PURAN MURTI
CAMPUS

A Unit of Puran Murti Educational Society
Approved by AICTE ,Recognized Under Section 2 (f) by UGC
Affiliated to Deenbandhu Chhotu Ram University of Science
And Technology, Murthal, Sonipat

Deenbandhu Chhotu Ram University of Science & Technology, Murthal (Sonepat)
Department of Electronics & Communication Engineering
SCHEME OF STUDIES & EXAMINATIONS
B.Tech. IInd YEAR (SEMESTER –III)
Choice Based Credit Scheme w.e.f. 2019-20

S. No.	Course No.	Course Title	Teaching Schedule			Marks of Class work	Examination Marks		Total	Credit	Duration of Exam	Contact Hrs./wk.
			L	T	P		Theory	Practical				
1	ECE201C	Electronic Devices	3	0	-	25	75	-	100	3	3	4
2	ECE281C	Electronic Devices lab	0	0	2	25	-	75	100	1	3	2
3	ECE203C	Digital System Design	3	0	-	25	75	-	100	3	3	3
4	ECE283C	Digital System Design lab	0	0	2	25	-	75	100	1	3	2
5	ECE205C	Signals and Systems	3	0	-	25	75	-	100	3	3	3
6	ECE207C	Network Theory	3	0	-	25	75	-	100	3	3	4
7		(Slot for BS/ES/HS courses)*								6		
8	MC203C or MC201C	Constitution of India **(Gr.-A)** or Environmental Studies**(Gr.-B)**	3	0	0	25	75	-	100	-	3	3
		Total	**18**	**0**	**4**	**200**	**450**	**150**	**800**	**20**		

Note:

0(*) Select any two subjects from table given below:-

S. No.	Course No.	Course Title	Teaching Schedule			Marks of Class work	Examination Marks		Total	Credit	Duration of Exam	Contact Hrs./wk.
			L	T	P		Theory	Practical				
1	MGT201C	Engineering Economics	3	0	0	25	75	-	100	3	3	3
2	CSE201C	Data Structures & Algorithms	3	0	0	25	75	-	100	3	3	3
3	CSE203C	Computer Organization & Architecture	3	0	0	25	75	-	100	3	3	3

Environmental Studies (MC201C)/ Constitution of India (MC203C) are mandatory & qualifying courses.

For DCRUST Murthal: GROUP A: BME, BT, CSE, ECE. GROUP B: CE, CHE, EE, ME.

Engg. Economics (MGT201C) is common with 3rd Semester Mech, CSE, ECE and 4th Semester Civil & Chemical Engg.

5. For student admitted in B. Tech. 1st Semester (C-Scheme) in 2019 and all trailing students, Examinations and evaluation of students shall be conducted as per guidelines AICTE Examinations Reforms covering the entire syllabus. The students shall be made aware about the reforms.

Campus:
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B.Tech. 2nd YEAR (SEMESTER –III)
Electronics & Communication Engineering

L	T	P	Credits		Class Work	: 25
3	0	0	3		Examination	: 75
					Total	: 100
						: 3 Hours

Duration of Exam

SUBJECT: Electronic Devices　　　　　**SUBJECT CODE: ECE201C**

Unit 1

Topic no.1:Basic Semiconductor Pn-Junction Theory: Introduction, Atomic Structure, Band Theory of Semiconductors,
Topic no 2 Covalent Bond, Metals, Insulators & Semiconductors, Effect of Temperature on Conduction,
Topic no.3 Drift Current, Donor & Accepter Impurities in Semiconductor,
Topic no 4 Law Of Mass Action, Hall's Effect, Hall Coefficient & Mobility, Poisson and continuity equation.
Topic no 5 Characteristics Of Diode: PN-Junction, Construction Types, Unbiased Junction, Biased Junction,
Topic no 6 Space Charge Region, Diode Characteristics & Parameters, Diode Capacitance, Diode Resistance,
Topic no 7 DC And AC Load Lines, Diode Testing, Zener And Avalanche Breakdown Diodes, Tunnel Diode,
Topic no 8Temperature Characteristics of Diode, Reverse Recovery Time, Switching Characteristics of Diode.

