation – FAMA and DAMA – Broadcast Systems – DAB - DVB.								
3	WIRLESS LAN				Total Hrs	9		
Wireless LAN – IEEE 802.11 - Architecture – services – MAC – Physical layer – IEEE 802.11a - 802.11b standards – HIPERLAN – Blue Tooth.								
4	MOBILE NETWORK LAYER				Total Hrs	9		
Mobile IP – Dynamic Host Configuration Protocol - Routing – DSDV – DSR – Alternative Metrics.								
5	TRANSPORT AND APPLICATION LAYERS				Total Hrs	7		
Traditional TCP – Classical TCP improvements – WAP, WAP 2.0.								
Total hours to be taught						45		
Text book (s) :								
1	Jochen Schiller, “Mobile Communications”, PHI/Pearson Education, Second Edition, 2003. (Unit I Chap 1,2 &3- Unit II chap 4,5 &6-Unit III Chap 7.Unit IV Chap 8- Unit V Chap 9&10.)							
2	William Stallings, “Wireless Communications and Networks”, PHI/Pearson Education, 2002. (Unit I Chapter – 7&10-Unit II Chap 9)							
Reference(s):								
1	Kaveh Pahlavan, Prasanth Krishnamoorthy, “Principles of Wireless Networks”, PHI/Pearson Education, 2003.							
2	Uwe Hansmann, Lothar Merk, Martin S. Nicklons and Thomas Stober, “Principles of Mobile Computing”, Springer, New York, 2003.							
3	Hazysztof Wesolowshi, “Mobile Communication Systems”, John Wiley and Sons Ltd, 2002.							

K.S.Rangasamy College of Technology Autonomous Regulation								R 2007
Department	Computer Science and Engineering		Program code & Name		14 : B.E. Computer Science and Engineering			
Elective – V								
Course Code	Course Name	Hours/Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07140884E	TCP / IP DESIGN AND IMPLEMENTATION	3	0	0	3	50	50	100
Objective(s)	Having learned about computer networks, this subject helps the students to learn TCP/IP protocol in depth considering design alternatives and implementation techniques to understand the internals of the TCP/IP protocols, understand how TCP/IP is actually implemented and to understand the interaction among the protocols in a protocol stack.							
1	INTRODUCTION				Total Hrs	9		
Internetworking concepts and architectural model- classful Internet address – CIDR-Subnetting and Supernetting –ARP- RARP- IP – IP Routing –ICMP – Ipv6								
2	TCP				Total Hrs	9		
Services – header – connection establishment and termination- interactive data flow- bulk data flow- timeout and retransmission – persist timer - keepalive timer- futures and performance								
3	IP IMPLEMENTATION				Total Hrs	9		
IP global software organization – routing table- routing algorithms-fragmentation and reassembly- error processing (ICMP) –Multicast Processing (IGMP)								
4	TCP IMPLEMENTATION I				Total Hrs	9		
Data structure and input processing – transmission control blocks- segment format- comparison-finite state machine implementation-Output processing- mutual exclusion-computing the TCP data length								
5	TCP IMPLEMENTATION II				Total Hrs	9		
Timers-events and messages- timer process- deleting and inserting timer event- flow control and adaptive retransmission-congestion avoidance and control – urgent data processing and push function.								
Total hours to be taught						45		
Text book (s) :								
1	Douglas E.Comer – “Internetworking with TCP/IP Principles, Protocols and Architecture”, Vol. 1 & 2 fourth edition, Pearson Education Asia, 2003. (Unit I in Comer Vol. I, Units II, IV & V – Comer Vol. II)							
2	W.Richard Stevens “TCP/IP illustrated” Volume 1 Pearson Education, 2003 (Unit II)							
Reference(s):								
1	TCP/IP protocol suite, Forouzan, 2nd edition, TMH, 2003							
2	W.Richard Stevens “TCP/IP illustrated” Volume 2 Pearson Education 2003.							

