

**G. PULLA REDDY ENGINEERING COLLEGE (Autonomous): KURNOOL**

**Accredited by NBA of AICTE and NAAC of UGC**

**An ISO 9001:2008 Certified Institution**

**Affiliated to JNTUA, Anantapur**



**Scheme – 2013**

Scheme and Syllabus for III & IV Semester of

Four year B.Tech. Degree Course in

**Department of Electronics and Communications Engineering**

**G. Pulla Reddy Engineering College (Autonomous): Kurnool**

**Accredited by NBA of AICTE and NAAC of UGC**

**An ISO 9001:2008 Certified Institution**

**Affiliated to JNTUA, Anantapuramu**

**ANNEXURE-II**

**FOUR YEAR B.TECH. DEGREE COURSE**

Scheme of Instruction and Examination

(Effective from 2013-2014)

**B.Tech. ECE III Semester**

**Scheme: 2013**

S. No	Course No.	Course Title	Credits	Scheme of Instruction periods/week			Scheme of Examination Maximum Marks		
				L	D/T	P	End Exam	Internal Assessment	Total
<b>I</b>		<b>Theory</b>							
1	HU201	Managerial Economics and Financial Accountancy	3	3	0	0	70	30	100
2	BS202	Complex Variables and Special Functions	3	3	1	0	70	30	100
3	EC201	Probability Theory and Stochastic Processes	3	3	0	0	70	30	100
4	EC202	Electronic Devices and Circuits	3	3	0	0	70	30	100
5	EC203	Signals and Systems	3	3	1	0	70	30	100
6	EE210	Circuit Theory	3	3	0	0	70	30	100
7	ML201	Quantitative Aptitude	2	1	1	0	–	100	100
<b>II</b>		<b>Practical</b>							
8	EC204	Electronic Devices & Circuits Lab	2	0	0	3	70	30	100
9	EC205	Basic Simulations Lab	2	0	0	3	70	30	100
		<b>Total</b>	24	19	03	06	<b>560</b>	<b>340</b>	<b>900</b>

### **FOUR YEAR B.TECH. DEGREE COURSE**

Scheme of Instruction and Examination

(Effective from 2013-2014)

**B.Tech. ECE IV Semester**

**Scheme: 2013**

S. No	Course No.	Course Title	Credits	Scheme of Instruction periods/week			Scheme of Examination Maximum Marks		
				L	D/T	P	End Exam	Internal Assessment	Total
<b>I</b>		<b><u>Theory</u></b>							
1	EC206	Analog Electronic Circuits	3	3	0	0	70	30	100
2	EC207	Pulse & Digital Electronics	3	3	1	0	70	30	100
3	EC208	Networks & Transmission Lines	3	3	0	0	70	30	100
4	EC209	Electromagnetic waves	3	3	1	0	70	30	100
5	EE211	Electrical Technology	3	3	0	0	70	30	100
6	ML202	Soft Skills	2	1	2	0	-	100	100
<b>II</b>		<b><u>Practical</u></b>							
7	EC210	Analog Electronic Circuits Lab	2	0	0	3	70	30	100
8	EC211	Pulse & Digital Electronics Lab	2	0	0	3	70	30	100
9	EE212	Electrical Circuits and Machines Lab	2	0	0	3	70	30	100
		<b>Total</b>	23	16	04	09	<b>560</b>	<b>340</b>	<b>900</b>

**HU201 : MANAGERIAL ECONOMICS & FINANCIAL ACCOUNTANCY (MEFA)**  
**(For B.Tech III Semester ECE & CSE)**

**Scheme : 2013**  
**Internal Assessment : 30**  
**End Exam : 70**  
**End Exam Duration : 3 Hrs**

L	T/D	P	C
3	0	0	3

**Course Objectives:**

- To enable the students to understand Principles of Managerial Economics
- To enable the students to know Accounting Practices for effective decision making
- To promote entrepreneurial abilities among the budding engineers

**Course Outcomes:**

- Students should be able to understand the application of Managerial Economics in various aspects of decision making
- Students should be able to think and analyze the critical problems in accountancy
- Students should be able to enhance their leadership qualities and understand the key elements to be an entrepreneur

**Unit-1**

**Introduction to Managerial Economics & Demand Analysis:**

**Managerial Economics:** Definition of Managerial Economics, Characteristics and Scope, Managerial Economics and its Relation with other subjects and its Uses, Role and Responsibilities of Managerial Economist

**Demand Analysis:** Meaning, Types of Demand, Demand Determinants, Law of Demand – Its assumptions and exceptions, Law of Diminishing Marginal Utility

**Unit-2**

**Elasticity of Demand and Demand Forecasting:**

**Elasticity of Demand:** Definition, Types of Elasticity of Demand, Practical Significance of price elasticity of demand, Measurement of Price Elasticity of Demand

**Demand forecasting** – Importance, Factors, Purposes of Demand Forecasting, Methods of Demand Forecasting.

**Unit-3**

**Theory of production & cost analysis and Market Structures:**

**Production Analysis:** Meaning of production function, Isoquants & Isocosts, The law of diminishing Marginal Returns, Law of Returns to Scale, Internal and External Economies of scale.

**Cost Analysis** – Cost concepts, Cost output relationship for Short Run and Long Run, Break Even Analysis – Its Importance, Limitations and Managerial uses

**Market Structures:** Types and Features of different Competitive situation–Perfect Competition – Monopoly – Monopolistic and Oligopolistic Competition, Price output determination in case of perfect competition and Monopoly.

#### **Unit-4**

##### **Types of Business Organizations & Capital and its Significance:**

**Types of Business Organizations:** Features and Evaluation of Sole Proprietorship, Partnership, Joint Stock Company.

**Capital and its Significance:** Types of Capital – Estimation of fixed and working capital requirements – Methods and sources of raising fixed and working capital

#### **Unit-5**

##### **Introduction to Financial Accountancy:**

**Principles of Accountancy:** Introduction to Accountancy, Double Entry System of Book Keeping-Meaning – Scope – Advantages, Journal Entries, Ledger, Preparation of Trial Balance.

#### **Unit-6**

##### **Final Accounts:**

**Preparation of Final Accounts:** Trading Account, Profit & Loss Account, Balance Sheet with adjustments, Final Accounts problems.

##### **Text Books:**

- 1) Varshiney and Maheswari, Managerial Economics, Sultan Chand & Co, New Delhi
- 2) Y.K Bhushan, Business Organization & Management, S Chand & Co., New Delhi.
- 3) S.P Jain and K.L Narang, Financial Accounting - Kalyani Publishers, New Delhi.

##### **Reference Books:**

- 1) Shukla & Grewal, Advanced Accountancy, S.Chand& Co., New Delhi
- 2) M.C Shukla, Business Organization and Management, S.Chand& Co., New Delhi.

##### **NOTE:**

**End Exam:** The question paper for end examination shall consist of One Compulsory question consisting of objective type, fill in the blanks etc for 10 marks and for the remaining 60 marks student has to answer any four questions out of 6 questions for 15 marks each.

**Internal Assessment:** The question paper for sessional examination shall have one *compulsory* question carrying 6 marks and five other conventional (descriptive or analytical type) questions carrying 8 marks each. The compulsory question consists of objective type questions like the multiple choice, fill in the blanks etc. Apart from the compulsory question, the student has to answer any 3 from the remaining 5 conventional questions.

