

K.S.Rangasamy College of Technology , Tiruchengode - 637215

Curriculum for the Programs under Autonomous Scheme

Regulation	R 2007
Department	Department of Electronics and Communication Engineering
Program Code & Name	13 : B.E (Electronics & Communication Engineering)

Semester – III

Subject Code	Course Name	Hours/ Week			Credit	Maximum marks		
		L	T	P		C	CA	ES
07130301G	Mathematics III	3	1	0	4	50	50	100
07130302C	Electrical Machines	3	1	0	4	50	50	100
07130303S	Data Structures using C	3	0	0	3	50	50	100
07130304S	Digital Electronics	3	0	0	3	50	50	100
07130305C	Electro Magnetic Fields	3	1	0	4	50	50	100
07130306C	Electronic Circuits- I	3	0	0	3	50	50	100
07130307P	Electrical Machines Lab	0	0	3	2	50	50	100
07130308P	Electronics lab - I	0	0	3	2	50	50	100
07130309P	Data structure Lab	0	0	3	2	50	50	100
07130310P	Comprehension - II	0	0	3	2	100	0	100
07130311P	Career Competency Development - I	0	0	3	2	100	0	100
Total		18	3	15	31			

Semester – IV

Subject Code	Course Name	Hours/ Week			Credit	Maximum marks		
		L	T	P		C	CA	ES
07130401C	Random Processes	3	1	0	4	50	50	100
07130402C	Electronic Circuits II	3	0	0	3	50	50	100
07130403C	Signals and Systems	3	1	0	4	50	50	100
07130404S	Object Oriented Programming	3	1	0	4	50	50	100
07130405C	Linear Integrated Circuits	3	0	0	3	50	50	100
07130406C	Measurements and Instrumentation	3	0	0	3	50	50	100
07130407P	Electronics circuits and simulation lab	0	0	3	2	50	50	100
07130408P	Linear Integrated Circuit Lab	0	0	3	2	50	50	100
07130409P	Object Oriented Programming Lab	0	0	3	2	50	50	100
07130410P	Comprehension - III	0	0	3	2	100	0	100
07130411P	Career Competency Development - II	0	0	3	2	100	0	100
Total		18	3	15	30			

Semester – V

Subject Code	Course Name	Hours/ Week			Credit	Maximum marks		
		L	T	P	C	CA	ES	Total
07130501C	Analog Communication	3	0	0	3	50	50	100
07130502C	Digital Signal Processing	3	1	0	4	50	50	100
07130503C	Microprocessors and Its Applications	3	0	0	3	50	50	100
07130504C	Control Systems	3	1	0	4	50	50	100
0713**++E	Elective - I	3	0	0	3	50	50	100
0713**++E	Elective - II	3	0	0	3	50	50	100
07130507P	Digital Signal Processing Lab	0	0	3	2	50	50	100
07130508P	Microprocessor and Application Lab	0	0	3	2	50	50	100
07130509P	Design Project - I	0	0	3	2	100	0	100
07130510P	Comprehension - IV	0	0	3	2	100	0	100
07130511P	Career Competency Development - III	0	0	3	2	100	0	100
Total		18	2	15	30			

Semester – VI

Subject Code	Course Name	Hours/ Week			Credit	Maximum marks		
		L	T	P	C	CA	ES	Total
07130601G	Professional Ethics	3	0	0	3	50	50	100
07130602C	Digital Communication	3	0	0	3	50	50	100
07130603C	VLSI Design	3	0	0	3	50	50	100
07130604C	Computer Networks	3	0	0	3	50	50	100
07130605C	Embedded systems	3	0	0	3	50	50	100
0713**++E	Elective - III	3	0	0	3	50	50	100
07130607P	Networks Lab	0	0	3	2	50	50	100
07130608P	VLSI Lab	0	0	3	2	50	50	100
07130609P	Design Project - II	0	0	3	2	100	0	100
07130510P	Comprehension - V	0	0	3	2	50	50	100
07130511P	Career Competency Development - IV	0	0	3	2	100	0	100
Total		18	0	15	28			

Semester – VII								
Subject Code	Course Name	Hours/ Week			Credit	Maximum marks		
		L	T	P	C	CA	ES	Total
07130701C	Antenna and Wave Propagation	3	1	0	4	50	50	100
07130702C	Mobile Communication	3	0	0	3	50	50	100
07130703C	Optical Communication	3	0	0	3	50	50	100
07130704C	Microwave Engineering	3	0	0	3	50	50	100
0713**++E	Elective IV	3	0	0	3	50	50	100
0713**++E	Elective V	3	0	0	3	50	50	100
07130707P	Embedded lab	0	0	3	2	50	50	100
07130708P	Optical & Microwave Lab	0	0	3	2	50	50	100
07130709P	Project Phase - I	0	0	3	2	100	0	100
07130510P	Comprehension -VI	0	0	3	2	50	50	100
07130511P	Career Competency Development - V	0	0	3	2	100	0	100
Total		18	1	15	29			
Semester – VIII								
Subject Code	Course Name	Hours/ Week			Credit	Maximum marks		
		L	T	P	C	CA	ES	Total
07130801G	Total Quality Management	3	0	0	3	50	50	100
0713**++E	Elective VI	3	0	0	3	50	50	100
0713**++E	Elective VII	3	0	0	3	50	50	100
07130804P	Project Phase - II	0	0	10	15	50	50	100
Total		9	0	10	24			

K.S.Rangasamy College of Technology , Tiruchengode - 637215

Curriculum for the Programs under Autonomous Scheme

Regulation	R 2007
Department	Department of Electronics and Communication Engineering
Program Code & Name	13 : B.E (Electronics & Communication Engineering)

List of Electives

SEMESTER – V

Subject Code	Course Name	Hours/ Week			Credit	Maximum marks		
		L	T	P	C	CA	ES	Total
0713**41E	Telecommunication Switching and Networks	3	0	0	3	50	50	100
0713**42E	Operating Systems	3	0	0	3	50	50	100
0713**43E	Television and Video Engineering	3	0	0	3	50	50	100
0713**44E	Electromagnetic Interference and Compatibility in System Design	3	0	0	3	50	50	100
0713**45E	Multimedia Systems	3	0	0	3	50	50	100
0713**46E	Advanced Digital System Design	3	0	0	3	50	50	100
0713**47E	Medical Electronics	3	0	0	3	50	50	100
0713**48E	Advanced Microprocessors	3	0	0	3	50	50	100
0713**49E	DSP Processor Architecture and programming	3	0	0	3	50	50	100
0713**50E	Database Management Systems	3	0	0	3	50	50	100
0713**51E	Real Time Operating System	3	0	0	3	50	50	100
0713**52E	Micro Controller System Design and Applications	3	0	0	3	50	50	100
0713**53E	High Speed Networks	3	0	0	3	50	50	100
0713**54E	Satellite Communication	3	0	0	3	50	50	100
0713**55E	Digital Image Processing	3	0	0	3	50	50	100
0713**56E	Computer Hardware and Interfacing	3	0	0	3	50	50	100
0713**57E	Wireless Network Technologies	3	0	0	3	50	50	100
0713**58E	TCP/IP	3	0	0	3	50	50	100
0713**59E	Internet Programming	3	0	0	3	50	50	100
0713**60E	Digital Communication Receivers	3	0	0	3	50	50	100
0713**61E	Radar and Navigational Aids	3	0	0	3	50	50	100
0713**62E	Speech and Audio Signal Processing.	3	0	0	3	50	50	100
0713**63E	Neural Networks and Applications	3	0	0	3	50	50	100
0713**64E	Global Positioning Systems	3	0	0	3	50	50	100
0713**65E	Multimedia Compression Techniques	3	0	0	3	50	50	100
0713**66E	Wireless Systems and Standards	3	0	0	3	50	50	100
0713**67E	CMOS VLSI Design	3	0	0	3	50	50	100

K.S.Rangasamy College of Technology Autonomous Regulation						R 2007		
Department	Electronics & Communication Engineering		Program Code & Name		13 : B.E.(Electronics & Communication Engineering)			
Semester - I								
Subject Code	Subject Name	Hours/ Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07000101G	Technical English (Common to All B.E, B.Tech)	3	0	0	3	50	50	100
Objectives								
i. To help learners improve their vocabulary and to enable them to use words appropriately in different academic and professional contexts. ii. To familiarize learners with different rhetorical functions of Technical English. iii. To help learners develop strategies that could be adopted while reading texts.								
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", 1 st Edition, Tata McGrawhil Publishing Company Ltd., New Delhi, 2005							
Reference(s) :								
1	Dr.M.Balasubraminian and Dr.G.Anbalagan, "Performance in English" Anuradha Publications, Kumbakonam, 2007.							
2	Sharon J. Gerson, Steven M. Gerson, "Technical Writing – Process & Product". 3 rd Edition, Pearson Education (Singapore) (p) Ltd., New Delhi, 2004.							
3	Mitra K. Barun, "Effective Technical Communication – A Guide for Scientists and Engineers", Oxford University Press, New Delhi, 2006.							

K.S.Rangasamy College of Technology Autonomous Regulation							R 2007	
Department	Electronics & Communication Engineering		Program Code & Name			13 : B.E.(Electronics & Communication Engineering)		
Semester - I								
Subject Code	Subject Name	Hours/ Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07000102G	Engineering Mathematics I (Common to All B.E, B.Tech)	3	1	0	4	50	50	100
Objectives								
On completion of the course the students are expected								
i. To identify algebraic eigenvalue problems from practical areas and obtain the eigensolutions in certain cases. ii. To diagonalizable a matrix which would render the eigensolution procedure very simple. iii. To understand effectively the geometrical aspects of curvature, maxima and minima concept as elegant iv. Differential calculus.								
1	MATRICES			Total Hrs		12		
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		12		
Curvature – Cartesian and polar co-ordinates – Centre and radius of curvature – Circle of curvature – Involutives and evolutes – Envelopes – Properties of envelopes and evolutes –Evolute as envelope of normals.								
3	FUNCTIONS OF SEVERAL VARIABLES			Total Hrs		12		
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		12		
Linear differential equations of Second and higher order with constant coefficient when the R.H.S is e^{ax} , x^n $n>0$, $\sin ax$, $\cos ax$, $e^{ax} x^n$, $e^x \sin x$, $e^x \cos x$, $x^n \sin x$ and $x^n \cos x$ – Differential Equations with variable coefficients (Cauchy’s Form and Legendre’s Linear Equation).								
5	DIFFERENTIAL EQUATIONS AND ITS APPLICATIONS			Total Hrs		12		
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						60		
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.							