Unit 2

Topic no 9 Diode Applications: Half Wave, Full Wave Center Tapped, Full Wave Bridge(Rectification),
Topic no 10 Series Clipping Circuit, Shunt Clipping Circuit, Clamping Circuit, Bridge Voltage Doubler,
Topic no 11 Filtering Circuit Using Capacitor & Inductor.
Topic no 12 Junction Transistor: Introduction, Construction Of Junction Transistor, Circuit Symbols,
Topic no 13 Transistor Operation, Unbiased Transistor, Operation Of Biased Transistor,
Topic no 14 Transistor Current Components, DC & AC Load Line, Operating Point,
Topic no 15 Transistor Configuration CB, CE, CC, Input/Output Characteristics, Early Effect
Topic no 16 Eber's-Moll-Model of Transistor, Maximum Rating of Transistor,
Topic no 17 Transistor Testing, Transistor as an Amplifier, Transistor as Oscillator.

Unit 3

Topic no 18 Bjt Biasing:Bias Stability, Instability Due To β, Thermal Stability, Stability Factor,
Topic no 19 Fixed Biased Circuits, Effect of Emitter Resistor, Collector to Base Bias, Voltage Divide Biasing,
Topicno20 Advantage & drawbacks of Biasing Techniques, Stability Factor calculation of Biasing Techniques,
Topicno21 Bias Compensation by various device, Thermal Runway, Transistor Dissipation, Thermal Resistance,
Topic no 22 Condition of Thermal Stability
Topicno23 Small Signal Circuit: Two Port Network, HybridModel, Typical Values of H-Parameter Model,
Topic no 24 Conversion of CE, CB, CC Configuration to Equivalent Hybrid Model, CB Circuit Analysis,
Topic no 25 CE circuit with & without R_E analysis, CC circuit analysis, Analysis of CE,
Topicno26 CB,CC Configuration with approximate Hybrid Model, Miller's Theorem, Dual of Miller Theorem.

Unit 4

Topic no 27 FET: Introduction, The Junction FET, Basic Construction, Operation, P- Channel FET,
Topicno 28 N-Channel FET, Frequency Model of FET, Low FrequencyFET,Transfer Characteristics of FET,
Topicno 29 MOSFET, Enhancement Mode, Depletion Mode of FET, Circuit Symbol of MOSFET,V-MOSFET.
Topicno30 Special Semicondutor Devices:Optoelectronic Devices,Photoconductors,
Topic no31 Photo Diode, Photo Transistor, Photo Voltaic Sensor,
Topic no 32 Photo Emission, Solar Cells, LED, LCD, Laser Diode, Schottky Diode, SCR, TRIAC, DIAC, UJT,
Topic no 33 Single Electron Transistor. Infrared LEDs, IGBT, Opto Coupler.

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Text/Reference Books:

1. Basic Electronics   By Debashion DE.   – Pearson Education.
2. Electronics Device & Circuit,   By Robert Boylestad ,Louis Nashelsky, 11th Edition, Pearson Education,2015.
3. Electronics Device Circuit   By David.A.Bell -- Oxford
4. Integrated Electronics   By Millman Halkias   -- TMH.
5. Electronics Device &Circuit   By Dharam Raj Cheruku -- Pearson Education.
6. Electronics Device &Circuit   By B.P Singh and Rekha Singh 2nd Edition – Pearson Education.

Course Outcomes: At the end of the course, students will be able to:

1. Understand the working of switching devices and apply the same in designing complex circuits with fewer devices.
2. Design amplifier and other complex circuits with the help of special semiconductor devices which will further increase real time applications and reduce runaway situations.
3. Apply the mathematical modeling for the electronic devices and circuits in turn helps in improvement in design in terms of size, power requirement and ease of use.
4. Use variety of electronic devices for designing society friendly electronic gadgets used for security and other useful purposes.

Note:

1. In Semester Examinations, the examiner will set two questions from each unit (total 8 questions in all) covering the entire syllabus. The students will be required to attend only five questions selecting atleast one question from each unit.
2. The use of scientific calculator will be allowed in the examination. However, programmable calculator and cellular phone will not be allowed.