## BS202 : COMPLEX VARIABLES AND SPECIAL FUNCTIONS (CVSF)

(For B.Tech III Semester ECE & EEE)

**Scheme : 2013**  
**Internal Assessment : 30**  
**End Exam : 70**  
**End Exam Duration : 3 Hrs**

L	T/D	P	C
3	1	0	3

### Course objectives:

1. To make the students to understand Bessel and Legendre functions . To make use of these functions not only in mathematics but also in solving engineering problems.
2. The students gain the knowledge of complex variables, conformal mapping, complex series and complex integration.
3. To make the students to understand the importance of numerical differential equations, interpolation, correlation coefficient and regression analysis.

### Course outcomes:

1. Students are able to understand and apply Bessel and Legendre functions in solving electrical engineering problems.
2. Students shall apply numerical solutions in engineering, science and also in many branches of applied mathematics.
3. Students are able to understand and apply Statistics in many fields of learning such as physical sciences and engineering.
4. Students shall apply Complex techniques in the area of transmission lines, control systems, signal processing and electromagnetic field theory.

### Unit - I

**Complex Variables:** Analytic functions, Cauchy-Riemann equations, sufficient condition for analyticity, Harmonic function, Method to find the Conjugate function, Milne – Thomson method. Conformal Mapping ( $e^z$ ,  $z^2$ ,  $\sin z$ ,  $\cos z$ ), Bilinear Transformation.

### Unit – II

**Complex Integration & Series :** Simple and Multiple Connected regions, Cauchy's Integral theorem, Cauchy's integral formula, Generalized Integral formula. Taylor's series, Maclaurin's series and Laurent's series. Residue theorem, Method of finding residues. Evaluation of real integrals by contour integration, Integration round the unit circle and in the interval  $(-\infty, \infty)$ .

### Unit-III

**Interpolation :** Operators, relation between the operators. Newton's forward and backward interpolation formulae. Lagrange's and Inverse Lagrange's interpolation formulae. Cubic Spline interpolation.

#### **Unit - IV**

**Bessel Functions:** Solution of Bessel's equation, Recurrence relations for  $J_n(x)$ , Generating function, Jacobi series, Orthogonality of Bessel's function.

#### **Unit – V**

**Legendre Functions:** Solution of Legendre's equation, Rodrigue's formula, Legendre polynomials, Generating function, Recurrence relations for  $P_n(x)$ , Orthogonality of Legendre polynomials.

#### **Unit – VI**

**Numerical Methods & Statistics:** Solution of first order Differential equations. Taylor's method, Picard's method, Euler's and modified Euler's methods. Runge-Kutta methods of second and forth order. Normal distribution, properties. Correlation coefficient, Lines of regression.

#### **Text Books:**

1. B.S. Grewal Higher Engineering Mathematics KhannaPublishers, New Delhi, 2005
2. T.K.V Iyengar and others A Text book of Engineering Mathematics Vol-3 S. Chand&co.2011

#### **Reference Books:**

1. S.S.Sastry Introductory Methods of Numerical Analysis, PHI, 2010
2. Erwin Kreyszig, Advanced Engineering Mathematics,John Wiley and Sons 8<sup>th</sup> Edition,2008

#### **NOTE:**

**End Exam:** The question paper for end examination shall consist of One Compulsory question consisting of objective type, fill in the blanks etc for 10 marks and for the remaining 60 marks student has to answer any four questions out of 6 questions for 15 marks each.

**Internal Assessment:** The question paper for sessional examination shall have one *compulsory* question carrying 6 marks and five other conventional (descriptive or analytical type) questions carrying 8 marks each. The compulsory question consists of objective type questions like the multiple choice, fill in the blanks etc. Apart from the compulsory question, the student has to answer any 3 from the remaining 5 conventional questions.

**EC201: PROBABILITY THEORY AND STOCHASTIC PROCESSES (PTSP)**  
**(For B.Tech. ECE III Semester)**

**Scheme : 2013**  
**Internal Assessment : 30**  
**End Exam : 70**  
**End Exam Duration : 3 Hrs**

L	T/D	P	C
3	0	0	3

**Course Objectives:**

- The Objective of this course is to provide the students with knowledge about the random variable, random processes.
- To model the random processes in the communication system such as receiver performance, Interference, thermal noise, and multipath phenomenon.

**Course Outcomes:**

- This course provides a foundation in the theory and Applications of probability and stochastic processes.
- Students are able to understand the mathematical techniques relating to random processes which are applicable in the areas of Communications, signal processing, detection & estimation of signals.

**Unit-I**

**Probability Theory:** Probability and axioms of probability, Joint Probability and Conditional Probability Total Probability, Baye's Theorem and Bernoulli's trials,.

**Unit-II**

**Single Random Variables:** Definition of a Random variable, Classification of Random variables, Distribution and Density functions- Gaussian, Uniform, Exponential, Binomial, Poisson's, Rayleigh, Chi square, Conditional distributions and density functions.

**Operations on single random variable:** Expectation, Moments about the origin, Central Moments, Variance, Skew and Kurtosis, Chebyshev's Inequality, Markov Inequality, Characteristic functions, Moment Generating function, Transformation of random variables.

**Unit-III**

**Multiple Random Variables:** Joint Distribution Function and its Properties, Joint Density and its Properties, Marginal Distribution and Density Functions, Conditional Distribution and Density – Point Conditioning and Interval conditioning, Statistical Independence, Sum of Two Random Variables, Sum of Several Random Variables, Central Limit Theorem.

**Unit-IV**

**Operations on Multiple Random Variables:** Expected Value of a Function of Random Variables, Joint Moments about the Origin, Joint Central Moments, Schwartz Inequality, Joint Characteristic Functions, Jointly Gaussian Random Variables & properties, Transformations of Multiple Random Variables, Linear Transformations of Gaussian Random Variables.

## Unit-V

**Random Processes-Temporal Characteristics:** Random Process Concept, Classification of Random Processes, Distribution and Density Functions, Stationarity and Statistical Independence. Ensemble Averages, Time Averages, Mean-Ergodic Processes, Correlation-Ergodic Processes, Autocorrelation Function and its Properties, Cross-Correlation Function and its Properties, Covariance Functions.

**Random Processes-Spectral Characteristics:** Power Density Spectrum and its Properties, Relationship between Power Spectrum and Autocorrelation Function, Cross-Power Density Spectrum and its Properties, Relationship between Cross-Power Spectrum and Cross-Correlation Function.

## Unit-VI

**Linear Systems with Random inputs:** Linear system Fundamentals, Random signal response of linear systems, System evaluation using random noise, spectral characteristics of system response.

### Text Books:

1. Peyton Z. Peebles, Probability Random variables and Random signal principles 4th Edition, TMH, 2009.
2. Athanasios Papoulis and Unni Krishna Pillai, Probability, Random variables and stochastic processes, 4th Edition, PHI, 2009.

### Reference books:

1. Henry Stark and John W. Woods, Probability and Random processes with applications to signal processing, 3rd edition, Pearson Education, 2009.
- R.P. Singh and S.D. Sapre, Communication Systems Analog & Digital, 2nd edition, TMH -2007.
- Simon Haykin, Communication Systems, 2nd Edition, John Wiley, 2009.
- I.J. Nagrath, S.N. Sharan, R. Ranjan, S. Kumar, Signals and Systems, 11th Edition, TMH, 2008

### NOTE:

**End Exam:** The question paper for end examination shall consist of One Compulsory question consisting of objective type, fill in the blanks etc for 10 marks and for the remaining 60 marks student has to answer any four questions out of 6 questions for 15 marks each.