K.S.Rangasamy College of Technology Autonomous Regulation							R 2007	
Department	Electronics & Communication Engineering		Program Code & Name			13 : B.E.(Electronics & Communication Engineering)		
Semester – I								
Subject Code	Subject Name	Hours/ Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07000103G	Applied Physics (Common to all B.E./B.Tech. programs)	4	0	0	4	50	50	100
Objectives								
i. Design of acoustically good buildings ii. Structural identification of engineering materials iii. Non destructive Techniques, Application of Quantum Physics iv. Application of Lasers in Engineering and Technology								
1	LASERS				Total Hrs	12		
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.								
2	FIBER OPTICS AND APPLICATIONS				Total Hrs	12		
Principles. Modes of propagation. - Crucible-crucible technique. Classification based on materials, refractive index profile. Splicing. Losses in optical fiber. Light sources for fiber optics. Detectors. Fiber optical communication links. Fiber optic sensors - temperature, displacement, voltage and magnetic field measurement.								
3	QUANTUM PHYSICS AND APPLICATIONS				Total Hrs	12		
Introduction to Quantum theory. Dual nature of matter and radiation - de Broglie wave length. Uncertainty principle. Schrödinger's equation. Particle in a box. Optical microscope - limitations of optical microscopy. Electron microscope - Scanning electron microscope, Transmission electron microscope and STEM								
4	ULTRASONICS				Total Hrs	12		
Introduction. Production – magnetostriction effect, magnetostriction generator, inverse piezoelectric effect, piezoelectric generator. Detection of ultrasonic. Properties. Cavitation. Industrial applications – drilling, welding, soldering and cleaning. Non Destructive Testing – pulse echo system through transmission, resonance system. Medical applications – cardiology, ultrasonic imaging								
5	VACCUM SCIENCE				Total Hrs	12		
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								
Total hours to be taught						60		
Text book (s) :								
1	Avadhanalu M N and Kshirsagar P G, "A Textbook of Engineering Physics", S. Chand & Company Ltd, New Delhi, 2005							
Reference(s):								
1	Jayakumar S,"Engineering Physics",R K Publishers,Coimbatore,2003.							
2	Dr.Arumugam.M,"Engineering Physics",Anuradha Publications,Kumbakonam,2006.							
3	Gaur R.K and Gupta S.L,"Engineering Physics",Dhanpati Rai and Sons ,New Delhi,2001.							

K.S.Rangasamy College of Technology Autonomous Regulation							R 2007	
Department	Electronics & Communication Engineering		Program Code & Name			13 : B.E.(Electronics & Communication Engineering)		
Semester – I								
Subject Code	Subject Name	Hours/ Week			Credit	Maximum Marks		
		L	T	P		C	CA	ES
07000104G	Applied Chemistry (Common to all B.E./B.Tech. programs)	4	0	0	4	50	50	100
Objectives								
The student should be conversant with								
<ul style="list-style-type: none"> i. The principles involved in electro chemistry, corrosion and its inhibition ii. Treatment of water for industrial purposes and the concept of energy storage devices lii Knowledge with respect to fuels and combustion 								
1	Water				Total Hrs	12		
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.								
2	Electro Chemistry				Total Hrs	12		
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.								
3	Corrosion & Corrosion Control				Total Hrs	12		
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 function – mechanism of drying								
4	Fuels & Combustion				Total Hrs	12		
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.								
5	Polymers				Total Hrs	12		
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.								
Total hours to be taught						60		
Text book (s) :								
1	Jain P C & Monica Jain, Engineering Chemistry , Dhanpat Rai Publishing Co., New Delhi, 14 th Edition, 2002							
Reference(s):								
1	Clair N Sawyer and Perry L Mc Carty, "Chemistry for Environmental Engineering", TMH Book Company, New Delhi, 14 th Edition, 2002.							
2	Dara S.S. "A text book of Engineering Chemistry, S.Chand & Co. Ltd.,2003.							

K.S.Rangasamy College of Technology Autonomous Regulation							R 2007	
Department	Electronics & Communication Engineering		Program Code & Name			13 : B.E.(Electronics & Communication Engineering)		
Semester - I								
Subject Code	Subject Name	Hours/ Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07000105G	Fundamentals of Programming	3	0	0	3	50	50	100
Objectives								
i. To enable the student to learn the major components of computer software ii. To learn how arithmetic is handled in computer iii. To know the correct and efficient ways of solving problems iv. To learn to program in C								
1	COMPUTER BASICS				Total Hrs	8		
Evolution of computers- Generations of computers- Applications of computers- - Computer Memory and Storage- Input Output Media - Algorithm- Flowchart- Pseudocode – Program control structures- - Programming languages- - Computer Software- Definition- Categories of Software								
2	SOFTWARE, PROGRAMMING AND INTERNET				Total Hrs	8		
Algorithm- Flowchart- Pseudocode – Program control structures- Programming paradigms- Programming languages- Generations of Programming languages- Computer Software- Definition- Categories of Software - Terminologies- Internet- Evolution- Basic Internet terms- Getting connected to Internet-Applications								
3	C FUNDAMENTALS				Total Hrs	9		
Introduction to C- Constants- Variables- Data types- Operators and Expressions- Managing Input and Output operations- Decision Making and Branching- Looping								
4	ARRAYS AND FUNCTIONS				Total Hrs	10		
Arrays- Character Arrays and Strings- User defined functions- Storage Classes								
5	STRUCTURES AND FILES				Total Hrs	10		
Structures- Definition- Initialization- Array of Structures- Structures within structures- Structures and Functions- Unions- File Management in C								
Total hours to be taught						45		
Text book (s) :								
1	ITL Education Solutions Limited, "Introduction to Information Technology", Pearson Education (India), 2005. (Unit I)							
Reference(s):								
1	E.Balagurusamy, "Programming in ANSI C", TMH, New Delhi, 2002 .							
2	Rajaraman V, "Fundamentals of Computers", Fourth Edition, PHI 2006.							
3	Byron Gottfried, "Programming with C", II Edition, TMH, 2002							

K.S.Rangasamy College of Technology Autonomous Regulation							R 2007	
Department	Electronics & Communication Engineering		Program Code & Name			13 : B.E.(Electronics & Communication Engineering)		
Semester – I								
Subject Code	Subject Name	Hours/ Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07010106S	Basics of Civil & Mechanical Engg	2	0	0	2	50	50	100
Objectives								
The subject covers the introduction to Civil Engineering, Basics of Materials and Building Construction and Surveying.								
A- CIVIL ENGINEERING								
1					Total Hrs	10		
Introduction – Civil Engineering – Materials – bricks – stones – sand - cement – concrete – steel sections – site for foundations. Bearing capacity – loads – Requirement of good foundations – types.								
2					Total Hrs	10		
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.								
3					Total Hrs	10		
Surveying – Objects – types – classification – principles – measurements of distances – angles – leveling – determination of areas – illustrative examples.								
Total hours to be taught						30		
Text book (s) :								
1	Shanmugam G and Palanichamy M S , Basic Civil and Mechanical Engg. , TMH Publishing Co., New Delhi, 1996							
Reference(s):								
1	Ramamrutham.S, Basic Civil Engineering Dhanpat Rai Publishing Co. (P) Ltd. 1999							

K.S.Rangasamy College of Technology Autonomous Regulation						R 2007		
Department	Electronics & Communication Engineering		Program Code & Name			13 : B.E.(Electronics & Communication Engineering)		
Semester – I								
Subject Code	Subject Name	Hours/ Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07010106S	Basics of Civil & Mechanical Engg.	2	0	0	2	50	50	100
Objectives								
i. To build familiarities in basic Mechanical Engineering. ii. To understand the concept used in Power plant, IC Engines, Refrigeration and Air conditioning system.								
B- MECHANICAL ENGINEERING								
1	POWER PLANT ENGINEERING				Total Hrs	10		
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.								
2	IC ENGINES				Total Hrs	10		
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.								
3	REFRIGERATION AND AIR CONDITIONING SYSTEM				Total Hrs	10		
Terminology of Refrigeration and Air conditioning. Principle of vapour compression and absorption system - Layout of typical domestic refrigerator - Window and Split type room Air conditioner.								
Total hours to be taught						30		
Text book (s) :								
1	Shanmugam G, Basic Mechanical Engg. ,TMH Publishing Co., New Delhi, 2005							
Reference(s):								
1	Venugopal K and Prahua Raja V, Basic Mechanical Engineering , Anuradha Publishers, Kumbakonam, 2000.							
2	Shantha Kumar S R J., Basic Mechanical Engineering , Hi-tech Publications, Mayiladuthurai, 2000							

K.S.Rangasamy College of Technology Autonomous Regulation							R 2007	
Department	Electronics & Communication Engineering	Program Code & Name			13 : B.E.(Electronics & Communication Engineering)			
Semester – I								
Subject Code	Subject Name	Hours/ Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07000107G	Applied Physics Laboratory	0	0	3	2	50	50	100
LIST OF EXPERIMENTS								
<ol style="list-style-type: none"> 1. Particle size using determination using Diode Laser. 2. Determination of Laser Parameters – Wave length, Refractive Index and Angle of Divergence 3. Determination of acceptance angle in an optic fiber. 4. Determination of Thickness of fiber – Air wedge method. 5. Determination of velocity of sound and compressibility of liquid – Ultrasonic Interferometer 6. Determination of wavelength of mercury spectrum by Spectrometer Grating. 7. Determination of specific resistance of given coil of wire – Carey Foster’s Bridge. 8. Determination of thermal conductivity of a Bad conductor - Lee’s Disc method. 9. Determination of Hysteresis losses in a Ferromagnetic material. 10. Determination of young” s Modulus of the material in the form of Bar -Cantiliver method 11. Determination of Band Gap of Semiconductor material. 12. Determination of Viscosity of liquid - Poiseuille’s method 								

K.S.Rangasamy College of Technology Autonomous Regulation							R 2007	
Department	Electronics & Communication Engineering	Program Code & Name			13 : B.E.(Electronics & Communication Engineering)			
Semester – I								
Subject Code	Subject Name	Hours/ Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07000108G	Applied Chemistry laboratory	0	0	3	2	50	50	100
LIST OF EXPERIMENTS								
<ol style="list-style-type: none"> 1. Estimation of hardness of water by EDTA. 2. Estimation of alkalinity of water sample. 3. Estimation of chloride content in water sample. 4. pH titration 5. potentiometric 6. Conductometric titration 7. Determination of EMF of an unknown cell 8. Determination of degree of dissociation of weak electrolyte. 9. Estimation of Ferric iron by spectrophotometry 10. Determination of total solids in boiler feed water. 11. Determination of water crystallization of a crystalline salt (Copper sulphate) 12. Determination of sodium and potassium in a water sample (by flame photometry) 								

K.S.Rangasamy College of Technology Autonomous Regulation							R 2007	
Department	Electronics & Communication Engineering		Program Code & Name			13 : B.E.(Electronics & Communication Engineering)		
Semester – I								
Subject Code	Subject Name	Hours/ Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07000109G	Programming Laboratory	0	0	3	2	50	50	100
LIST OF EXPERIMENTS								
<ol style="list-style-type: none"> 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 for mark sheet processing using files. 12. Write a C Program to perform merge the given two files. <p>Software Requirements :</p> <p>Operating System : Windows / Unix clone</p> <p>Compiler : C Compiler</p>								

K.S.Rangasamy College of Technology Autonomous Regulation							R 2007	
Department	Electronics & Communication Engineering		Program Code & Name			13 : B.E.(Electronics & Communication Engineering)		
Semester – I								
Subject Code	Subject Name	Hours/ Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07000110G	Engineering Practice Lab	0	0	3	2	50	50	100
LIST OF EXPERIMENTS								
Plumbing								
<ol style="list-style-type: none"> 1. Safety aspects in Plumbing. 2. Study of tools and equipments - preparation of models 3. Cutting and Threading of G.I. Pipes 4. Study of valves, taps and repairing 5. Measuring and marking practice of PVC & G.I. pipes - connection to service line 								
Sheet Metal								
<ol style="list-style-type: none"> 1. Study of Tools, Equipments and Safety precautions. 2. Drawing of tools and accessories 3. Different types of joints making - knocked up, double grooving joints 4. Model making –Trays, Baskets and Funnels 								
Electrical Wiring								
<ol style="list-style-type: none"> 1. Safety aspects of Electrical wiring 2. Study of Electrical materials and wiring components 3. Wiring circuit for a lamp using single and Stair case switches. 4. Wiring circuit for fluorescent lamps 5. Calculation of power and energy 								
Welding and Soldering								
<ol style="list-style-type: none"> 1. Safety aspects of Welding and Soldering 2. Study of Gas and Arc Welding Equipments 3. Welding of Lap, Butt, T-joints & Corner Joints 4. Model making –Trays, Baskets and Funnels. 								