For student admitted in B. Tech. 1st Year (C-Scheme) in 2019 and all trailing students.

Examinations and evaluation of students shall be conducted as per guidelines AICTE Examinations   Reforms covering the entire syllabus. The students shall be made aware about the reforms.

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Subject:Electronic Devices Lab   **Subject Code: ECE281C**

B.Tech. 2nd YEAR (SEMESTER –III)
Electronics & Communication Engineering

L	T	P	Credits
0	0	2	1

Class Work	: 25
Examination	: 75
Total	: 100
Duration of Exam	: 3 Hours

LIST OF EXPERIMENTS:
1. Analysis & study of half wave and full wave rectifiers
2. Analysis & study of power supply filter.
3. Analysis & study of diode as a clipper and clamper.
4. Analysis & study of zener diode as a voltage regulator.
5. Analysis & study of CE amplifier for voltage, current and Power gains input, output impedances.
6. Analysis & study of CC amplifier as a buffer.
7. Analysis & study the frequency response of RC coupled amplifier.
8. Analysis & study of transistor as a constant current source in CE configuration .
9. To study characteristics of FET.
10. Analysis & study of FET common source amplifier.
11. Analysis & study of FET common drain amplifier.
12. Study and design of a DC voltage doubler.
13. To study characteristics of SCR.
14. To study characteristics of DIAC.
15. To study UJT as a relaxation oscillator.

Text/Reference Books:
1. Basic Electronics   By Debashion DE. – Pearson Education.
2. Electronics Device & Circuit,   By Robert Boylestad ,Louis Nashelsky, 11th Edition, Pearson Education,2015.
3. Electronics Device Circuit   By David.A.Bell -- Oxford
4. Integrated Electronics   By Millman Halkias -- TMH.
5. Electronics Device &Circuit   By Dharam Raj Cheruku -- Pearson Education.
6. Electronics Device &Circuit   By B.P Singh and Rekha Singh 2nd Edition – Pearson Education.

Course Outcomes: At the end of the course, students will be able to:
1. Understand the characteristics of diodes, transistors, JFETs, and op-amps.
2. Understand the operation and characteristics of different configurations of BJT.
3. Understand the operation and characteristics of different special semiconductor devices.
4. Design complex electronic circuits with fewer devices.
5. Optimize power requirement in design of complex electronic circuits.
   Note:
   1. In Semester Examinations, the examiner will set two questions from each unit (total 8 questions in all) covering the entire syllabus. The students will be required to attend only five questions selecting atleast one question from each unit.
   2. The use of scientific calculator will be allowed in the examination. However, programmable calculator and cellular phone will not be allowed.

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Subject: Digital System Design   **Subject Code: ECE203C**

B.Tech. 2nd YEAR (SEMESTER –III)
(Common for ECE and CSE)

L	T	P	Credits		Class Work	: 25
3	0	0	3		Examination	: 75
					Total	: 100
					Duration of Exam	: 3 Hours

Unit 1

Topic no.1 Logic Simplification: Review of Boolean Algebra and DeMorgan's Theorem, SOP & POS forms,
Topic no 2 Canonical forms, Realization Using Gates. Karnaugh maps up to 6 variables,
Topic no 3 VEM technique, Binary codes, Code Conversion. Numericals.

Unit 2

Topic no.4 Combinational & Sequential Logic Design: Comparators, Multiplexers, Encoder,
Topic no 5 Decoder, Display devices, Half and Full Adders, Subtractors, Parallel Adders,
Topic no.6 Adder with Look Ahead Carry, BCD Adder. Sequential Logic Design: Building blocks like S-R,
Topic no.7 JK and Master-Slave JK FF, Edge triggered FF,
Topic no.8 Ripple and Synchronous counters, Sequence Generator, Shift registers.

Unit 3

Topic no.9 Finite state machines: Introduction, Design of synchronous FSM: Serial Binary Adder,
Topic no.10 Sequence detector, Parity Bit Generator, pulse train generator.
Topic no.11 Algorithmic State Machines charts: Introduction, Component of ASM chart,
Topic no.12 Introductory examples of ASM chart.