**Internal Assessment:** The question paper for sessional examination shall have one *compulsory* question carrying 6 marks and five other conventional (descriptive or analytical type) questions carrying 8 marks each. The compulsory question consists of objective type questions like the multiple choice, fill in the blanks etc. Apart from the compulsory question, the student has to answer any 3 from the remaining 5 conventional questions.

## EC202: ELECTRONIC DEVICES AND CIRCUITS (EDC)

(Common to B.Tech. III Semester ECE & EEE)

**Scheme : 2013**  
**Internal Assessment : 30**  
**End Exam : 70**  
**End Exam Duration : 3 Hrs**

L	T/D	P	C
3	0	0	3

### Course Objectives:

- To understand electronic devices, including diodes, bipolar junction transistors and FET
- To understand basic circuits of the electronic devices and Computer aided circuit analysis

### Course Outcomes:

- Students are able to understand the operating principles of major electronic devices, circuit models and connection to the physical operation of the device and ability in analysis and design of basic circuits

### Unit-I

**Review of Semiconductor Physics & Transistor:** Energy band diagram- Fermi-level, Drift and diffusion concepts, Continuity equation, Minority carrier injection, and Potential variation within graded semiconductor, Contact potential difference, p-n junction diode & Zener diode characteristics, Rectifiers with filters, Eber's moll model and small signal model of bipolar junction transistor, Graphical determination of h parameters.

### Unit-II

**Transistor Biasing:** Need for biasing, Operating point, DC and AC load lines, Bias stabilization techniques: fixed bias, collector to base bias, self-bias, Stabilization against variations in  $I_{co}$ ,  $V_{BE}$  and  $\beta$  for the self bias circuit, Bias compensation techniques, Thermal runaway and thermal stability.

### Unit-III

**Junction Field Effect Transistor (JFET):** Principle of operation, Characteristics of JFET, FET small signal model, Graphical determination of  $g_m$ ,  $r_d$  and  $\mu$ , FET as Voltage Variable Resistor (VVR), Advantages of FET over BJT.

### Unit-IV

**FET Biasing:** Biasing techniques: Fixed bias, Source self-bias, Voltage divider bias

**MOSFETS:** Depletion and enhancement types of MOSFETs.

## Unit-V

**Single Stage Amplifiers :** Transistor as an amplifier, Transistor Low frequency hybrid Model, Analysis of a transistor amplifier circuit using h-Parameters, Comparison of CB, CC and CE amplifier configurations, Emitter Follower, Linear analysis of transistor amplifier circuits, Miller's Theorem and its Dual.

## Unit-VI

**Multistage Transistor Amplifiers:** Types of coupling – RC coupled, Direct coupled, Analysis of two cascaded amplifier stages, Approximate CE, CB and CC models, CE amplifier with emitter resistance, Darlington, Bootstrap and Cascode amplifiers, Frequency response of an amplifier at Low and High frequencies, Bandwidth of cascaded amplifier stages.

### Text Books:

1. J.Milliman, C.Halkias & Satyabrata Jit, Electronic Devices and Circuits, 2nd Edition, TMH, 2007.
2. J. Milliman & C.Halkias, Integrated Electronics –TMH, 2007
3. Robert Boylestad & Lowis Nashelsky, Electronic Devices and Circuit Theory, 5th Edition PHI, 1993
4. Allen Mottershed, Electronics devices and circuits, PHI

### Reference Books:

1. Ben.G.Streetman , Solid state electronic devices, PHI
2. David .A. Bell , Electronic devices and circuits, 4th Edition, PHI, 1999.
3. Nagrath , Analog and Digital Circuits, TMH

### NOTE:

**End Exam:** The question paper for end examination shall consist of One Compulsory question consisting of objective type, fill in the blanks etc for 10 marks and for the remaining 60 marks student has to answer any four questions out of 6 questions for 15 marks each.

**Internal Assessment:** The question paper for sessional examination shall have one *compulsory* question carrying 6 marks and five other conventional (descriptive or analytical type) questions carrying 8 marks each. The compulsory question consists of objective type questions like the multiple choice, fill in the blanks etc. Apart from the compulsory question, the student has to answer any 3 from the remaining 5 conventional questions.

**EC203 : SIGNALS AND SYSTEMS (SAS)**  
**(For B.Tech ECE III Semester)**

**Scheme : 2013**  
**Internal Assessment : 30**  
**End Exam : 70**  
**End Exam Duration : 3 Hrs**

L	T/D	P	C
3	1	0	3

**Course objectives:**

- The objective of the course is to analyze the linear, time invariant systems to standard input signals.
- To study different standard signals that can be applied to various systems

**Course outcomes:**

- The students are able to apply various transformation techniques to estimate the characteristics of systems.
- The students are able to estimate frequency spectrum of any standard signal

**Unit-I**

**Introduction:** Basic continuous and discrete time signals, Classification of Signals and Systems and their properties, Basic operations on signals, Elementary signals, Singularity functions: Impulse, Step and Ramp functions.

**Unit-II**

**Fourier Series and Fourier Transforms:** Dirichlet's conditions, Trigonometric Fourier series and Exponential Fourier series, Spectrum and its significance, Amplitude and Phase spectra, Fourier transform(FT), Fourier transform of standard signals, properties of Fourier transforms, Fourier transforms involving impulse function, Fourier transform of periodic signals.

**Unit-III**

**Signal transmission and Sampling:** Linear time invariant (LTI) system, Transmission of signals through continuous and discrete time LTI systems, Transfer function of an LTI system. Distortion less transmission through LTI system, Causality & stability, , Sampling of continuous time signals, Sampling theorem, Reconstruction of signal from its samples, effect of under sampling – Aliasing, Practical aspects of sampling; pulses of finite duration, Flat top sampling

**Unit-IV**

**Convolution and correlation of signals :** Graphical method of convolution, auto correlation and Cross correlation of functions, properties of correlation function, Energy density spectrum, Parseval's theorem, Power density spectrum, Relation between auto correlation function and energy/power spectral density function, Relation between convolution and correlation, Applications of convolution and correlation.

**Unit-V**

**Laplace transforms:** Laplace transform(LT), Concept of region of convergence (ROC) for Laplace transforms, Properties of Laplace transforms, Laplace transform of periodic signals. Inverse Laplace transform. Laplace transform solution for electric circuits, System impulse response and definition of system transfer function.

## Unit-VI

**Z-transforms** : Z-Transform of Discrete time signal, Region of Convergence(ROC) and its properties, Constraints on ROC for various classes of signals, properties of Z Transforms, System function, Causality and stability, Inverse Z Transform, Unilateral Z Transform.

### Text Books:

1. Simon Haykin, Communication Systems, 2<sup>nd</sup> Edition, Wiley-Eastern.
2. Oppenheim A.V and Willsky, Signals and Systems, 2<sup>nd</sup> Edition, Pearson Edition.
3. B.P.Lathi , Communication Systems , Wiley Eastern.

### References Books:

1. Simon Haykin and Van Veen, Wiley, Signals & Systems, 2<sup>nd</sup> Edition.
2. Simon Haykin, Signals and Systems, Wiley-Eastern.
3. Hwei Piao Hsu, Schaum's, Outline of Theory Problems of Signals and Systems, McGraw-Hill Professional.