K.S.Rangasamy College of Technology Autonomous Regulation							R 2007	
Department	Electronics & Communication Engineering		Program Code & Name			13 : B.E.(Electronics & Communication Engineering)		
Semester – II								
Subject Code	Subject Name	Hours/ Week			Credit	Maximum Marks		
		L	T	P		C	CA	ES
07000201G	Communication Skills (Common to all B.E./B.Tech. programs)	3	0	0	3	50	50	100
Objectives								
i. To equip students with effective speaking and listening skills in English. ii. To help them develop the soft skills and people skills which will make them to excel in their job's. iii. To enhance to students' performs at placement interviews.								
1	Listening				Total Hrs	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								
2	Communication				Total Hrs	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								
3	Conversation Skills				Total Hrs	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								
4	Remedial Grammar & Vocabulary				Total Hrs	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								
5	Written communication & Career Skills				Total Hrs	9		
Writing e-mails - Writing Reports - Note – taking and note – making - Preparing curriculum vitae and cover – letters - Facing an interview - Presentation skills - Persuasion skills								
Total hours to be taught						45		
Text book (s) :								
1	Rizvi M Ashraf, "Effective Technical Communication", 1 st Edition, Tata McGrawhil Publishing Company Ltd., New Delhi, 2005.							
Reference(s):								
1	Kiranmai Dutt P, Geetha Rajeevan and Prakash C L N, "A Course in Communication Skills", by Ebek – Cambridge University Press India Pvt. Ltd.,							
2	Naterop, cup "Telephoning in English – Cambridge University Press India Pvt.Ltd., 2007							
3	Richard, "New Interchange Services (Student's Book)" – Introduction, Level – 1, Level – 2, Level – 3, Cambridge University Press India Pvt.Ltd., 2007.							

K.S.Rangasamy College of Technology Autonomous Regulation						R 2007		
Department	Electronics & Communication Engineering		Program Code & Name			13 : B.E.(Electronics & Communication Engineering)		
Semester - II								
Subject Code	Subject Name	Hours/ Week			Credit	Maximum Marks		
		L	T	P		C	CA	ES
07000202G	Engineering Mathematics-II	3	1	0	4	50	50	100
Objectives								
On completion of the course the students are expected								
i. To identify multiple integrals problems from practical areas								
ii. To understand effectively the geometrical aspects of analytic functions, complex variables and Laplace transform.								
1	MULTIPLE INTEGRALS				Total Hrs	12		
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)								
2	VECTOR CALCULUS				Total Hrs	12		
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								
3	ANALYTIC FUNCTIONS				Total Hrs	12		
Function of a complex variable – Analytic function – Necessary conditions –Polar form– Cauchy– Riemann equations – Sufficient conditions (excluding proof) – Properties of analytic function – Harmonic conjugate – Construction of Analytic functions –Conformal mapping: $w = a+z$, az , $1/z$ and bilinear transformation .								
4	COMPLEX INTEGRATION				Total Hrs	12		
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).								
5	LAPLACE TRANSFORM				Total Hrs	12		
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.								
Total hours to be taught						60		
Text book (s) :								
1	Veerarajan. T., "Engineering Mathematics (for first year), Fourth Edition Tata -McGraw- Hill Publishing Company Limited, New Delhi, 2005.							
Reference(s):								
1	Kandasamy. P, Thilagavathy. K and Gunavathy. K, "Engineering Mathematics" – S.Chand and Co. New Delhi 2007							
2	Venkataraman.M.K, "Engineering Mathematics, Volume I & II Revised Enlarged Fourth Edition", The National Pub. Co., Chennai, 2004.							
3	Widder. D.V., "Advanced Calculus", Second Edition, Prentice Hall of India, New Delh i, 2000.							

K.S.Rangasamy College of Technology Autonomous Regulation r							R 2007	
Department	Electronics & Communication Engineering			Program Code & Name		13 : B.E.(Electronics & Communication Engineering)		
Semester - II								
Subject Code	Subject Name	Hours/ Week			Credit	Maximum Marks		
		L	T	P		C	CA	ES
07000203G	Material Science (Common to all B.E./B.Tech. programs)	4	0	0	4	50	50	100
Objectives								
i. Impart fundamental knowledge in various engineering subject and applications ii. Application of conducting, Superconducting and Magnetic Materials iii. Application of dielectric ,New engineering Materials and Nanomaterials in Modern Technology.								
1	SEMICONDUCTING MATERIALS AND DEVICES				Total Hrs	12		
Elemental and compound semiconductors. Intrinsic and extrinsic semiconductors - Properties.Carrier concentration in intrinsic and extrinsic semiconductors (qualitative). Material preparation - Czochralski's technique and zone refining technique. Hall effect - Hall coefficient in extrinsic semiconductors, experimental determination of Hall coefficient. Application of Hall effect. Semiconductor devices – Solar Cells, LED, Photodiode, LDR, LCD and Strain Gauges.								
2	MAGNETIC MATERIALS				Total Hrs	12		
Ferro and ferrimagnetic materials – Properties Heisenberg and domain theory of ferromagnetism. Hysteresis. Hard and soft magnetic materials. Ferrites – structure, preparation and applications. Devices and applications - Permanent magnets, transformer cores, magneto optical recording, magnetic valves and bearings, Superconducting Magnets, SQUIDS.								
3	SMART MATERIALS				Total Hrs	12		
Shape Memory alloys (SMA) – Characteristics, properties of NiTi alloy, application, advantages and disadvantages of SMA. Nanophase materials – preparation – mechanical alloying and solgel technique, properties & applications. Superconductivity BCS theory of superconductivity (qualitative),Types of superconductors, properties – High Tc superconductors. Application of superconductors SQUID,Cryotron, Magnetic levitation. Metallic glasses – Preparation, properties & applications.								
4	NANOMATERIALS AND CHARACTERIZATION				Total Hrs	12		
Fabrication methods – Top down processes – Milling, lithographics, machining process – Bottom-up process – Vapour phase deposition methods, plasma-assisted deposition process, MBE and MOVPE, liquid phase methods, colloidal and solgel methods– Methods for templating the growth of nanomaterials – Ordering of nanosystems, self-assembly and self-organisation – Preparation, safety and storage issues.								
5	NANODEVICES AND THEIR VARIOUS APPLICATIONS				Total Hrs	12		
Nanomagnetic materials – Particulate nanomagnets and geometrical nanomagnets – Magneto resistance – Probing nanomagnetic materials – Nanomagnetism in technology– Carbon nanotubes – fabrication- applications– Organic FET, organic LED's – Organic photovoltaics – Injection lasers, quantum cascade lasers, optical memories, electronic applications, colulomb blockade devices.								
Total hours to be taught						60		
Text book (s) :								
1	Jayakumar S, "Materials Science", R K Publishers, Coimbatore, 2004							
Reference(s):								
1	Raghavan V., "Materials Science and Engineering" -Prentice Hall of India, New Delhi, 2001.							
2	James F Shackelford, S "Introduction to Materials Science for Engineers", 6 edition, Macmillan Publishing Company, New York. 2004.							

K.S.Rangasamy College of Technology Autonomous Regulation							R 2007	
Department	Electronics & Communication Engineering		Program Code & Name			13 : B.E.(Electronics & Communication Engineering)		
Semester - II								
Subject Code	Subject Name	Hours/ Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07000204G	Environmental Science (Common to all B.E./B.Tech. programs)	4	0	0	4	50	50	100
Objectives								
The student should be conversant with								
i. The evolution of environmentalism and the importance of environmental studies								
ii. Focuses on the various natural resources and the current threats to their sustainability								
iii. Significance and protection of bio diversity and various forms of environmental degradation								
1					Total Hrs	12		
Atmosphere – Planet Earth – Biosphere – Hydrosphere – Lithosphere – Ecosystem and Bio diversity – endemic and endangered species – habitat – wet lands – deforestation – hotspot – composition of atmosphere – Troposphere – stratosphere – mesosphere – thermosphere – ozone and ozone depletion – Air pollution – pollution sources , effects and control – green house effect and global warming – climate change – Case Studies in current scenario.								
2					Total Hrs	12		
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 – acid rain –thermal pollution, noise pollution and control - Case Studies in current scenario.								
3					Total Hrs	12		
Land – weathering and erosion - types of weathering – types of soil – soil erosion – land slides – 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					Total Hrs	12		
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								
5					Total Hrs	12		
Biogeographical classification of India – Biodiversity in India – India as mega diversity nation – hotspots of biodiversity in India – threats to biodiversity – 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						60		
Text book (s) :								
1	Linda D. Williams – “Environmental Science Demystified”, Tata McGraHill Publishing Company Limited , 2005							
Reference(s):								
1	G. Tyler Miller, JR _ “Environmental Science “, Thomson, 2004							
2	William P. Cunningham – “Principles of Environmental Science”, Tata McGra w Hill, New Delhi, 2007							

K.S.Rangasamy College of Technology Autonomous Regulation							R 2007	
Department	Electronics & Communication Engineering		Program Code & Name			13 : B.E.(Electronics & Communication Engineering)		
Semester - II								
Subject Code	Subject Name	Hours/ Week			Credit	Maximum Marks		
		L	T	P		C	CA	ES
07130205S	Circuit theory	3	1	0	4	50	50	100
Objectives								
The students should appreciate the function of any complex electronic circuits by his understanding of RL,RC, RLC and transformed coupled circuits								
1	BASIC CIRCUIT ANALYSIS				Total Hrs	12		
Ohm's law, Kirchoff's laws, DC and AC Circuits, Resistors in series and parallel Circuits, Mesh current and Node voltage method of analysis for both circuits.								
2	NETWORK THEOREMS FOR DC AND AC CIRCUITS				Total Hrs	12		
Thevenin's and Norton's theorem – Super position theorem – Maximum power transfer theorem – Reciprocity Theorem								
3	RESONANCE AND COUPLED CIRCUITS				Total Hrs	12		
Series and parallel Resonance, their frequency response, Quality factor and Bandwidth, Self and Mutual Inductance, coefficient of coupling, Tuned circuits, single tuned circuits.								
4	TRANSIENT FOR DC CIRCUITS				Total Hrs	12		
Transient response of RL , RC and RLC circuits using Laplace transform for DC input								
5	DUALITY AND TOPOLOGY				Total Hrs	12		
Concept of duality, Dual network, Graphs of a network, Trees, Chords and branches, Tie set and cut set of a graph, Application to network analysis.								
Total hours to be taught						60		
Text book (s) :								
1	William H.Hayt Jv, Jack E.Kemmerly and Steven M.Durbin, "Engineering Circuit Analysis", TMH Publishers, 6 th edition, New Delhi, 2002							
Reference(s):								
1	Joseph A.Edminister, Mahmood Nahri, "Electric Circuits", Schaum's Series, Tata McGraw- Hill, New Delhi 2001							
2	Paranjothi S R," Electric Circuit Analysis", New Age International Ltd., New Delhi, 1996							
3	Chakrabati A, "Circuit Theory (Analysis and Synthesis)", Dhanpath Rai & Sons, New Delhi, 1999.							