Unit 4

Topic no.13 Logic Families and PLDs: TTL NAND gate, Specifications, Noise margin,
Topic no.14 Propagation delay, fan-in, fan-out, Tristate TTL, ECL, CMOS families and their interfacing.
Topic no.15 Concept of Programmable logic devices like PAL, PLA, ROM, CPLD and FPGA.
Topic no.16 Logic implementation using Programmable Devices.

Text/Reference Books:
1. R.P. Jain, "Modern digital Electronics", Tata McGraw Hill, 4th edition, 2009
2. A.Anand Kumar, "Switching Theory & Logic Design", PHI.
3. W.H. Gothmann, "Digital Electronics- An introduction to theory and practice", PHI, 2nd edition, 2006.
4. D.V. Hall, "Digital Circuits and Systems", Tata McGraw Hill, 1989.
5. Morris Mano, "Digital Design: With an Introduction to the Verilog HDL", 5th Edition, Pearson Education, 2013.
6. Morris Mano, "Logic & Computer Fundamentals",4th Edition, Pearson Education.

Course Outcomes: At the end of the course, students will demonstrate the ability to:

1. Understand binary codes, binary arithmetic, minimization techniques and their relevance to digital logic design.
2. Design & analyze modular combinational circuits with MUX/DEMUX, Decoder, Encoder and sequential logic circuits.
3. Understand finite state machines and develop a digital logic to find out sustainable solution of a real life problem.
4. Understand and implement various digital integrated circuits using different logic families and simple systems composed of PLDs.

Note:
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Subject: Digital System Design Lab   Subject Code: ECE283C

B.Tech. 2nd YEAR (SEMESTER –III)
(Common for ECE and CSE)

L	T	P	Credits
0	0	2	1

Class Work   : 25
Examination   : 75
Total   : 100
Duration of Exam : 3 Hours

LIST OF EXPERIMENTS:

1 To study & design basic gates.
2 To realize and minimize five & six variables using K-Map method.
3 To verify the operation of Multiplexer & De-multiplexer.
4 To perform Half adder and Full adder
5 To perform Half substractor and Full substractor.
6 To verify the truth table of S-R,J-K,T & D Type flip flop .
7 To study FLIP- FLOP conversion.
8 To design & verify the operation of 3 bit synchronous counter.
9 To design & verify the operation of synchronous UP/DOWN decade counter using JK flip
10 To design & verify operation of Asynchronous counter.
11 To design and implement a circuit to detect a Count Sequence.
12 Conversion of state diagram to the state table and implement it using logical circuit.

Text/Reference Books:

1. R.P. Jain, "Modern digital Electronics", Tata McGraw Hill, 4th edition, 2009
2. A.Anand Kumar, "Switching Theory & Logic Design", PHI.
3. W.H. Gothmann, "Digital Electronics- An introduction to theory and practice", PHI, 2nd edition, 2006.

Course Outcomes: At the end of the course, students will demonstrate the ability to:

1. Implement the basic digital theory concepts practically and will be able to verify various results derived in theory.
2. Design, analyze and troubleshoot broad range of combinational and sequential circuits for various practical problems using basic gates and flip flops I.C's.
3. Develop technical writing skills to communication effectively and present one's own work.
4. Acquire teamwork skills for finding sustainable solution of a complex problem and working effectively in groups.

Note:-
1. Each laboratory class/section shall not be more than about 20 students.
2. To allow fair opportunity of practical hands on experience to each student, each experiment may either done by each student individually or in group of not more than 3-4 students. Larger groups be strictly discouraged/ disallowed.