### NOTE:

**End Exam:** The question paper for end examination shall consist of One Compulsory question consisting of objective type, fill in the blanks etc for 10 marks and for the remaining 60 marks student has to answer any four questions out of 6 questions for 15 marks each.

**Internal Assessment:** The question paper for sessional examination shall have one *compulsory* question carrying 6 marks and five other conventional (descriptive or analytical type) questions carrying 8 marks each. The compulsory question consists of objective type questions like the multiple choice, fill in the blanks etc. Apart from the compulsory question, the student has to answer any 3 from the remaining 5 conventional questions.

**EE210 : CIRCUIT THEORY (CT)**  
**(For B.Tech ECE III Semester)**

**Scheme : 2013**  
**Internal Assessment : 30**  
**End Exam : 70**  
**End Exam Duration : 3 Hrs**

L	T/D	P	C
3	0	0	3

**Course Objectives:**

- To review the basic electrical concepts of voltage, current and resistance.
- To review the components of a basic electrical circuit and make the students proficient in basic analysis, design and measurement of linear analogy electrical systems important across engineering disciplines.

**Course Outcomes:**

- Students can analyze complex dc & ac linear circuits and can design simple linear electrical circuits
- Students are able to analyze the circuits and can understand the applications of RL, RC, and RLC circuits for DC and AC excitations.
- Students can Predict the transient behavior of first and second order circuits

**Unit-I**

**Introduction to Electrical Circuits:** Resistance, Inductance, Capacitance, Specifications of R, L, C and their V-I characteristics, Independent and dependent sources, Response for various types of excitations – step, ramp and parabolic signals, Power and energy in R-L-C components.

**Unit-II**

**Network Analysis:** Kirchhoff's laws-network reduction Techniques-series, parallel, series parallel, Star – to – Delta or Delta – to – Star Transformations, Source Transformation, Nodal analysis, mesh analysis, super node and super mesh for D.C excitations.

**Unit-III**

**Analysis of AC Concepts:** Concept of impedance, impedance triangle, admittance, concept of complex power, real, reactive power and power factor, Analysis of series, parallel and series-parallel (RL, RC and RLC) circuits with suitable examples and phasor diagrams.

**Magnetic Circuits:** Concept of mutual inductance in coupled circuits- coefficient of coupling – dot convention – composite magnetic circuit analysis.

**Unit-IV**

**Network Topology:**

Definitions, Graphs, Tree, incident matrix, Basic Cutset and Tie set schedules, Matrices for Planar Networks, Duality and Dual Networks

**Resonance:**

Resonance in series and parallel circuits – bandwidth and Q factor, Half-Power Frequencies

## **Unit-V**

### **Network Theorems:**

Super Position, Reciprocity, Thevenin's, Norton's, Maximum Power Transfer, Milliman's, Tellegen's, and Compensation Theorems for DC and AC excitations.

## **Unit-VI**

**Transient Analysis:** Transient response of RL, RC and RLC circuits for DC and sinusoidal excitations using Laplace transform method.

### **Text Books:**

1. William Hayt & Kemmerly, *Engg. Circuit Analysis*, 6<sup>th</sup> Edition, TMH, 2006
2. Joseph A Edminister, *Theory and problems of Electric circuits*, 4<sup>th</sup> Edition, TMH, 2004
3. D. Roy Choudary, *Networks and Systems*, New Age International, 2007.
4. Van Valkenburg, *Network analysis*, 3<sup>rd</sup> Edition, PHI, 2005
5. Sivanaga Raju, G. Kishor and C. Srinivasa Rao (2010) , "Electrical Circuit Analysis", Cengage Learning

### **Reference Books:**

1. A.Sudhakar and S.P.Shyam Mohan, *Circuits and Networks*, 2<sup>nd</sup> Edition, TMH, 2002
2. Smarajit Ghosh, *Network Theory*, PHI, 2005.

### **NOTE:**

**End Exam:** The question paper for end examination shall consist of One Compulsory question consisting of objective type, fill in the blanks etc for 10 marks and for the remaining 60 marks student has to answer any four questions out of 6 questions for 15 marks each.

**Internal Assessment:** The question paper for sessional examination shall have one *compulsory* question carrying 6 marks and five other conventional (descriptive or analytical type) questions carrying 8 marks each. The compulsory question consists of objective type questions like the multiple choice, fill in the blanks etc. Apart from the compulsory question, the student has to answer any 3 from the remaining 5 conventional questions.

## **ML201 : QUANTITATIVE APTITUDE (QA)**

(Common for all branches of II B.Tech - I Semester)

<b>L</b>	<b>T/D</b>	<b>P</b>	<b>C</b>
<b>1</b>	<b>1</b>	<b>0</b>	<b>2</b>

**Scheme : 2013**  
**Internal Assessment : 30**  
**End Exam : 70**  
**End Exam Duration : 3 Hrs**

### **Numerical Ability**

Number Systems, HCF and LCM, Decimal Fractions, Square Roots and Cube Roots, Linear and Quadratic Equations

Averages, Mixtures & Allegations, Ages, Ratios, Proportions and Variations, Percentages, Profit and Loss

Time, Speed and Distance, Time and Work

Permutations and Combinations, Probability, Clocks and Calendars

### **Introduction to concepts of Reasoning**

Cubes, Series and sequences, Odd man out, Coding and decoding

### **General Mental Ability**

Puzzles and Teasers

### **References Books:**

1. Arun Sharma, *How to Prepare for Quantitative Aptitude*, TMH Publishers, New Delhi.
2. R.S. Aggarwal, *Quantitative Aptitude*, S.Chand Publishers, New Delhi.
3. Sharon Weiner-Green, *Ira K. Wolf, Barron's GRE*, Galgotia Publications, New Delhi.
4. Ethnus, *Aptimithra*, McGraw Hill Publishers
5. R.S Aggarwal , *Verbal and Non-Verbal Reasoning*, S.Chand Publishers, New Delhi.
6. Shakuntala Devi, *Puzzles to Puzzle You*, Orient Paper Backs Publishers, New Delhi.
7. Shakuntala Devi , *More Puzzles*, Orient Paper Backs Publishers, New Delhi.
8. Ravi Narula , *Brain Teasers*, Jaico Publishing House, New Delhi.
9. George J Summers, *Puzzles and Teasers*, Jaico Publishing House, Mumbai.

### **DISTRIBUTION AND WEIGHTAGE OF MARKS**

There shall be four objective type (Paper / PC based) tests, carrying 25 marks each, during the semester. The sum of the marks scored in all these four tests shall be the final score.

## **EC204: ELECTRONIC DEVICES & CIRCUITS LAB (EDC (P))**

**(For B.Tech III Semester - ECE)**

**Scheme : 2013**

**Internal Assessment : 30**

**End Exam : 70**

**End Exam Duration : 3 Hrs**

<b>L</b>	<b>T/D</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>3</b>	<b>2</b>

### **Course Objectives:**

- To study the different Electronic Devices characteristics and applications.
- To study the design and analysis of amplifier circuits

### **Course Outcomes:**

- Students are able to design and analyze the Characteristics of different devices and amplifier circuits.