K.S.Rangasamy College of Technology Autonomous Regulation						R 2007		
Department	Electronics & Communication Engineering		Program Code & Name			13 : B.E.(Electronics & Communication Engineering)		
Semester – II								
Subject Code	Subject Name	Hours/ Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07130205S	Electron Devices	3	1	0	4	50	50	100
Objectives								
On completion of this course the student will understand								
<ul style="list-style-type: none"> i. The basics of electron motion in electric field and magnetic field, and passive circuit components. ii. Mechanisms of current flow in semi-conductors. iii. Diode operation and switching characteristics. iv. Working principle of transistors. 								
1	ELECTRON BALLISTICS & SEMICONDUCTOR THEORY				Total Hrs	12		
Electron Ballistics: Charged particle, Force on Charged particles in an Electric field, Constant field Potential, Field Intensity, Force in Magnetic field, Motion in a magnetic – Parallel Electric and Magnetic Fields – Perpendicular Electric and Magnetic Fields. Semiconductor Theory: Review of Intrinsic & extrinsic semiconductors – classical theory and Energy Band theory – charge densities in semiconductors – mobility and conductivity – Drift and Diffusion current.								
2	SEMICONDUCTOR DIODES				Total Hrs	12		
Construction of PN junction diodes – VI characteristics – Quantitative theory of PN diode,current components Diode resistance Transition and diffusion capacitances – Effect of temperature on PN junction characteristics – Model of diode – Diode specification – Clipping and Clamping Circuits – Voltage multipliers using diodes.								
3	BI-POLAR JUNCTION TRANSISTOR				Total Hrs	12		
Construction of a Transistor – Principle of Transistor action - Currents in transistor – Input and output characteristics of a transistor in CE, CB and CC configurations – cut off, active saturation and break down regions – Current gain in CE, CB and CC configurations – h parameter model for BJT – BJT specification.								
4	FIELD EFFECT TRANSISTORS AND UJT				Total Hrs	12		
Construction and characteristics of JFET – parameters of JFET – MOSFET – Depletion and Enhancement mode – FET in CS, CD and CG Configurations – equivalent circuits of FET at low frequencies – FET model at high frequencies – FET specification, Construction, Theory of operation and characteristics of UJT.								
5	SPECIAL SEMICONDUCTOR DEVICES				Total Hrs	12		
Fabrication and Characteristics of Zener Diode – Tunnel Diode – Pin Diode – Varactor Diode – Construction and Characteristics of SCR – Two Transistor Equivalent Circuits – Applications – TRIAC and DIAC – LASCR and CCD – Photodiodes – Photo conductive cell – photo voltaic cell – LED, LCD – photo transistors – solar cell – opto couplers.								
Total hours to be taught						60		
Text book (s) :								
1	Salivahanam S, Suresh Kumar N and vallyvaraj A, “Electronic Devices and Circuits”, TMH, 1998.							
Reference(s):								
1	Jacob Millman, Christos C.Halkias, ‘Electronic Devices and Circuits’, Tata McGraw Hill Publishing Limited, New Delhi, 2003.							
2	Ben G. Streetman and Sanjay Banerjee, ‘Solid State Electronic Devices’, Pearson Education, 2002.							
3	David A. Bell, ‘Electronic Devices and Circuits’, Prentice Hall of India Private Limited, 4 th edition, New Delhi, 2003							

K.S.Rangasamy College of Technology Autonomous Regulation						R 2007		
Department	Electronics & Communication Engineering		Program Code & Name			13 : B.E.(Electronics & Communication Engineering)		
Semester - II								
Subject Code	Subject Name	Hours/ Week			Credit	Maximum Marks		
		L	T	P		C	CA	ES
07000207G	Engineering Graphics	1	0	3	3	50	50	100
Objectives								
To develop graphics skills for communicating concepts, ideas and designs of engineering products and to give exposure to national standards relating to technical drawings								
1	CONCEPTS AND CONVENTIONS				Total Hrs	4		
Importance of graphics in engineering communication of concepts and ideas in the design of engineering products – conventional and computer methods – layout, orthographic and isometric representation techniques - relative merits and demerits – 2D and 3d modeling - specifications of size and layout of drawing sheets – Lettering and dimensioning – conventions followed.								
2	CURVES AND SHAPES USED IN ENGINEERING PRODUCTS				Total Hrs	4		
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.								
3	FREE HAND SKETCHING PRACTICES				Total Hrs	7		
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.								
4	DEVELOPMENT OF SURFACES – PRACTICES				Total Hrs	5		
Development of lateral surfaces of simple and truncated solids – prisms, pyramids, cylinders and cones - freehand sketching practices - simple exercises to practice.								
5	2D DRAFTING				Total Hrs	20		
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.								
6	SOLID MODELING				Total Hrs	20		
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								
Total hours to be taught						60		
Text book (s) :								
1	Dhananjay.A. Jolhe, “Engineering Drawing”, Tata McGraw Hill Publishing Co., 2007							
Reference(s):								
1	K.V.Natarajan “A text book of Engineering Graphics”, Dhanalakshmi Publishers, Chennai, 2006							
2	M.B. Shah and B.C. Rana, “Engineering Drawing”, Pearson Education, 2005.							
3	Luzadder and Duff, “Fundamentals of Engineering Drawing” Prentice Hall of India Pvt Ltd, XI Edition - 2001							

K.S.Rangasamy College of Technology Autonomous Regulation							R 2007	
Department	Electronics & Communication Engineering	Program Code & Name			13 : B.E.(Electronics & Communication Engineering)			
<u>Semester – II</u>								
Subject Code	Subject Name	Hours/ Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07130208S	Circuits Lab	0	0	3	2	50	50	100
LIST OF EXPERIMENTS								
<ol style="list-style-type: none"> 1. Verification of Ohm's Laws and Kirchoff's Laws. 2. Verification of Thevenin's and Norton's Theorem 3. Verification of Superposition Theorem 4. Verification of Maximum Power Transfer Theorem 5. Verification of Reciprocity Theorem 6. Verification of Self and Mutual Inductances of a coil 7. Verification of Mesh and Nodal analysis 8. Transient response of RL and RC circuits 9. Frequency response of Series and Parallel Resonance Circuits 10. Frequency response of Single Tuned coupled Circuits. 								

K.S.Rangasamy College of Technology Autonomous Regulation							R 2007	
Department	Electronics & Communication Engineering	Program Code & Name			13 : B.E.(Electronics & Communication Engineering)			
<u>Semester – II</u>								
Subject Code	Subject Name	Hours/ Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07130209S	Electron Devices Lab	0	0	3	2	50	50	100
LIST OF EXPERIMENTS								
<ol style="list-style-type: none"> 1. Characteristics of PN Junction Diode and Zener Diode 2. Characteristics of BJT (common emitter configuration) 3. BJT (common base configuration) 4. Characteristics of JFET and MOSFET 5. Characteristics of UJT 6. Characteristics of SCR 7. Characteristics of DIAC and TRIAC 8. Characteristics of Photo Diode and Photo Transistor 9. Measurement of Voltage, frequency and phase angle using CRO 10. Measurement of Hybrid parameters of a Transistor. 								

K.S.Rangasamy College of Technology Autonomous Regulation							R 2007	
Department	Electronics & Communication Engineering		Program Code & Name			13 : B.E.(Electronics & Communication Engineering)		
<u>Semester - III</u>								
Subject Code	Subject Name	Hours/ Week			Credit	Maximum Marks		
		L	T	P		C	CA	ES
07130301G	Mathematics III (Common to all B.E./ B.Tech branches)	3	1	0	4	50	50	100
Objectives								
The course objective is to impart analytical skills to the students in the areas of boundary value problems and transform techniques. This will be necessary for their effective studies in a large number of engineering subjects like heat conduction, communication systems, electro-optics and electromagnetic theory. The course will also serve as a prerequisite for post graduate and specialized studies and research.								
1	PARTIAL DIFFERENTIAL EQUATIONS			Total Hrs		12		
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.								
2	FOURIER SERIES			Total Hrs		12		
Dirichlet’s conditions – General Fourier series – Odd and even functions – Half range sine series – Half range cosine series –Parseval’s Identity – Harmonic Analysis.								
3	BOUNDARY VALUE PROBLEMS			Total Hrs		12		
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.								
4	FOURIER TRANSFORM			Total Hrs		12		
Fourier transform pair – Sine and Cosine transforms – Properties – Transforms of simple functions – Convolution theorem – Parseval’s Identity – Problems.								
5	Z -TRANSFORM AND DIFFERENCE EQUATIONS			Total Hrs		12		
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.								
Total hours to be taught						60		
Text book (s) :								
1	Grewal, B.S., “Higher Engineering Mathematics”, Thirty Sixth Edition, Khanna Publishers, Delhi, 2001.							
2	T.Veerarajan, “Engineering Mathematics -III”, Tata McGraw Hill Publishing Company Limited, New Delhi.							
Reference(s) :								
1	Kandasamy, P., Thilagavathy, K., and Gunavathy, K., “Engineering Mathematics Volume III”, S. Chand & Company Ltd., New Delhi, 1996							
2	Narayanan, S., Manicavachagom Pillay, T.K. and Ramaniah, G., “ Advanced Mathematics for Engineering Students”, Volumes II and III, S. Viswanathan (Printers and Publishers) Pvt. Ltd. Chennai, 2002.							

K.S.Rangasamy College of Technology Autonomous Regulation							R 2007	
Department	Electronics & Communication Engineering		Program Code & Name			13 : B.E.(Electronics & Communication Engineering)		
<u>Semester - III</u>								
Subject Code	Subject Name	Hours/ Week			Credit	Maximum Marks		
		L	T	P		C	CA	ES
07130302C	Electrical Machines	3	1	0	4	50	50	100
Objectives								
To impart knowledge on								
i. Constructional details, principle of operation, performance, starters and testing of D.C. machines. ii. Constructional details, principle of operation and performance of transformers. iii. Constructional details, principle of operation and performance of induction motors.								
1	D.C. MACHINES			Total Hrs		12		
Constructional details – emf equation – Methods of excitation – Self and separately excited generators – Characteristics of series, shunt and compound generators – Principle of operation of D.C. motor – Back emf and torque equation – Characteristics of series, shunt and compound motors - Starting of D.C. motors – Types of starters - Testing, brake test and Swinburne’s test – Speed control of D.C. shunt motors.								
2	TRANSFORMERS			Total Hrs		12		
Constructional details – Principle of operation – emf equation – Transformation ratio – Transformer on no load – Parameters referred to HV/LV windings – Equivalent circuit – Transformer on load – Regulation - Testing – Load test, open circuit and short circuit tests.								
3	INDUCTION MOTORS			Total Hrs		12		
Construction – Types – Principle of operation of three-phase induction motors – Equivalent circuit – Performance calculation – Starting and speed control – Single-phase induction motors (only qualitative treatment).								
4	SYNCHRONOUS AND SPECIAL MACHINES			Total Hrs		12		
Construction of synchronous machines -types – Induced emf – Voltage regulation; emf and mmf methods – Brushless alternators – Reluctance motor – Hysteresis motor – Stepper motor								
5	TRANSMISSION AND DISTRIBUTION			Total Hrs		12		
Structure of electric power systems – Generation, transmission, sub-transmission and distribution systems - EHVAC and EHVDC transmission systems – Substation layout – Insulators – cables.								
Total hours to be taught						60		
Text book (s) :								
1	D.P.Kothari and I.J.Nagrath, ‘Basic Electrical Engineering’, Tata McGraw Hill publishing company ltd, second edition, 2002							
2	C.L. Wadhwa, ‘Electrical Power Systems’, Wiley eastern ltd India, 1985.							
Reference(s) :								
1	S.K.Bhattacharya, ‘Electrical Machines’, Tata McGraw Hill Publishing company ltd, second edition, 1998.							
2	V.K.Mehta and Rohit Mehta, ‘Principles of Power System’, S.Chand and Company Ltd, third edition, 2003.							