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Subject: Signals and Systems   **Subject Code: ECE205C**

B.Tech. 2nd YEAR (SEMESTER –III)
Electronics & Communication Engineering

L	T	P	Credits		
3	0	0	3		

Class Work   : 25
Examination   : 75
Total   : 100
Duration of Exam : 3 Hours

Unit 1

Topic no 1 Introduction To Signal: Signal Definition, Classification with examples:

Topic no2 Continuous –Time & Discrete –Time, Continuous –valued & Discrete –valued,

Topic no3 Analog & Digital, Deterministic & Random,

Topic no 4 One Dimensional & Multi Dimensional, Even/Symmetric & Odd/Anti symmetric signals,

Topic no 5 Causal, Non causal & Anti causal; Real & Complex, Periodic & Aperiodic,

Topic no 6 Energy & Power signals; Representation of Discrete –Time signals,

Topic no 7 Elementary Discrete Time Signals.

Topic no 8 Introduction To Discrete-Time Systems And Their Properties:

Topic no 9 Systems & Their Representation, Independent variable transformations

Topic no 10 Time Shifting, Time Reversal, Time Scaling, time shifting and reversal;

Topic no 11 classification of Systems: Hardware, Software & Mixed Systems;

Topic no 12 Linear & Nonlinear Systems; Static/without memory & Dynamic/ with memory Systems,

Topic no 13 Causal & Non causal System; Invertible & Noninvertible; Stable & Unstable System,

Topic no 14 Time variant & Time Invariant Systems.

Unit 2

Topic no 15 Linear-Time Invarient (Lti) Systems And Their Advantages:

Topic no 16 LTI Systems, Discrete –time Signal representation in terms of impulses,

Topic no 17 Impulse Response of Discrete Time LTI Systems, Finite Impulse Response System,

Topic no 18 Infinite Impulse Response System, LTI Systems Properties,

Topic no 19 LTI systems representation by Constant –Coefficient Difference Equation,

Topic no 20 LTI System Characterization, Cascade & Parallel Connection of LTI Systems.

Topic no 21 Introduction To Frequency Domain Representation:

Topic no 22 Concept of frequency for analog signals and discrete –time signals,

Topic no 23 Fourier Series Representation of Periodic Signals,

Topic no 24 I/P O/P Relationship for LTI Systems using Fourier Series, Filtering Concept.

Topic no 25 Fourier Transform representation for Discrete –Time Signals,

Topic no 26 Properties of Discrete –Time Fourier Transform,

Topic no 27 Systems Characterized by Linear Constant Coefficient Difference Equations.

Unit 3

Topic no28 Laplace Transform: Definition and Region of Convergence,

Topic no 29 Laplace transform applications to LTI systems, Transfer function of LTI systems,

Topic no 30 Poles and Zeros in S-plane, Stability in S-domain.

Topic no 31 Z-Transform And Its Inverse:Introduction to Z-Transform,

Topic no 32 Region of Convergence (ROC) for Z-Transform, ROC for: Finite & Infinite Duration; Causal,

Topic no 33 Anti causal & Noncausal signals; Z-Transform Properties,

Topic no34 Relationship with Fourier Transform, Inverse Z-Transform,

Topic no 35 Rational Z –Transforms, Poles & Zeros of Signals & Systems,

Topic no 36 Pole Location and Time Domain behavior for Causal Signals;

Topic no 37 Applications of Z-Transform: System Function of an LTI System,

Topic no 38 Causality & Stability of LTI Systems, Pole Zero Cancellation.

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Unit 4

Topic no 39 State Variable Technique: State Space Representation of Continuous

Topic no 40 Time LTI Systems with multi-input, multi-output;

Topic no 41 Solution of state equation for Continuous –Time Systems.

Topic no 42 State Space Representation of Discrete –Time LTI Systems:

Topic no 43 single input single output and multiple input multiple output systems,

Topic no 44 Solution of State Equation for Discrete-time LTI Systems,

Topic no 45 Determining System function H(z).

Text Books:

1. A. V. Oppenheim, A. S. Willsky, with S. Nawab "Signals & Systems", 2nd Edition, Pearson Education, 2015.
2. S. Salivahanan, C. Gnanapriya, " Digital Signal Processing", Second Edition, McGraw Hill Education.
3. J. G. Proakis, D. G. Manolakis, "Digital Signal Processing, Principles, Algorithms, & Applications", 4th Edition, Pearson Education.