### **Electronics Workshop Practice ( 2 lab sessions)**

1. Identification, specifications and testing of R, L, C components (colour codes), potentiometers, Bread boards, CDS, PCB.
2. Identification, specifications and testing of active devices : Diodes, BJT, FET, SCR, & UJT
3. Study and operation of Multimeters , Function generators ,Regulated power supplies CRO & DSO

### **List of Experiments (For laboratory examination – Minimum of 10 experiments))**

1. Forward and reverse bias characteristics of PN junction diode Characteristics
2. Zener diode characteristics and Zener diode as voltage regulator.
3. Half Wave Rectifier with and without filters.
4. Full Wave Rectifier with and without filters.
5. Input and output characteristics of BJT in CB Configuration.
6. Input and output characteristics of BJT in CE Configuration.
7. FET Characteristics.
8. Frequency response of CE Amplifier.
9. Frequency response of CC Amplifier.
10. UJT Characteristic and UJT Relaxation Oscillator.
11. SCR Characteristics.
12. LED Characteristics.

## **EC205 : BASIC SIMULATIONS LAB (BS (P))**

**(For B.Tech. ECE III Semester)**

**Scheme : 2013**

**Internal Assessment : 30**

**End Exam : 70**

**End Exam Duration : 3 Hrs**

<b>L</b>	<b>T/D</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>3</b>	<b>2</b>

### **Course Objectives:**

- To study the generation of various continuous time and discrete time domain signals using MATLAB software.
- To study the basic operations on continuous time and discrete time domain signals.

### **Course Outcomes:**

- Students are able to understand the basic difference between continuous time & discrete time domain signals.
- Students are able to understand the process of sampling the band limited continuous time domain signals.

### **List of Experiments:**

1. Operations on matrices
2. Generation of signals
3. Even and odd parts of signal
4. Convolution between signals
5. Auto-correlation and Cross-correlation between signals
6. Computation of Unit Sample response and Unit step response of signals
7. Finding the Fourier transform of signal
8. Laplace transform of signals
9. Location of poles and zeros in the Z-plane
10. Sampling theorem verification
11. Verification of linearity and Time Invariance property
12. Gibbs phenomenon
13. Removal of noise by Auto-Correlation
14. Verification of Weiner-Khinchine relations

## EC206 : ANALOG ELECTRONIC CIRCUITS (AEC)

(For B.Tech IV Semester ECE & EEE)

**Scheme : 2013**

**Internal Assessment : 30**

**End Exam : 70**

**End Exam Duration : 3 Hrs**

L	T/D	P	C
3	0	0	3

### Course Objectives:

1. To provide knowledge about single stage amplifiers, multi-stage amplifiers, feedback amplifiers,
2. large signal amplifiers, differential, tuned amplifiers and FET amplifiers and their analysis
3. To provide knowledge about working and design of oscillators
4. Different transistor models at high frequencies

### Course Outcomes:

1. Able to know about the design and analysis of single stage amplifiers, multi-stage amplifiers, Feedback amplifiers, large signal amplifiers, differential, tuned amplifiers and FET amplifiers and oscillators
2. Analysis of bipolar transistor models at high frequencies using  $\pi$ -models.

### Unit-I

**Transistor at High Frequencies:** Hybrid- $\pi$  model, Hybrid- $\pi$  conductances, and capacitances, CE short circuit current gain, Parameters  $f_{\beta}$  and  $f_T$ , Current gain with resistive load, Single stage CE transistor amplifier frequency response, Gain-bandwidth product (GBW).

### Unit-II

**FET Amplifiers:** FET small signal analysis, Low frequency CS and CD amplifiers, CS and CD amplifiers at high frequencies.

**Differential Amplifiers:** Ideal differential amplifier, CMRR, Emitter-coupled differential amplifier, Differential amplifier supplied with constant current, Practical considerations, Transfer characteristics of differential amplifiers.

### Unit-III

**Feedback Amplifiers:** Classification of amplifiers, Concept of feedback, Transfer gain with feedback, General characteristics of negative feedback amplifiers- Gain, Bandwidth, Input resistance, Output resistance & Noise, Method of analysis of feedback amplifier, Analysis of feedback (Voltage & Current series, Voltage & Current shunt) amplifiers.

### Unit-IV

**Oscillators:** Barkhausen criterion, RC Phase shift oscillator using FET & BJT, General form of LC oscillator circuit, Hartley and Colpitts oscillators, Wien-bridge oscillator and Crystal oscillator its significance.

## Unit-V

**Large Signal Amplifiers:** Classes of operation, Class A amplifiers (Series-fed, Transformer coupled, Push pull), Class B amplifiers (Push pull, Complementary-symmetry), Crossover distortion and Class AB operation, Class C amplifiers and efficiency.

## Unit-VI

**Tuned Amplifiers:** Need of tuned amplifiers, Analysis of single stage capacitive coupled tuned amplifier.

**Special semiconductor devices:** Principle of operation, Characteristics and applications of- Tunnel diode, Varactor diode, Photo Diode, Photo transistor, UJT, SCR, DIAC and TRIAC, LCD, LED.

## Text Books:

1. Millman and Halkias, Integrated Electronics, 2nd Edition, TMH 2010.
2. Allen Mottershed, Electronic Devices and Circuits, 28th Edition, PHI 2006.
3. Donald A. Neamen, *Electronic Circuit Analysis and Design*, 2<sup>nd</sup> Edition, Mc Graw Hill 2001.
4. G. K. Mithal, Electronic Devices and Circuits, 23rd Edition, Khanna pub. 2006

## Reference Books:

1. Bogart Theodore, Electronic Devices and Circuits, 6th Edition, PE 2008.
2. Millman and Grabel, Microelectronic, 2nd Edition, TMH 2003.
3. Henry Zanger, Semiconductor Devices and Circuits, Johnwiley 1984.

## NOTE:

**End Exam:** The question paper for end examination shall consist of One Compulsory question consisting of objective type, fill in the blanks etc for 10 marks and for the remaining 60 marks student has to answer any four questions out of 6 questions for 15 marks each.

**Internal Assessment:** The question paper for sessional examination shall have one *compulsory* question carrying 6 marks and five other conventional (descriptive or analytical type) questions carrying 8 marks each. The compulsory question consists of objective type questions like the multiple choice, fill in the blanks etc. Apart from the compulsory question, the student has to answer any 3 from the remaining 5 conventional questions.

**EC207: PULSE AND DIGITAL ELECTRONICS (PDE)**  
**(For B.Tech ECE IV Semester)**

**Scheme : 2013**  
**Internal Assessment : 30**  
**End Exam : 70**  
**End Exam Duration : 3 Hrs**

L	T/D	P	C
3	1	0	3

**Course Objectives:**

- To provide the fundamentals of linear and nonlinear wave shaping, multivibrators and sampling gates.
- To provide the students with an introduction to the fundamentals of Number systems, logic gates, Combinational and sequential circuits

**Course Outcomes:**

- Students are able to examine the switching operations of transistor, sampling gates, digital circuit building blocks (multivibrators), passive and active wave shaping.
- Competently use an oscilloscope to examine digital signals, build simple power supplies, and demonstrate the simple digital gates and operation of flip flop

**Unit-I**

**Linear Wave Shaping:** High pass, Low pass RC circuits, Their response for sinusoidal, Step, Pulse, Square and ramp inputs, RC network as differentiator and integrator.

**Non Linear Wave Shaping:** Diode clippers, Clipping at two independent levels, Transfer characteristics of clippers, Clamping operation, Clamping circuits using diode with different inputs, Clamping circuit theorem.