K.S.Rangasamy College of Technology Autonomous Regulation								R 2007
Department	Computer Science and Engineering	Program code & Name			14 : B.E. Computer Science and Engineering			
Elective – V								
Course Code	Course Name	Hours/Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07140885E	SERVICE ORIENTED ARCHITECTURE	3	0	0	3	50	50	100
Objective(s)	To study about SOA principles, and to study about SOA implementations, study about the data integration in SOA							
1	INTRODUCTION TO SOA				Total Hrs	9		
Software architecture- Introduction- Roles,SOA principles- SOA plans- SOA definitions-SOA models-SOA service categories- SOA infrastructure layers- pillars of SOA-ESB technology								
2	SOA CHALLENGES AND ANATOMY				Total Hrs	9		
Introduction- Basic technology-Current trends and challenges, Anatomy-SOA-Service architecture-Infrastructure and components-Standard for development of services-Elements of SOA-Service oriented modeling, analysis and design								
3	SOA IMPLIMENTATION PROCESS				Total Hrs	9		
Model drive Architecture-Middle tier data management in SOA- Examples- Data integration in SOA								
4	MIGRATING TO SOA				Total Hrs	9		
Problems in existing system- Nature of service- Requirements of SOA- Addressing the problems- Benefits of SOA- Future models- SOA implementation Framework(SOAIF)- Benefits- requirements- components								
5	SOA IMPLIMENTATION CHALLENGES				Total Hrs	9		
Components-Challenges in SOA- Overcoming the road blocks to SOA success- Delivering adaptable SOA – Cases in SOA								
Total hours to be taught						45		
Text book (s) :								
1	RAVI KUMAR JAIN BANDA by ICFAI university press							
Reference(s):								
1	Joshy Joseph & Craig Fellenstein, “Grid Computing”, PHI, PTR-2003.							

K.S.Rangasamy College of Technology Autonomous Regulation								R 2007
Department	Computer Science and Engineering		Program code & Name			14 : B.E. Computer Science and Engineering		
Elective – V								
Course Code	Course Name	Hours/Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07140886E	WIRELESS TECHNOLOGY	3	0	0	3	50	50	100
Objective(s)	Study the concept of wireless medium, study about wireless medium access; study about wireless network operation and to study about wireless WAN, wireless LANS and HIPERLANS.							
1	WIRELESS MEDIUM				Total Hrs		9	
Air Interface Design – Radio propagation mechanism – Pathloss modeling and Signal Coverage – Effect of Multipath and Doppler – Channel Measurement and Modelling – Simulation of Radio Channel.								
2	WIRELESS MEDIUM ACCESS				Total Hrs		9	
Fixed Assignment Access for Voice Networks – Random Access for Data Networks – Integration of Voice and Data Traffic.								
3	WIRELESS NETWORK OPERATION				Total Hrs		9	
Wireless Network Topologies – Cellular Topology – Cell fundamentals – Signal to Interference Ratio – Capacity Expansion – Mobility Management – Resources and Power Management – Security in Wireless Networks.								
4	WIRELESS WAN				Total Hrs		9	
GSM and TDMA Technology – Mobile Environment – Communication in the Infrastructure – CDMA Technology – IS95 – IMT2000 – Mobile Data Networks – CDPD Networks – GPRS – Mobile Application Protocol.								
5	WIRELESS LANS AND HIPERLANS				Total Hrs		9	
Introduction to wireless LANs – IEEE 802.11 – WPAN IEEE 802.15 – Wireless Home Networking – Concepts of Bluetooth Technology – Wireless Geolocation.								
Total hours to be taught							45	
Text book (s) :								
1	Kaveth Pahlavan, K.Prasanth Krishnamurthy, “Principles of Wireless Networks”, Pearson Education Asia, 2002							
Reference(s):								
1	Leon Garcia, Widjaja, “Communication Networks”, Tata McGraw Hill, New Delhi, 2000.							
2	William Stallings, “Wireless Communications and Networks”, Prentice Hall, 2002.							
3	Jochen Schiller, “Mobile Communications”, 2nd Edition, Pearson Education, 2003							