K.S.Rangasamy College of Technology Autonomous Regulation							R 2007	
Department	Electronics & Communication Engineering		Program Code & Name			13 : B.E.(Electronics & Communication Engineering)		
<u>Semester - III</u>								
Subject Code	Subject Name	Hours/ Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07130303S	Data Structures using C	3	0	0	3	50	50	100
Objectives								
i. To learn the systematic way of solving problems ii. To understand the different methods of organizing large amounts of data iii. To learn to program in C iv. To efficiently implement the different data structures								
1	PROBLEM SOLVING			Total Hrs		9		
Introduction - Problem solving aspect – Top-down Design – Implementation of algorithms – Efficiency of algorithms – Analysis of Algorithms – Fundamental algorithms								
2	LISTS, STACKS AND QUEUES			Total Hrs		9		
Abstract Data Type (ADT) – The List ADT – The Stack ADT – The Queue ADT								
3	TREES			Total Hrs		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								
4	SORTING			Total Hrs		9		
Preliminaries – Insertion Sort – Shellsort – Heapsort – Mergesort – Quicksort – External Sorting								
5	GRAPHS			Total Hrs		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.								
Total hours to be taught						45		
Text book (s) :								
1	Y. Langsam, M. J. Augenstein and A. M. Tenenbaum, "Data Structures using C", Pearson Education Asia, 2004							
2	M. A. Weiss, "Data Structures and Algorithm Analysis in C", 2 nd ed, Pearson Education Asia, 2002. (chaps 3, 4.1-4.4 (except 4.3.6), 4.6, 5.1-5.4.1, 6.1-6.3.3, 7.1-7.7 (except 7.2.2, 7.4.1, 7.5.1, 7.6.1, 7.7.5, 7.7.6), 7.11, 9.1-9.3.2, 9.5-9.5.1, 9.6-9.6.2, 9.7)							
Reference(s) :								
1	Y. Langsam, M. J. Augenstein and A. M. Tenenbaum, "Data Structures using C", Pearson Education Asia, 2004							
2	Richard F. Gilberg, Behrouz A. Forouzan, "Data Structures – A Pseudocode Approach with C", Thomson Brooks / COLE, 1998							

K.S.Rangasamy College of Technology Autonomous Regulation							R 2007	
Department	Electronics & Communication Engineering			Program Code & Name		13 : B.E.(Electronics & Communication Engineering)		
<u>Semester - III</u>								
Subject Code	Subject Name	Hours/ Week			Credit	Maximum Marks		
		L	T	P		C	CA	ES
07130304S	Digital Electronics	3	0	0	3	50	50	100
Objectives								
i. To introduce number systems and codes ii. To introduce basic postulates of Boolean algebra and shows the correlation between Boolean expressions iii. To introduce the methods for simplifying Boolean expressions iv. To outline the formal procedures for the analysis and design of combinational circuits and sequential circuits v. To introduce the concept of memories and programmable logic devices								
1	NUMBER SYSTEMS			Total Hrs		9		
Binary, Octal, Decimal, Hexadecimal-Number base conversions – complements – signed Binary numbers. Binary Arithmetic- Binary codes: Weighted –BCD-2421-Gray code-Excess 3 code-ASCII –Error detecting code – conversion from one code to another-Boolean postulates and laws –De-Morgan's Theorem- Principle of Duality- Boolean expression – Boolean function- Minimization of Boolean expressions – Sum of Products (SOP) –Product of Sums (POS)-Minterm- Maxterm- Canonical forms – Conversion between canonical forms –Karnaugh map Minimization – Don't care conditions.								
2	LOGIC GATES & COMBINATIONAL CIRCUITS			Total Hrs		9		
LOGIC GATES: AND, OR, NOT, NAND, NOR, Exclusive – OR and Exclusive – NOR- Implementations of Logic Functions using gates, NAND –NOR implementations –Multi level gate implementations- Multi output gate implementations. TTL and CMOS Logic and their characteristics –Tristate gates. COMBINATIONAL CIRCUITS: Design procedure – Adders-Subtractors – Serial adder/ Subtractor - Parallel adder/ Subtractor- Carry look ahead adder- BCD adder- Magnitude Comparator- Multiplexer/ Demultiplexer- encoder / decoder – parity checker – code converters. Implementation of combinational logic using MUX, ROM, PAL and PLA.								
3	SEQUENTIAL CIRCUIT			Total Hrs		9		
Flip flops SR, JK, T, D and Master slave – Characteristic table and equation –Application table – Edge triggering –Level Triggering –Realization of one flip flop using other flip flops –Asynchronous / Ripple counters – Synchronous counters – Modulo – n counter –Classification of sequential circuits – Moore and Mealy -Design of Synchronous counters: state diagram- State table –State minimization –State assignment- ASM-Excitation table and maps-Circuit implementation - Register – shift registers- Universal shift register – Shift counters – Ring counters.								
4	ASYNCHRONOUS SEQUENTIAL CIRCUITS			Total Hrs		9		
Design of fundamental mode and pulse mode circuits – primitive state / flow table – Minimization of primitive state table – state assignment – Excitation table – Excitation map- cycles – Races –Hazards: Static –Dynamic –Essential –Hazards elimination.								
5	MEMORY DEVICES			Total Hrs		9		
Classification of memories –RAM organization – Write operation –Read operation – Memory cycle - Timing wave forms – Memory decoding – memory expansion – Static RAM Cell-Bipolar RAM cell – MOSFET RAM cell –Dynamic RAM cell –ROM organization - PROM –EPROM –EEPROM –EAPROM –Programmable Logic Devices –Programmable Logic Array (PLA)- Programmable Array Logic (PAL)-Field Programmable Gate Arrays (FPGA).								
Total hours to be taught						45		

CONTINUATION SHEET

K.S.Rangasamy College of Technology Autonomous Regulation							R 2007		
Department	Electronics & Communication Engineering			Program Code & Name		13 : B.E.(Electronics & Communication Engineering)			
<u>Semester - III</u>									
Subject Code	Subject Name	Hours/ Week			Credit	Maximum Marks			
		L	T	P		C	CA	ES	Total
07130304S	Digital Electronics	3	0	0	3	50	50	100	
Text Book(s) :									
1	M. Morris Mano, Digital Design, 3.ed., Prentice Hall of India Pvt. Ltd., New Delhi, 2003/Pearson Education (Singapore) Pvt. Ltd., New Delhi, 2003.								
2	John .M Yarbrough, Digital Logic Applications and Design, Thomson - Vikas publishing house, New Delhi, 2002								
Reference(s) :									
1	S. Salivahanan and S. Arivazhagan, Digital Circuits and Design, 2 nd ed., Vikas Publishing House Pvt. Ltd, New Delhi, 2004								
2	Charles H.Roth. "Fundamentals of Logic Design", Thomson Publication Company, 2003.								
3	Donald P.Leach and Albert Paul Malvino, Digital Principles and Applications, 5 ed., Tata McGraw Hill Publishing Company Limited, New Delhi, 2003.								
4	R.P.Jain, Modern Digital Electronics, 3 ed., Tata McGraw –Hill publishing company limited, New Delhi, 2003.								

K.S.Rangasamy College of Technology Autonomous Regulation							R 2007	
Department	Electronics & Communication Engineering		Program Code & Name			13 : B.E.(Electronics & Communication Engineering)		
Semester - III								
Subject Code	Subject Name	Hours/ Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07130305C	Electro Magnetic Fields	3	1	0	4	50	50	100
Objectives								
i. To analyze fields and potentials due to static charges ii. To evaluate static magnetic fields iii. To understand how materials affect electric and magnetic fields iv. To understand the relation between the fields under time varying situations v. To understand principles of propagation of uniform plane waves.								
1	STATIC ELECTRIC FIELDS			Total Hrs		12		
Introduction to Co-ordinate System – Rectangular – Cylindrical and Spherical Co-ordinate System – Introduction to line, Surface and Volume Integrals – Definition of Curl, Divergence and Gradient – Meaning of Strokes theorem and Divergence theorem Coulomb’s Law in Vector Form – Definition of Electric Field Intensity – Principle of Superposition – Electric Field due to discrete charges – Electric field due to continuous charge distribution - Electric Field due to charges distributed uniformly on an infinite and finite line – Electric Field on the axis of a uniformly charged circular disc – Electric Field due to an infinite uniformly charged sheet. Electric Scalar Potential – Relationship between potential and electric field - Potential due to infinite uniformly charged line – Potential due to electrical dipole - Electric Flux Density – Gauss Law – Proof of Gauss Law – Applications.								
2	STATIC MAGNETIC FIELD			Total Hrs		12		
The Biot-Savart Law in vector form – Magnetic Field intensity due to a finite and infinite wire carrying a current I – Magnetic field intensity on the axis of a circular and rectangular loop carrying a current I – Ampere’s circuital law and simple applications. Magnetic flux density – The Lorentz force equation for a moving charge and applications – Force on a wire carrying a current I placed in a magnetic field – Torque on a loop carrying a current I – Magnetic moment – Magnetic Vector Potential.								
3	ELECTRIC AND MAGNETIC FIELDS IN MATERIALS			Total Hrs		12		
Nature of dielectric materials– Electric Polarization – Boundary conditions for electric fields - Definition of Capacitance – Poisson’s and Laplace’s equation - Capacitance of Parallel plate capacitor, Concentric sphere and Coaxial cable using Laplace’s equation – Electrostatic energy and energy density – Electric current – Current density – point form of ohm’s law – continuity equation for current. Nature of magnetic materials – magnetization and permeability - magnetic boundary conditions- Definition of Inductance – Inductance of solenoid, Toroid and Coaxial cable – Definition of mutual inductance. Energy density in magnetic fields.								
4	TIME VARYING ELECTRIC AND MAGNETIC FIELDS			Total Hrs		12		
Faraday’s law – Maxwell’s Second Equation in integral form from Faraday’s Law – Equation expressed in point form. Displacement current – Ampere’s circuital law in integral form – Modified form of Ampere’s circuital law as Maxwell’s first equation in integral form – Equation expressed in point form. Maxwell’s four equations in integral form and differential form. Poynting Vector and the flow of power – Power flow in a co-axial cable – Instantaneous Average and Complex Poynting Vector.								
5	ELECTROMAGNETIC WAVES			Total Hrs		12		
Derivation of Wave Equation – Uniform Plane Waves – Maxwell’s equation in Phasor form – Wave equation in Phasor form – Plane waves in free space and in a homogenous material. Wave equation for a conducting medium – Plane waves in lossy dielectrics – Propagation in good conductors – Skin effect. Linear, Elliptical and circular polarization – Reflection of Plane Wave from a conductor – normal incidence – Reflection of Plane Waves by a perfect dielectric – normal and oblique incidence. Dependence on Polarization. Brewster angle.								
Total hours to be taught						60		