**Unit-II**

**Switching Characteristics of Diode and Transistor:** Diode as a switch, Piecewise linear diode characteristics, Transistor as a switch, Saturation parameters of Transistor and their variation with temperature, Transistor-switching times, Design of transistor switch.

**Multivibrators:** Design and Analysis of Bistable, Monostable, Astable Multivibrators and Schmitt trigger using transistors.

**Unit-III**

**Number Systems:** Binary, Octal, Decimal, Hexadecimal systems, Conversion of number systems, Weighted and non-weighted codes, Digital Data Representation: Fixed - Signed magnitude, 1's complement, 2's complement, Floating point – Biased exponent, Binary arithmetic, Hamming code, Error detection and correction.

**Unit-IV**

**Logic Gates and Simplification of Boolean Expressions:** OR, AND, NOT, NAND, NOR, EX-OR and EX-NOR gates, Boolean theorems, Switching functions: types, Sum of products, Product of sum, Canonical forms, Minimization of Boolean functions using K-maps and tabulation methods.

**Sampling gates:** Basic operating principles of sampling gates, Unidirectional and Bi-directional sampling gates.

## Unit-V

**Combinational Circuits:** Binary adders and Subtractors using signed magnitude, 1's complement, 2's complement, Carry look-ahead adders (fast adders), BCD adders and Subtractors, Decoders, Encoders, multiplexers, De-multiplexers, Parity generator and checker, Code conversion circuits, Magnitude comparator.

## Unit-VI

**Sequential Circuits :** Finite state model of sequential circuits, Flip-flops, shift registers, Asynchronous and Synchronous counters, Ring and Johnson counters, Design of non-binary counters, Synthesis of synchronous sequential circuits, Melay and Moore machines, Minimization of states.

### Text Books:

1. Milliman and Taub, *Pulse, Digital and Switching Waveforms*, McGraw-Hill.
2. M. Moris Mano, Charles R.Kime, *Digital Logic and Computer Design Fundamentals*, 2<sup>nd</sup> Edition, Pearson Ed.
3. Zvi Kohavi, *Switching and Finite Automata Theory*, TMH.
4. R.P.Jain, *Modern Digital Electronics*, 3<sup>rd</sup> Edition, TMH.

### Reference Books:

1. David .A. Bell, *Solid State Pulse Circuits*, 4<sup>th</sup> Edition, PHI.
2. Wakerly, *Digital Design- Principles and Practices*, 4<sup>th</sup> Edition, PHI.

### NOTE:

**End Exam:** The question paper for end examination shall consist of One Compulsory question consisting of objective type, fill in the blanks etc for 10 marks and for the remaining 60 marks student has to answer any four questions out of 6 questions for 15 marks each.

**Internal Assessment:** The question paper for sessional examination shall have one *compulsory* question carrying 6 marks and five other conventional (descriptive or analytical type) questions carrying 8 marks each. The compulsory question consists of objective type questions like the multiple choice, fill in the blanks etc. Apart from the compulsory question, the student has to answer any 3 from the remaining 5 conventional questions.

**EC208 : NETWORKS AND TRANSMISSION LINES (NTL)**  
**(For B.Tech ECE IV Semester)**

**Scheme : 2013**  
**Internal Assessment : 30**  
**End Exam : 70**  
**End Exam Duration : 3 Hrs**

L	T/D	P	C
3	0	0	3

**Course Objectives:**

- To understand the network functions, filters and transmission lines and how to apply the different mathematical techniques to the filters, attenuators, network synthesis and transmission lines.
- To understand the network functions and synthesis.

**Course Outcomes:**

- Able to apply different types of filters and attenuators.
- Able to understand the basic idea in designing of transmission lines for systems.

**Unit-I**

**Two port Networks:**

Terminals and terminal pairs, Driving point and transfer functions for two port Networks - Z, Y, h, g, ABCD parameters, Equivalence of two port networks. Inter connection of two ports, analysis of reciprocal networks.

**Unit-II**

**Characteristics of Networks:**

Symmetrical networks, Characteristic impedance and propagation constant. Asymmetrical networks, Image and iterative impedances, Image transfer constant & iterative transfer constant, Properties of L, T and PI sections, Lattice, Bridged -T, Twin -T networks. L -matching networks.

**Unit-III**

**Filters Basics:** The Decibel and Neper, Types of Filters, Characteristics of the filter.

**Constant K filters:** Low pass, High pass, Band pass, Band stop filters design.

**m-derived filters:** m-derived low pass, High pass, Band pass, Band stop filters design.

Composite filter design, Equalizers, Attenuators.

**Unit-IV**

**Transmission lines:**

Types of transmission lines, Primary constants, Skin effect, Transmission line equations from source and load end, Infinite line, Secondary constants, Velocity of propagation, Group velocity. Terminations: Open and short circuited lines, Transmission line as circuit element, Line distortion, Distortion less line, loaded lines.

**Unit-V**

**Characteristics:**

Properties of transmission lines at UHF, Reflection coefficient, Standing waves, Characteristics of half wave, Quarter wave and  $1/8$  wave lines.

## **Unit-VI**

### **Smith Chart:**

Construction and applications of Smith chart, Transmission line matching. Single and double stub matching.

### **Text Books:**

1. Van Valkunberg, Network Analysis (Unit-I).3rdEdition, PHI 1974.
2. Umesh Sinha, Networks and Transmission Lines, 8thEdition, Satya Prakashan

### **Reference Books:**

1. John D Ryder, Networks Lines and Fields, 2<sup>nd</sup> Edition, Prentice Hall 2003.
2. Johnson, Transmission Lines and Networks, TMH.
3. V K A Atre, Network Theory & Filter Design, New Age International.
4. A.Sudhakar and S.P.Shyam Mohan, Circuits and Networks, 3<sup>rd</sup> Edition, TMH 2007

### **NOTE:**

**End Exam:** The question paper for end examination shall consist of One Compulsory question consisting of objective type, fill in the blanks etc for 10 marks and for the remaining 60 marks student has to answer any four questions out of 6 questions for 15 marks each.

**Internal Assessment:** The question paper for sessional examination shall have one *compulsory* question carrying 6 marks and five other conventional (descriptive or analytical type) questions carrying 8 marks each. The compulsory question consists of objective type questions like the multiple choice, fill in the blanks etc. Apart from the compulsory question, the student has to answer any 3 from the remaining 5 conventional questions.

**EC209 : ELECTROMAGNETIC THEORY (EMT)**  
**(For B. Tech ECE IV Semester)**

**Scheme : 2013**  
**Internal Assessment : 30**  
**End Exam : 70**  
**End Exam Duration : 3 Hrs**

L	T/D	P	C
3	1	0	3

**Course Objectives:**

- To develop and understand the fundamental concepts of electromagnetic fields with an emphasis on wave propagation.
- The main objective of the course is to get students familiar with the typical problems and Constraints that arise when designing and developing Electromagnetics.

**Course Outcomes:**

- Students can learn electromagnetic fields and have a solid foundation based on the laws of Electromagnetics.

**Unit-I**

**Co-ordinate Systems and Vector Calculus:** Vector Algebra, Co-ordinate systems-Cartesian, Cylindrical and Spherical, Transformation of Vector functions from one Co-ordinate system to another. Gradient, Divergence, Curl and their physical interpretations, Stokes theorem, Divergence theorem.