Reference Books:

1. Smarajit Ghosh,"Signal & Systems",Pearson Education.
2. Nagrath & R. Ranjan, "Signals & Systems", TMH.
3. Schaum Series, "Signals & Systems",Sue & Ranjan.
4. R.F. Ziemer, W.H. Tranter and D.R. Fannin, "Signals and Systems - Continuous and Discrete", 4th Edition, Pearson Educatio.
5. B.P. Lathi, "Signal Processing and Linear Systems", Oxford University Press, c1998.
6. Douglas K. Lindner, "Introduction to Signals and Systems", McGraw Hill International Edition
7. M. J. Roberts, "Signals and Systems - Analysis using Transform methods and MATLAB", TMH, 2003.

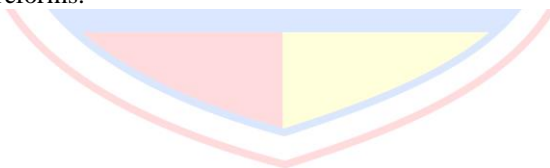**Course Outcomes**:At the end of this course students will demonstrate the ability to:

1. Understand and classify different types of signals and systems as per their properties.
2. Represent continuous and discrete time signals and systems in time and frequency domain using different transforms. Understanding frequency concepts for analog and digital signals.
3. Get familiarized with the characteristics and applications of Linear Time Invariant Systems for practical applications.
4. Analyze LTI systems using Laplace/Z-Transform. Use of LTI systems as filters for various applications.

   Note:
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   2. The use of scientific calculator will be allowed in the examination. However, programmable calculator and cellular phone will not be allowed.

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Subject: Network Theory   **Subject Code: ECE207C**

B.Tech 2nd YEAR (SEMESTER –III)
Electronics & Communication Engineering

L	T	P	Credits			
3	0	0	3			

Class Work	: 25
Examination	: 75
Total	: 100
Duration of Exam	: 3 Hours

Unit 1

Topic no 1Fundamentals of Network Analysis:Node and Mesh Analysis,

Topic no 2 Matrix approach of network containing voltage and current sources, and reactances,

Topic no 3 Source transformation and duality.

Topic no 4 Network theorems: Superposition, reciprocity, Thevenin's, Norton's,

Topic no 5 Maximum power Transfer, compensation and Tallegen's theorem as applied to AC. circuits.

Unit 2

Topic no 6 Trigonometric and exponential Fourier series:

Topic no 7 Discrete spectra and symmetry of waveform,

Topic no 8 Steady state response of a network to non-sinusoidal periodic inputs,

Topic no 9 Power factor, effective values.

Topic no 10 Fourier Transform& Laplace Transform: Fourier transform and continuous spectra,

Topic no 11Three phase unbalancedcircuit and power calculation.

Topic no12 Laplace transforms and properties: Partial fractions, singularity functions, waveform synthesis.

Unit 3

Topic no 13 A.C Analysis:Analysis of RC, RL,

Topic no 14 RLC networks with and without initial conditions with Laplace transforms

Topic no 15 Evaluation of initial conditions, Behaviors of series and parallel resonant circuits.

Topic no 16 Transient behavior: concept of complex frequency,

Topic no 17 Driving points and transfer functions poles and zeros of immittance function,

Topic no 18 Their properties, sinusoidal response from pole-zero locations, convolution theorem.

Unit 4

Topic no 19 Two port network and interconnections:

Topic no 20 Characteristics and parameters of two port networks, Network Configurations,

Topic no 21 Short-circuit Admittance parameters, open-circuit impedance parameters,

Topic no 22 Transmission parameters, hybrid parameters, condition for reciprocity & symmetry,

Topic no 23 Inter-relationships between parameters of two-port network sets,

Topic no 24 Inter-connection of two port networks.

Topic no 25 Topology: Principles of network topology, graph matrices, network analysis using graph theory

Topic no 26 Filter Analysis: Introduction to band pass, low pass, high pass and band reject filters,

Topic no 27 Analysis & design of prototype high-pass, prototype low-pass, prototype band-pass,

Topic no28 Prototype band-reject filter.