CONTINUATION SHEET

K.S.Rangasamy College of Technology Autonomous Regulation							R 2007		
Department	Electronics & Communication Engineering			Program Code & Name		13 : B.E.(Electronics & Communication Engineering)			
Semester - III									
Subject Code	Subject Name	Hours/ Week			Credit	Maximum Marks			
		L	T	P		C	CA	ES	Total
07130305S	Electro Magnetic Fields	3	1	0	4	50	50	100	
Text Book(s) :									
1	William H.Hayt , John.A.Buck : "Engineering Electromagnetics" TATA McGRAW -HILL , Seventh Edition (UnitI,II,III)								
2	E.C. Jordan & K.G. Balmain "Electromagnetic Waves and Radiating Systems." Prentice Hall of India 2 nd edition 2003. (Unit IV, V). McGraw -Hill, 9 th reprint								
Reference(s) :									
1	John D.Kraus "Electromagnetics" McGraw -Hill international edition (4 th edition 1991).								
2	Ramo, Whinnery and Van Duzer: "Fields and Waves in Communications Electronics" John Wiley & Sons (3 rd edition 2003)								
3	K.A.Gangadhar "Field Theory" Khanna Publishers, New Delhi.								
4	Narayana Rao, N : "Elements of Engineering Electromagnetics" 4 th edition, Prentice Hall of India, New Delhi, 1998.								

K.S.Rangasamy College of Technology Autonomous Regulation							R 2007	
Department	Electronics & Communication Engineering		Program Code & Name			13 : B.E.(Electronics & Communication Engineering)		
<u>Semester - III</u>								
Subject Code	Subject Name	Hours/ Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07130306C	Electronic Circuits- I	3	0	0	3	50	50	100
Objectives								
On completion of this course the student will understand								
<ul style="list-style-type: none"> i. The methods of biasing transistors ii. Design of simple amplifier circuits iii. Mid – band analysis of amplifier circuits using small - signal equivalent circuits to determine gain input impedance and output impedance 								
1	TRANSISTOR BIASING			Total Hrs		9		
BJT – Need for biasing - Fixed bias circuit, Load line and quiescent point. Variation of quiescent point due to h_{FE} variation within manufacturers tolerance. Stability factors. Different types of biasing circuits. Method of stabilizing the Q point to the extent possible. Advantage of Self bias (voltage divider bias) over other types of biasing. Use of Self bias circuit as a constant current circuit. Source self bias and voltage divider bias for FET. Use of JFET as a voltage variable resistor.								
2	MIDBAND ANALYSIS OF SMALL SIGNAL AMPLIFIERS			Total Hrs		9		
CE, CB and CC amplifiers. Method of drawing small -signal equivalent circuit. Midband analysis of various types of single stage amplifiers to obtain gain, input impedance and output impedance. Miller's theorem. Comparison of CB, CE and CC amplifiers and their uses. Darlington connection using similar and Complementary transistors. Methods of increasing input impedance using Darlington connection and bootstrapping. CS, CG and CD (FET) amplifiers. Multistage amplifiers. Basic emitter coupled differential amplifier circuit. Bisection theorem. Differential gain. CMRR. Use of constant current circuit to improve CMRR. Derivation of transfer characteristic, Transconductance. Use as Linear amplifier, limiter, amplitude modulator.								
3	FREQUENCY RESPONSE OF AMPLIFIERS			Total Hrs		9		
General shape of frequency response of amplifiers. Definition of cut off frequencies and bandwidth. Low frequency analysis of amplifiers to obtain lower cut off frequency Hybrid – pi equivalent circuit of BJTs. High frequency analysis of BJT amplifiers to obtain upper cut off frequency. High frequency equivalent circuit of FETs. High frequency analysis of FET amplifiers. Gain-bandwidth product of FETs. General expression for frequency response of multistage amplifiers. Calculation of overall upper and lower cut off frequencies of multistage amplifiers. Amplifier rise time and sag and their relation to cut off frequencies.								
4	LARGE SIGNAL AMPLIFIERS			Total Hrs		9		
Classification of amplifiers (Class A, B, AB, C&D), Efficiency of class A, RC coupled and transformer -coupled power amplifiers. Class B complementary-symmetry, push-pull power amplifiers. Calculation of power output, efficiency and power dissipation. Crossover distortion and methods of eliminating it.Heat flow calculations using analogous circuit. Calculation of actual power handling capacity of transistors with and without heat sink. Heat sink design.								
5	RECTIFIERS AND POWER SUPPLIES			Total Hrs		9		
Half-wave, full-wave and bridge rectifiers with resistive load. Analysis for Vdc and ripple voltage with C, CL, L -C and C-L-C filters. Voltage multipliers Zenerdiode regulator. Electronically regulated d.c power supplies. Line regulation, output resistance and temperature coefficient. Switched mode power supplies. Power control using SCR.								
Total hours to be taught							45	

CONTINUATION SHEET

K.S.Rangasamy College of Technology Autonomous Regulation							R 2007		
Department	Electronics & Communication Engineering			Program Code & Name		13 : B.E.(Electronics & Communication Engineering)			
<u>Semester - III</u>									
Subject Code	Subject Name	Hours/ Week			Credit	Maximum Marks			
		L	T	P	C	CA	ES	Total	
07130306C	Electronic Circuits- I	3	0	0	3	50	50	100	
Text Book(s) :									
1	Millman J. and Halkias .C., " Integrated Electronics ", Tata McGraw -Hill.								
2	Robert L. Boylestad and Louis Nashelsky, 8 th edn., PHI, 2002								
Reference(s) :									
1	S.Salivahanan, et.al, "Electronic Devices and Circuits", TMH, 1998.								
2	Floyd, Electronic Devices, Sixth edition, Pearson Education, 2003.								
3	I.J. Nagrath, Electronics – Analog and Digital, PHI, 1999.								

K.S.Rangasamy College of Technology Autonomous Regulation							R 2007	
Department	Electronics & Communication Engineering	Program Code & Name			13 : B.E.(Electronics & Communication Engineering)			
<u>Semester - III</u>								
Subject Code	Subject Name	Hours/ Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07130307P	Electrical Machines Lab	0	0	3	2	50	50	100
LIST OF EXPERIMENTS								
<ol style="list-style-type: none"> 1. Open circuit and load characteristics of separately excited and self excited D.C. generator. 2. Load test on D.C. shunt motor. 3. Load test on D.C. series motor. 4. Swinburne's test and speed control of D.C. shunt motor. 5. Load test on single phase transformer and open circuit and short circuit test on single phase transformer 6. Regulation of three phase alternator by EMF and MMF methods. 7. Load test on three phase induction motor. 8. No load and blocked rotor tests on three phase induction motor (Determination of equivalent circuit parameters) 9. Load test on single-phase induction motor. 10. Study of D.C. motor and induction motor starters. 								

K.S.Rangasamy College of Technology Autonomous Regulation							R 2007	
Department	Electronics & Communication Engineering	Program Code & Name			13 : B.E.(Electronics & Communication Engineering)			
Semester - III								
Subject Code	Subject Name	Hours/ Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07130308P	Electronics lab - I	0	0	3	2	50	50	100
LIST OF EXPERIMENTS								
<p>1. BJT Amplifier using voltage divider bias (self bias) with unbypassed emitter resistor.</p> <p>(i) Measurement of input resistance and gain</p> <p>(ii) Comparison with calculated values.</p> <p>(iii) Plot of DC collector current as a function of collector resistance (application as constant current circuit).</p> <p>2. Source follower with Bootstrapped gate resistance.</p> <p>(i) Measurement of gain, input resistance and output resistance with and without Bootstrapping .</p> <p>(ii) Comparison with calculated values.</p> <p>3. Class B Complementary symmetry power amplifier</p> <p>1. Observation of the output wave form with cross over Distortion.</p> <p>2. Modification of the circuit to avoid cross over distortion.</p> <p>3. Measurement of maximum power output.</p> <p>4. Determination of efficiency.</p> <p>5. Comparison with calculated values.</p> <p>4. Differential amplifier using BJT.</p> <p>1. Construction of the circuit.</p> <p>2. Measurement of DC collector current of individual transistors.</p> <p>3. Equalization of DC current using individual emitter resistance (50 – 100 Ohms)</p> <p>4. Measurement of CMRR.</p> <p>5. Power supply Full wave rectifier with simple capacitor filter.</p> <p>(i) Measurement of DC voltage under load and ripple factor, Comparison with calculated values.</p> <p>(ii) Measurement of load regulation characteristics (Vout vs Iout). Comparison with calculated values.</p> <p>6. Measurement of UJT and SCR Characteristics.</p> <p>1. Firing Characteristics of SCR.</p> <p>2. Measurement of Intrinsic stand off ratio of UJT.</p> <p>7. 1) Design and implementation of Adders and Subtractors using logic gates.</p> <p>2) Design and implementation of 4 bit binary Adder/ subtractor and BCD adder using IC 7483</p> <p>8. Design and implementation of 16 bit odd/even parity checker generator using IC74180.</p> <p>9. Design and implementation of Multiplexer and De-multiplexer using logic gates and study of IC74150 and IC 74154</p> <p>10. Design and implementation of encoder and decoder using logic gates and study of IC7445 and IC7 4147</p> <p>11. Construction and verification of 4 bit ripple counter and Mod -10 / Mod-12 Ripple counters</p> <p>12. Design and implementation of 3-bit synchronous up/down counter</p>								

K.S.Rangasamy College of Technology Autonomous Regulation							R 2007	
Department	Electronics & Communication Engineering		Program Code & Name			13 : B.E.(Electronics & Communication Engineering)		
<u>Semester - III</u>								
Subject Code	Subject Name	Hours/ Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07130309P	Data structure Lab	0	0	3	2	50	50	100
LIST OF EXPERIMENTS								
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							