**Unit-II**

**Electro Static Fields-I:** Coulomb's law, Electric field intensity, Field due to different charge distributions-Line charge, Sheet charge and Volume charge distributions. Electric flux and Flux density, Gauss's law and its application. Maxwell's first equation in integral and point forms.

**Unit-III**

**Electro Static Fields-II:** Energy expended in moving a point charge in an electric field, Line integral, Potential difference and Potential, Potential field of a point charge and system of charges, Potential gradient, Dipole, Energy density in the electrostatic field. Current and current density, Continuity of current, Metallic conductors, Nature of dielectric materials, Boundary Conditions for perfect dielectrics and conductors, Capacitance-examples, Poisson's and Laplace equations-examples.

**Unit-IV**

**Magneto static Fields:** Biot-Savart's law, Ampere's circuital law, Magnetic flux and magnetic flux density, Scalar and vector magnetic potentials, Force on a moving charge, Differential current element and force between two differential current elements, force and torque on closed circuit, Magnetization and permeability, Magnetic boundary conditions, Energy in a magnetic field.

**Unit-V**

**Time Varying Fields & Maxwell's Equations:** Faraday's law, Lorentz Force Equation, Maxwell's equations in various forms, Displacement Current Density.

## **Unit-VI**

**Uniform Plane Wave:** Wave motion in free space, perfect, lossy dielectrics and good conductors. Poynting theorem, Polarization, Reflection of plane waves- normal and oblique incidence (Perpendicular and Parallel Polarizations)

### **Text Books:**

1. Hayt.W.H, *Engineering Electromagnetics*, 7th Edition, TMH.
2. Sadiku, *Engineering Electromagnetics*, 3rd Edition, Oxford University Press.
3. G.S.N.Raju, *Electromagnetic Field Theory and Transmission Lines*, 1st Edition, Pearson Ed.

### **Reference Books:**

1. Jordan and Balmain, *Electromagnetic Waves and Radiating Systems*, 2nd edition, Pearson Ed.
2. John.D.Kraus, *Electromagnetics*, 6th Edition, Mc Graw-Hill.
3. Nanapneni Narayana Rao, *Elements of Engg. Electromagnetics*, 6th Edition, Pearson Ed.

**End Exam:** The question paper for end examination shall consist of One Compulsory question consisting of objective type, fill in the blanks etc for 10 marks and for the remaining 60 marks student has to answer any four questions out of 6 questions for 15 marks each.

**Internal Assessment:** The question paper for sessional examination shall have one *compulsory* question carrying 6 marks and five other conventional (descriptive or analytical type) questions carrying 8 marks each. The compulsory question consists of objective type questions like the multiple choice, fill in the blanks etc. Apart from the compulsory question, the student has to answer any 3 from the remaining 5 conventional questions.

## EE211 : ELECTRICAL TECHNOLOGY (ET)

(For B. Tech ECE IV Semester)

**Scheme : 2013**

**Internal Assessment : 30**

**End Exam : 70**

**End Exam Duration : 3 Hrs**

L	T/D	P	C
3	0	0	3

### Course Objectives:

- To know the designing and working principles of D.C generators ,D.C motors, poly phase induction motors and Transformers
- Providing knowledge about Alternators , synchronous motors and single phase induction motors

### Course Outcomes:

- Able to get clear idea about basic principles and design of D.C generators and D.C motors, single phase induction motors and Transformers.
- Able to get knowledge about Alternators , synchronous motors and poly phase induction

### Unit-I

**D.C.Generators:** Constructional features-single lap and wave windings-EMF equation-methods of excitation- characteristics of shunt, series and compound generators.

### Unit-II

**D.C. Motors :** Principle of operation —torque equation- speed-torque characteristics of shunt, series and compound Motors – Losses and efficiency–testing– Swinburne’s test and brake test– Speed control of DC shunt motor- 3 point and 4 point starters.

### Unit-III

**Transformers:** Principle of operation –constructional features-useful and leakage fluxes-EMF equation-leakage reactance-vector diagram-equivalent circuit of single phase transformer – types –Constructional features – Phasor diagram on No Load and Load – Equivalent circuit

**Performance of Transformers:** Losses and Efficiency of transformer and Regulation – OC and SC tests– all-day efficiency-parallel operation-auto transformers.

### Unit- IV

**Polyphase Induction Motors:** A.C Windings-Pitch factor and Distribution factor- EMF equation -Constructional features -Principle of operation– Slip-Torque characteristics – Equivalent circuit-Circle Diagram- Losses and Efficiency -.Methods of Speed control-Star-delta and rotor rheostat starters-applications.

### Unit-V

**Alternators:** Constructional features – salient pole and turbo alternators-concept of synchronous reactance-vector diagram- regulation –determination by Synchronous Impedance Method – synchronizing of alternators to infinite bus bar.

## **Unit-VI**

**Synchronous Motors:** Principle of operation-V and inverted V curves, methods of starting, hunting and its suppression -applications.

**Single Phase Induction Motors:** Construction- Characteristics –starting split phase and shaded pole methods- single phase series motor.

### **Text Books:**

1. M.S Naidu and S. Kamakshaiah, Introduction to Electrical Engineering, TMH Publications.
2. T.K. Nagasarkar and M.S.Sukhija, Basic Electrical Engineering, Oxford University Press, 2005

### **Reference Books:**

1. V.K Mehta, Principles of Electrical Engineering, S.Chand Publications.
2. I.J. Nagarath and D.P Kothari, Theory and Problems of basic electrical engineering, PHI Publications
3. David V. Kerns, JR. J. David Irwin, Essentials of Electrical and Computer Engineering

### **NOTE:**

**End Exam:** The question paper for end examination shall consist of One Compulsory question consisting of objective type, fill in the blanks etc for 10 marks and for the remaining 60 marks student has to answer any four questions out of 6 questions for 15 marks each.

**Internal Assessment:** The question paper for sessional examination shall have one *compulsory* question carrying 6 marks and five other conventional (descriptive or analytical type) questions carrying 8 marks each. The compulsory question consists of objective type questions like the multiple choice, fill in the blanks etc. Apart from the compulsory question, the student has to answer any 3 from the remaining 5 conventional questions.

## **ML202 :SOFT SKILLS (SS)**

**(Common to B.Tech IV Semester CIVIL, EEE & ME and  
V Semester ECE & CSE Branches)**

**(Draft Syllabus)**

**Scheme : 2013**  
**Internal Assessment : 100**

<b>L</b>	<b>T/D</b>	<b>P</b>	<b>C</b>
<b>1</b>	<b>1</b>		<b>2</b>

The purpose of this course is to provide exposure to the students to the soft skills that are crucial to an employee's ability to work EFFECTIVELY.

### **Objectives:**

- Acquire competence to use grammar with an understanding of its basic rules
- Be able to speak and write appropriately applying these rules
- Communicate effectively and enhance their interpersonal relationship building skills with renewed self confidence
- Work together in teams and accomplish objectives in a cordial atmosphere
- Face interviews, GDs and give presentations
- Understand and develop the etiquette necessary to present oneself in a professional setting

### **Course Outcomes:**

- Students will be able to demonstrate the competence to use grammar with an understanding of its basic rules
- Students will be able to communicate effectively and enhance their interpersonal relationship building skills with renewed self confidence
- Students will be able to work together in teams and accomplish objectives in a cordial atmosphere
- Students will be able to face interviews, GDs and give presentations
- Students will be able to understand and develop the etiquette necessary to present themselves in a professional setting

### **Course Work**

To achieve the objectives, the following course content is prescribed.