K.S.Rangasamy College of Technology Autonomous Regulation							R 2007	
Department	Electronics & Communication Engineering		Program Code & Name			13 : B.E.(Electronics & Communication Engineering)		
<u>Semester - IV</u>								
Subject Code	Subject Name	Hours/ Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07130401C	Random Processes	3	1	0	4	50	50	100
Objectives								
At the end of the course, the students would								
<ul style="list-style-type: none"> i. Have a fundamental knowledge of the basic probability concepts. ii. Have a well – founded knowledge of standard distributions which can describe real life phenomena . iii. Acquire skills in handling situations involving more than one random variable and functions of random variables. 								
1	PROBABILITY AND RANDOM VARIABLE			Total Hrs		12		
Axioms of probability - Conditional probability - Total probability – Baye's theorem - Random variable - Probability mass function - Probability density functions - Properties –Moments - Moment generating functions and their properties.								
2	STANDARD DISTRIBUTIONS			Total Hrs		12		
Binomial, Poisson, Geometric, Negative Binomial, Uniform, Exponential , Gamma, Weibull and Normal distributions and their properties - Functions of a random variable.								
3	TWO DIMENSIONAL RANDOM VARIABLES			Total Hrs		12		
Joint distributions - Marginal and conditional distributions – Covariance - Corrselation and regression - Transformation of random variables - Central limit theorem.								
4	CLASSIFICATION OF RANDOM PROCESSES			Total Hrs		12		
Definition and examples - first order, second order, strictly stationary, wide – sense stationary and Ergodic processes - Markov process - Binomial, Poisson and Normal processes - Sine wave process.								
5	CORRELATION AND SPECTRAL DENSITIES			Total Hrs		12		
Auto correlation - Cross correlation - Properties – Power spectral density – Cross spectral density - Properties – Wiener-Khintchine relation – Relationship between cross power spectrum and cross correlation function - Linear time invariant system - System transfer function –Linear systems with random inputs – Auto correlation and cross correlation functions of input and output.								
Total hours to be taught						60		
Text book (s) :								
1	Ross, S., "A First Course in Probability", Fifth edition, Pearson Education, Delhi, 2002.							
2	Peebles Jr. P.Z., "Probability Random Variables and Random Signal Principles", Tata McGraw -Hill Pubishers, Fourth Edition, New Delhi, 2002. (Chapters 6, 7 and 8).							
Reference(s) :								
1	Henry Stark and John W. Woods "Probability and Random Processes with Applications to Signal Processing", Pearson Education, Third edition, Delhi, 2002							
2	Veerarajan. T., "Probabilitiy, Statistics and Random proces s", Tata McGraw-Hill Publications, Second Edition, New Delhi, 2002							

K.S.Rangasamy College of Technology Autonomous Regulation							R 2007	
Department	Electronics & Communication Engineering		Program Code & Name			13 : B.E.(Electronics & Communication Engineering)		
<u>Semester - IV</u>								
Subject Code	Subject Name	Hours/ Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07130402C	Electronic Circuits II	3	0	0	3	50	50	100
Objectives								
On completion of this course the student will understand								
i. The advantages and method of analysis of feed back amplifiers ii. Analysis and design of RC and LC oscillators, tuned amplifiers, wave shaping circuits, multivibrators, blocking oscillators and time based generators.								
1	FEEDBACK AMPLIFIERS				Total Hrs	9		
Block diagram. Loop gain. Gain with feedback. Desensitivity of gain. Distortion and cut off frequencies with feedback. The four basic feedback topologies and the type of gain stabilized by each type of feedback. Input and Output resistances with feedback. Method of identifying feedback topology, feedback factor and basic amplifier configuration with loading effect of feedback network taken into account. Analysis of feedback amplifiers. Nyquist criterion for stability of feedback amplifiers.								
2	OSCILLATORS				Total Hrs	9		
Barkhausen Criterion. Mechanism for start of oscillation and stabilization of amplitude. Analysis of Oscillator using Cascade connection of one RC and one CR filters. RC phase shift Oscillator. Wienbridge Oscillator and twin -T Oscillators. Analysis of LC Oscillators, Colpitts, Hartley, Clapp, Miller and Pierce oscillators. Frequency range of RC and LC Oscillators. Quartz Crystal Construction. Electrical equivalent circuit of Crystal. Crystal Oscillator circuits								
3	TUNED AMPLIFIERS				Total Hrs	9		
Coil losses, unloaded and loaded Q of tank circuits. Analysis of single tuned and synchronously tuned amplifiers. Instability of tuned amplifiers. Stabilization techniques. Narrow band neutralization using coil. Broad banding using Hazeltine neutralization. Class C tuned amplifiers and their applications. Efficiency of Class C tuned Amplifier.								
4	WAVE SHAPING AND MULTIVIBRATOR CIRCUITS				Total Hrs	9		
RL & RC Integrator and Differentiator circuits. Diode clippers, clampers and slicers. Collector coupled and Emitter coupled Astable multivibrator. Monostable multivibrator. Bistable multivibrators. Triggering methods. Storage delay and calculation of switching times. Speed up capacitors. Schmitt trigger circuit.								
5	BLOCKING OSCILLATORS AND TIMEBASE GENERATORS				Total Hrs	9		
Monostable and Astable Blocking Oscillators using Emitter and base timing. Frequency control using core saturation. Pushpull operation of Astable blocking oscillator i.e., inverters. Pulse transformers. UJT sawtooth generators. Linearization using constant current circuit. Bootstrap and Miller saw-tooth generators. Current time base generators.								
Total hours to be taught						45		
Text book (s) :								
1	Millman and Halkias. C., "Integrated Electronics", Tata McGraw -Hill 1991,(I,II).							
2	Schilling and Belove, "Electronic Circuits", TMH, Third Edition, 2002 (Unit - III)							
Reference(s) :								
1	Sedra / Smith, "Micro Electronic Circuits" Oxford university Press, 2004.							
2	David A. Bell, " Solid State Pulse Circuits ", Prentice Hall of India, 1992.							

K.S.Rangasamy College of Technology Autonomous Regulation							R 2007	
Department	Electronics & Communication Engineering		Program Code & Name			13 : B.E.(Electronics & Communication Engineering)		
Semester - IV								
Subject Code	Subject Name	Hours/ Week			Credit	Maximum Marks		
		L	T	P		C	CA	ES
07130403C	Signals and Systems	3	1	0	4	50	50	100
Objectives								
i. To study the properties and representation of discrete and continuous signals. ii. To study the sampling process and analysis of discrete systems using z -transforms. iii. To study the analysis and synthesis of discrete time systems.								
1	REPRESENTATION OF SIGNALS				Total Hrs	12		
Continuous and discrete time signals: Classification of Signals – Periodic a periodic even – odd – energy and power signals – Deterministic and random signals – complex exponential and sinusoidal signals – periodicity – properties of discrete time complex exponential unit impulse – unit step impulse functions – Transformation in independent variable of signals: time scaling, time shifting.Determination of Fourier series representation of continuous time and discrete time periodic signals – Explanation of properties of continuous time and discrete time Fourier series.								
2	ANALYSIS OF CONTINUOUS TIME SIGNALS AND SYSTEMS				Total Hrs	12		
Continuous time Fourier Transform and Laplace Transform analysis with examples – properties of the Continuous time Fourier Transform and Laplace Transform basic properties, Parseval's relation, and convolution in time and frequency domains.Basic properties of continuous time systems: Linearity, Causality, time invariance, stability, magnitude and Phase representations of frequency response of LTI systems -Analysis and characterization of LTI systems using Laplace transform: Computation of impulse response and transfer function using Laplace trans form.								
3	SAMPLING THEOREM AND z-TRANSFORMS				Total Hrs	12		
Representation of continuous time signals by its sample - Sampling theorem – Reconstruction of a Signal from its samples, aliasing – discrete time processing of continuous time signals, sampling of b and pass signals. Basic principles of z-transform - z-transform definition – region of convergence – properties of ROC – Properties of z-transform – Poles and Zeros – inverse z-transform using Contour integration - Residue Theorem, Power Series expansion and Partial fraction expansion, Relationship between z-transform and Fourier transform .								
4	DISCRETE TIME SYSTEMS				Total Hrs	12		
Computation of Impulse & response & Transfer function using Z Transform. DTFT Properties and examples – LTI-DT systems -Characterization using difference equation – Block diagram representation – Properties of convolution and the interconnection of LTI Systems – Causality and stability of LTI Systems.								
5	SYSTEMS WITH FINITE AND INFINITE DURATION IMPULSE RESPONSE				Total Hrs	12		
Systems with finite duration and infinite duration impulse response – recursive and non-recursive discrete time system – realization structures – direct form – I, direct form – II, Transpose, cascade and parallel forms .								
Total hours to be taught						60		
Text book (s) :								
1	Alan V. Oppenheim, Alan S. Willsky with S. Hamid Nawab, Signals & Systems, 2 nd edn., Pearson Education, 1997							
Reference(s) :								
1	John G. Proakis and Dimitris G. Manolakis, Digital Signal Processing, Principles, Algorithms and Applications, 3 rd edn., PHI, 2000.							
2	M. J. Roberts, Signals and Systems Analysis using Transform method and MATLAB, TMH 2003.							
3	Simon Haykin and Barry Van Veen, Signals and Systems, John Wiley, 1999							

K.S.Rangasamy College of Technology Autonomous Regulation							R 2007		
Department	Electronics & Communication Engineering			Program Code & Name			13 : B.E.(Electronics & Communication Engineering)		
Semester - IV									
Subject Code	Subject Name	Hours/ Week			Credit	Maximum Marks			
		L	T	P		C	CA	ES	Total
07130404S	Object Oriented Programming	3	1	0	4	50	50	100	
Objectives									
i. To study the object oriented programming principles, tokens, expressions, control structures and functions. ii. To introduce the classes, objects, constructors and Destructors. iii. To introduce the operator overloading, inheritance and polymorphism concepts in C++.									
1	OBJECT ORIENTED PROGRAMMING AND BASICS OF C++				Total Hrs	12			
Software crisis – Software evolution – A look at procedure oriented programming – Object oriented programming paradigm – Basic concepts of object oriented programming – Benefits of OOP – Object-oriented languages – Applications of OOP - What is C++? – A simple C++ program – More C++ statements – Structure of C++ Program. Tokens – Keywords – Identifiers and constants – Basic data types – User defined data types – Derived data types – Symbolic constants – Declaration of variables – Dynamic initialization of variables – Reference variables – Operators in C++ – Scope resolution operator – Manipulators – Type cast operator – Expressions and their types – Special assignment expressions – Control structures - The main function – Function prototyping – Call by reference – Return by reference – Inline functions – Default arguments – Function overloading.									
2	CLASSES AND OBJECTS				Total Hrs	12			
Specifying a class – Defining member functions – Private member functions –Arrays within a class – Memory allocation for objects – Static data members – Static member functions – Arrays of objects – Objects as function arguments –Friendly functions – Returning objects. Constructors: Parameterized constructors – Multiple constructors in a class – Constructors with default arguments – Dynamic initialization of objects – Copy constructor – Dynamic constructors Destructors.									
3	OPERATOR OVERLOADING, INHERITANCE AND POLYMORPHISM				Total Hrs	12			
Defining operator overloading: Overloading unary, binary operators. Manipulation of strings using operators – Rules for overloading operators – Type Conversions - Defining derived classes – Single inheritance – Multilevel inheritance – Multiple inheritance – Hierarchical inheritance – Hybrid inheritance – Virtual base classes – Abstract classes - Introduction to pointers to objects: This pointer – Pointers to derived classes – Virtual functions – Pure virtual functions.									
4	JAVA EVOLUTION, CONSTANTS, VARIABLES, DATA TYPES, OPERATORS, CLASSES, OBJECTS, METHODS, ARRAYS AND STRINGS				Total Hrs	12			
Java features: How Java differs from C and C++ - Simple Java program – Java program structures – Java tokens – Java statements – Implementing a Java program – Java virtual machine – Command line arguments - Constants – Variables – Data types – Scope of variables – Operators in Java. Defining a class – Adding variables and methods – Creating objects – Accessing class members – Constructors – Method overloading – Static members – Inheritance: Extending a class – Overriding methods – Final variables and methods – Final classes – Abstract methods and classes – Visibility control - Arrays – One dimensional array – Creating an array – Two-dimensional arrays – Strings – Vectors.									
5	PROGRAMMING USING INTERFACES, PACKAGES, MULTITHREADING, MANAGING ERRORS AND EXCEPTIONS AND APPLETS				Total Hrs	12			
Defining interfaces – Extending interfaces – Implementing interfaces – Accessing interface variables – Java API packages – Using system packages – Creating, accessing and using a package – Adding a class to a package - Creating threads – Extending the thread class – Stopping and blocking a thread – Thread exceptions – Thread priority – Synchronization – Life cycle of a thread – Using thread methods.Types of errors: Exceptions – Syntax of exception handling code – Multiple catch statements – Using finally statements – Throwing our own exceptions – Using exceptions for debugging. Preparing to write applets – Applet lifecycle – Creating an executable applet – Designing a web page – Applet tag – Adding applet to HTML file – Running the Applet.									
Total hours to be taught							60		

CONTINUATION SHEET

K.S.Rangasamy College of Technology Autonomous Regulation							R 2007	
Department	Electronics & Communication Engineering	Program Code & Name			13 : B.E.(Electronics & Communication Engineering)			
<u>Semester - IV</u>								
Subject Code	Subject Name	Hours/ Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07130404S	Object Oriented Programming	3	1	0	4	50	50	100
Text Book(s) :								
1	E.Balagurusamy, 'Object Oriented Programming with C++', Second edition, Tata McGraw Hill, 2003.							
2	E.Balagurusamy, 'Programming with JAVA – A Primer', Second edition, Tata McGraw Hill, 2003							
Reference(s) :								
1	Herbert Schildt, 'C++ - The Complete Reference', Tata McGraw Hill, 1997.							
2	Bjarne Stroustrup, 'The C++ Programming Language', Addison Wesley, 2000							
3	John .R .Hubbard, 'Schaums Outline Programming with C++', Tata McGraw Hill, 2003							

K.S.Rangasamy College of Technology Autonomous Regulation							R 2007	
Department	Electronics & Communication Engineering		Program Code & Name			13 : B.E.(Electronics & Communication Engineering)		
<u>Semester - IV</u>								
Subject Code	Subject Name	Hours/ Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07130405C	Linear Integrated Circuits	3	0	0	3	50	50	100
Objectives								
i. To introduce the basic building blocks of linear integrated circuits. ii. To teach the linear and non-linear applications of operational amplifiers. iii. To introduce the theory and applications of analog multipliers and PLL.								
1	Introduction				Total Hrs	9		
Basis of Differential Amplifier, Need for ICs, IC classification based on application and fabrication, operational amplifier – circuit symbol, Packages and Power Supply Connection, Ideal Op Amp – Block Diagram, Properties, Ideal Voltage Transfer Curve, Voltage Series Feedback amplifier, Voltage Shunt Feedback Amplifier, DC Characteristics, AC Characteristics – Frequency response, Compensation Technique, Slew rate, Differentiator, Integrator, Summing Amplifier, Scale Changer, Instrumentation Amplifier, Voltage to Current Converter, Current to Voltage Converter.								
2	Comparators and Active Filters				Total Hrs	9		
Basic Comparator, Zero Crossing Detector, Schmitt Trigger, Comparator Characteristics OP amp with diodes – Clippers, Clampers, Precision rectifier – Half Wave and Full Wave rectifiers , Peak detectors, Sample and hold circuit, Log and Antilog Amplifier, Power Amplifier, Low Pass, high pass and Band Pass filters.								
3	Wave form Generators				Total Hrs	9		
Astable Multivibrator, Monostable Multivibrator using opamp, Sine Wave Generators – Wien Bridge Oscillator, RC phase Shift Oscillator, Traingular Wave Generator, Saw tooth Wave Generator, 555 Timer - Block diagram, Astable Multivibrator, Monostable multivibrator using 555 timer, Applications								
4	PLL and Multiplier				Total Hrs	9		
PLL Block diagram, Closed Loop analysis of PLL Applications – Frequency Multiplier, Divider, FSK Modulator, Frequency translation, AM detection, FM detection, Analog Multipliers – Basic Multiplier and its Characteristics. Voltage Divider, Squaring Circuit, Square Rooting Circuit, Frequency Doubler Using Multiplier, Gilbert cell Multiplier								
5	DAC / ADC , Regulators				Total Hrs	9		
ADC / DAC Specification – Resolution, Linearity, Accuracy, Monotonicity, Settling time, Stability DAC – Weighted Resistor DAC, R – 2R Ladder type DAC, Inverted R-2R Ladder type DAC, ADC – Single Slope ADC, Dual Slope ADC, Successive Approximation ADC, Flash type ADC, Delta Modulation , Adaptive Delta Modulation, Voltage Regulators – Linear and Switched Mode Types								
Total hours to be taught						45		
Text book (s) :								
1	Ramakant A . Gayakwad, 'OP – AMP and Linear IC's' Prentice Hall / Pearson Education 1994							
2	D.Roy Choudry , Shail Jain , 'Liner integrated Circuits', New Age International Pvt Ltd 2000							
Reference(s) :								
1	Gray and Meyer, 'Analysis and Design of Analog Integrated Circuits', Wiley International, 1995.							
2	J.Michael Jacob, 'Applications and Design with Analog Integrated Circuits', Prentice Hall of India, 1996							
3	K.R.Botkar, 'Integrated Circuits'. Khanna Publishers, 1996.							

K.S.Rangasamy College of Technology Autonomous Regulation							R 2007	
Department	Electronics & Communication Engineering		Program Code & Name			13 : B.E.(Electronics & Communication Engineering)		
<u>Semester - IV</u>								
Subject Code	Subject Name	Hours/ Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07130406C	Measurements and Instrumentation	3	0	0	3	50	50	100
Objectives								
To learn								
i. Basic measurement concepts								
ii. Concepts of electronic measurements								
iii. Importance of signal generators and signal analysers in measurements								
1	BASIC MEASUREMENT CONCEPTS				Total Hrs	9		
Measurement systems – Static and dynamic characteristics – units and standards of measurements – error analysis – moving coil, moving iron meters – multimeters – True RMS meters – Bridge measurements – Maxwell, Hay, Schering, Anderson and Wien bridge.								
2	BASIC ELECTRONIC MEASUREMENTS				Total Hrs	9		
Electronic multimeters – Cathode ray oscilloscopes – block schematic – applications – special oscilloscopes – Q meters – Vector meters – RF voltage and power measurements								
3	SIGNAL GENERATORS AND ANALYZERS				Total Hrs	9		
Function generators – RF signal generators – Sweep generators – Frequency synthesizer – wave analyzer – Harmonic distortion analyzer – spectrum analyzer.								
4	DIGITAL INSTRUMENTS				Total Hrs	9		
Comparison of analog and digital techniques – digital voltmeter – multimeters – frequency counters – measurement of frequency and time interval – extension of frequency range – measurement errors.								
5	DATA ACQUISITION SYSTEMS AND FIBER OPTIC MEASUREMENTS				Total Hrs	9		
Elements of a digital data acquisition system – interfacing of transducers – multiplexing – computer controlled instrumentation – IEEE 488 bus – fiber optic measurements for power and system loss – optical time domains reflectometer.								
Total hours to be taught						45		
Text book (s) :								
1	Albert D.Helfrick and William D.Cooper – Modern Electronic Instrumentation and Measurement Techniques, Prentice Hall of India, 2003.							
Reference(s) :								
1	Joseph J.Carr, Elements of Ele ctronics Instrumentation and Measurement, Pearson education, 2003							
2	Alan. S. Morris, Principles of Measurements and Instrumentation, Prentice Hall of India, 2 nd edn., 2003							
3	Ernest O. Doebelin, Measurement Systems - Application and Design-Tata McGraw-Hill-2004.							

K.S.Rangasamy College of Technology Autonomous Regulation							R 2007	
Department	Electronics & Communication Engineering		Program Code & Name			13 : B.E.(Electronics & Communication Engineering)		
<u>Semester - IV</u>								
Subject Code	Subject Name	Hours/ Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07130407P	Electronics circuits and simulation lab	0	0	3	2	50	50	100
LIST OF EXPERIMENTS								
<ol style="list-style-type: none"> 1. Series and Shunt feedback amplifiers: Frequency response, Input and output impedance calculation 2. Design of RC Phase shift oscillator: Design Wein Bridge Oscillator 3. Design of Hartley and Colpitts Oscillator 4. Tuned Class C 5. Integrators, Differentiators, Clippers and Clampers 6. Design of Astable and Monostable and Bistable multivibrators <p>SIMULATION USING PSPICE:</p> <ol style="list-style-type: none"> 1. Differentiate amplifier 2. Active filter : Butterworth IInd order LPF 3. Astable, Monostable and Bistable multivibrator - Transistor bias 4. D/A and A/D converter (Successive approximation) 5. Analog multiplier 6. CMOS Inverter, NAND and NOR 								

K.S.Rangasamy College of Technology Autonomous Regulation							R 2007	
Department	Electronics & Communication Engineering		Program Code & Name			13 : B.E.(Electronics & Communication Engineering)		
<u>Semester - IV</u>								
Subject Code	Subject Name	Hours/ Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07130408P	Linear Integrated Circuit Lab	0	0	3	2	50	50	100
LIST OF EXPERIMENTS								
Design and testing of: <ol style="list-style-type: none"> 1. Inverting, Non inverting and Differential amplifiers. 2. Integrator and Differentiator. 3. Instrumentation amplifier. 4. Active lowpass and bandpass filter. 5. Astable, Monostable multivibrators and Schmitt Trigger using op -amp. 6. Phase shift and Wien bridge oscillator using op -amp. 7. Astable and monostable using NE555 Timer. 8. PLL characteristics and Frequency Multiplier using PLL. 9. DC power supply using LM317 and LM723. 10. Study of SMPS control IC SG3524 / SG3525. 								

K.S.Rangasamy College of Technology Autonomous Regulation						R 2007		
Department	Electronics & Communication Engineering	Program Code & Name			13 : B.E.(Electronics & Communication Engineering)			
Semester - IV								
Subject Code	Subject Name	Hours/ Week			Credit	Maximum Marks		
		L	T	P	C	CA	ES	Total
07130409P	Object Oriented Programming Lab	0	0	3	2	50	50	100
LIST OF EXPERIMENTS								

C++

1. Programs Using Functions
 - Functions with default arguments
 - Implementation of Call by Value, Call by Address and Call by Reference
2. Simple Classes for understanding objects, member functions and Constructors
 - Classes with primitive data members
 - Classes with arrays as data members
 - Classes with pointers as data members – String Class
 - Classes with constant data members
 - Classes with static member functions
3. Compile time Polymorphism
 - Operator Overloading including Unary and Binary Operators.
 - Function Overloading
4. Runtime Polymorphism
 - Inheritance
 - Virtual functions
 - Virtual Base Classes
 - Templates
5. File Handling
 - Sequential access
 - Random access

JAVA

6. Simple Java applications
 - for understanding reference to an instance of a class (object), methods
 - Handling Strings in Java
7. Simple Package creation.
 - Developing user defined packages in Java
8. Interfaces
 - Developing user-defined interfaces and implementation
 - Use of predefined interfaces
9. Threading
 - Creation of thread in Java applications
 - Multithreading
10. Exception Handling Mechanism in Java
 - Handling pre-defined exceptions
 - Handling user-defined exceptions