### **Contents**

- Revision and reinforcement of language skills – grammar – vocabulary
- Communication Skills – Barriers to Communication – Strategies to overcome the barriers
- Non Verbal Communication – Body Language – Proxemics – Kinesics
- Emotional Quotient – self analysis of emotional responses

- Group Discussions – understanding the objective and skills tested in a GD – types of GDs – roles in a GD – dos and don'ts in a GD
- Team Work – importance of team work – team vs group – attributes of a successful team – working with groups – dealing with people – group decision making
- Goal Setting – importance of goal setting – difference between goals and dreams – importance of writing goals – SMART goals – short term goals – long term goals
- Time Management – scheduling – how to delegate effectively – plugging time leaks – learning to say “No”
- Presentation Skills – Oral Presentations – PPTs – Prepared Speeches – Extempore
- General Awareness & Current affairs
- Business Etiquette – telephone and email etiquette – dining etiquette – dos and don'ts in a formal setting

## References

1. Stephen R. Covey, “The Seven Habits of Highly Effective People”, Pocket Books Publishers, London
2. Infosys Campus Connect Portal –//<http://campusconnect.infosys.com/>
3. Shiv Khera, “You Can Win”, MacMillan India Publishers, New Delhi
4. Stephen R. Covey, A. Roger Merrill and Rebecca R. Merrill, “First Things First”, Pocket Books Publishers, London
5. Gloria J. Galanes, Katherine Adams, John K. Brillhart, “Effective Group Discussion: Theory and Practice”.
6. Priyadarshani Patnaik, “Group Discussion and Interview Skills with VCD”, Foundation Books.
7. Sangeeta Sharma & Binod Mishra, “Communication Skills for Engineers and Scientists”, PHI Learning Private Limited.
8. Dr. Shalini Verma, “Body Language- Your Success Mantra”, S.Chand, 2006.
9. Andrea J. Rutherford, “Basic Communication Skills for Technology”, 2nd Edition, Pearson Education, 2007.
10. Krishna Mohan and Meera Bajerji, “Developing Communication Skills”, MacMillan India Ltd.

## DISTRIBUTION AND WEIGHTAGE OF MARKS

For the Soft Skills subject there shall be continuous tests for 50 marks and viva-voce for 50 marks.

**EC210 : ANALOG ELECTRONIC CIRCUITS LAB (AEC (P))**  
**(For B.Tech ECE IV Semester)**

**Scheme : 2013**  
**Internal Assessment : 30**  
**End Exam : 70**  
**End Exam Duration : 3 Hrs**

L	T/D	P	C
0	0	3	2

**Course Objectives:**

- To study the Analog Electronic Circuits and applications.
- To study the design and analysis of amplifier circuits

**Course Outcomes:**

- Students are able to design and analyze the Characteristics of different amplifier circuits.

**List of Experiments (12 Experiments to be done)**

**i) Design and Simulation in Simulation Laboratory using any simulation Software**  
**(Minimum 6 Experiments)**

1. Two stage RC Coupled Amplifier
2. Boot Strap Emitter Follower
3. Darlington Emitter Follower
4. Common Source FET Amplifier
5. CE Amplifier(with & without Feedback)
  - i) Current Series Feedback
  - ii) Voltage Shunt Feedback
6. Voltage Series Feedback Amplifier
7. Single Stage Tuned Amplifier
8. Common Drain Amplifier
9. RC Phase Shift Oscillator
10. Wien Bridge Oscillator
11. Differential Amplifier
12. Power Amplifiers
  - i) Class B Push Pull Amplifier
  - ii) Class C Amplifier

**ii) Testing in the Hardware Laboratory (6 Experiments)**

1. Two stage RC Coupled Amplifier
2. Boot Strap Emitter Follower
3. Darlington Emitter Follower
4. Common Source FET Amplifier
5. CE Amplifier(with & without Feedback)
  - i) Current Series Feedback

- ii) Voltage Shunt Feedback
- 6. Voltage Series Feedback Amplifier
- 7. Single Stage Tuned Amplifier
- 8. Common Drain Amplifier
- 9. RC Phase Shift Oscillator
- 10. Wien Bridge Oscillator
- 11. Differential Amplifier
- 12. Power Amplifiers
  - i) Class B Push Pull Amplifier
  - ii) Class C Amplifier

### **Equipment Required for the Laboratory**

- 1.** Software Simulations for Electronic Circuits
  - i) Computer Systems with Latest Specifications
  - ii) Connected in LAN(Optional)
  - iii) Operating Systems(Windows XP)
  - iv) Suitable Simulation Software
- 2.** Hardware Requirement for Electronic Circuits
  - i)** Regulated Power Supply
  - ii)** CRO's
  - iii)** Function Generators
  - iv)** Multi-meter
  - v)** Components

**EC211: PULSE AND DIGITAL ELECTRONICS LAB (PDE(P))**  
**(For B.Tech ECE IV Semester)**

**Scheme : 2013**  
**Internal Assessment : 30**  
**End Exam : 70**  
**End Exam Duration : 3 Hrs**

L	T/D	P	C
0	0	3	2

**Course Objectives:**

- To study the Pulse and Digital Circuits and applications.
- To study the design and analysis of pulse and digital circuits

**Course Outcomes:**

- Students are able to design and analyze the Characteristics of different pulse and digital circuits.

**List of Experiments (12 Experiments to be done)**

1. Linear Wave Shaping.
2. Non-Linear Wave Shaping Clippers.
3. Non –Linear Wave Shaping Clampers.
4. Transistor As A Switch.
5. Astable Multivibrator.
6. Monostable Multivibrator.
7. Bistable Multivibrator.
8. Schmitt Trigger.
9. Sampling Gates
10. Study of Logic Gates (Using Discrete Components)
11. Verification of Logic Gates and Adders
12. BCD to Excess-3 Code Converter
13. Multiplexer & Decoder
14. Shift Register and Ring Counter
15. Asynchronous Decade Counter

**Equipment Required for the Laboratory**

**Hardware Requirement for Electronic Circuits**

- i) Regulated Power Supply, Function Generators
- ii) CRO's, Multi-meter Components

**EE212 : ELECTRICAL CIRCUITS AND MACHINES LAB (ECMP)**  
**(For B.Tech ECE IV Semester)**

**Scheme : 2013**  
**Internal Assessment : 30**  
**End Exam : 70**  
**End Exam Duration : 3 Hrs**

L	T/D	P	C
0	0	3	2

**Course Objectives:**

- Verification of KVL, KCL
- Verification of network theorems
- Load tests and break tests on generator and motors

**Course Outcomes:**

- Able to prove network theorems.
- Able to study the load regulation characteristics of generators and Motors
- Able to study about the regulation characteristics of 1-phase transformer and Alternators

**List of Experiments:**

1. Load test on DC Compound Generator.
2. Swinburne's Test.
3. Brake Test on Three Phase Squirrel cage Induction Motor.
4. Regulation of Alternator.
5. Load Test on Single Phase Transformer.
6. OC and SC test on Single Phase Transformer.
7. Brake Test on DC Shunt Motor.
8. Determination of self-inductance, Mutual inductance and coefficient of coupling.
9. KCL and KVL.
10. Thevenin's Theorem.
11. Norton's Theorem.
12. Superposition Theorem..