Text Books:
1. Van, Valkenburg.; "Network analysis" ; Prentice hall of India, 2000
2. Sudhakar A. Shyammohan, S. P.; "Circuits and Network"; Tata McGraw-Hill New Delhi, 1994
3. A William Hayt, "Engineering Circuit Analysis" 8th Edition, McGraw-Hill Education
Reference Books:
1. Network Theory by U.A Bakshi, V.A Bakshi, Technical Publications
2. "Fundamentals of Electric Circuit" by C.K Alexander and Sadiku.
3. A.V. Oppenheim, A.S. Willsky, with S. Nawaab "Signals & Systems",Prentice –Hall India

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Course Outcomes:

At the end of this course students will demonstrate the ability to

1. Understand basics electrical circuits with nodal and mesh analysis.
2. Appreciate electrical network theorems.
3. Apply Laplace Transform for steady state and transient analysis.
4. Determine different network functions.

Note:

1. In Semester Examinations, the examiner will set two questions from each unit (total 8 questions in all) covering the entire syllabus. The students will be required to attend only five questions selecting atleast one question from each unit.
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Department: ECE 3rd Semester

Study Scheme				Evaluation Scheme			Total Marks
Lectures per week				Interna Assessment	External Assessment (Examination)		
L	T	P	Credits	Max. Marks	Max. Marks	Exam Duration	
3	-	-	3	25	75	3 hours	100

Subject: Engineering Economics   **Subject Code: MGT201C**

UNIT-I: Concept of Economics
Topic no.1 Various definitions, nature of Economic problem
Topic no.2 Micro and macro economics- their features and scope
Topic no.3 Production possibility curve, Relationship between Science,
Topic no.4 Engineering Technology and Economics.
Topic no.5 Utility: Concept and measurement of utility,
Topic no.6 Law of Diminishing Marginal Utility,
Topic no.7 Law of equi-marginal utility – its importance and practical applications.

UNIT-II: Demand
Topic no.8 Concept, Individual and Market demand schedule,
Topic no.9 Law of demand, shape of demand curve.
Topic no.10 Elasticity of demand: Concept,
Topic no.11 Measurement of elasticity of demand,
Topic no.12 Factors affecting elasticity of demand,
Topic no.13 Practical application of elasticity of demand.
Topic no.14 Various concepts of cost: Fixed cost, variable cost,
Topic no.15 Average cost, marginal cost, money cost,
Topic no.16 Real cost, opportunity cost

UNIT III: Production
Topic no.17 Meaning of production and factors of production;
Topic no.18 Law of variable proportions, Law of Return to Scale
Topic no.19 Internet and External economics and diseconomies of scale.
Topic no.20 Meaning of Market, Type of Marker– perfect Competition,
Topic no.21 Monopoly, Oligopoly,
Topic no.22 Monopolistic competition (Main features of these markers).

UNIT-IV: Supply
Topic no.23 Law of Supply,
Topic no.24 Role of Demand & Supply in Price Determination and effect of changes in demand
Topic no.25 Supply on price. Nature and characteristics of Indian economy,
Topic no.26 Privatization – meaning, merits and demerits.
Topic no.27 Globalisation – meaning, merits and demand

TEXT BOOKS:

1. Ahuja H.L"Micro Ecomomic Theory" S. Chand Publication, New Delhi
2. Dewett K.K "Modern Ecomomic Theory" S. Chand Publication, New Delhi
3. Jain T.R, Grover M.L, Ohri V.K Khanna O.P,"Economics for engineers" V.K .Publication ,New Delhi
4. Dr. R.K. Agarwal & Rashmi Agarwal, " Principles and Applications of Economic", Pragati Prakashan.

Campus:
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And Technology, Murthal, Sonipat

SUGGESTED BOOKS:

1. Jhingan 1. Jhingan M.L"Micro Ecomomic Theory" S.Chand Publication ,New Delhi
2. Chopra P.N "Principle of Economics" Kalyani Publishers, Delhi
3. Mishra S.K "Modern Micro Economics" Pragati Publication Mumbai. 44
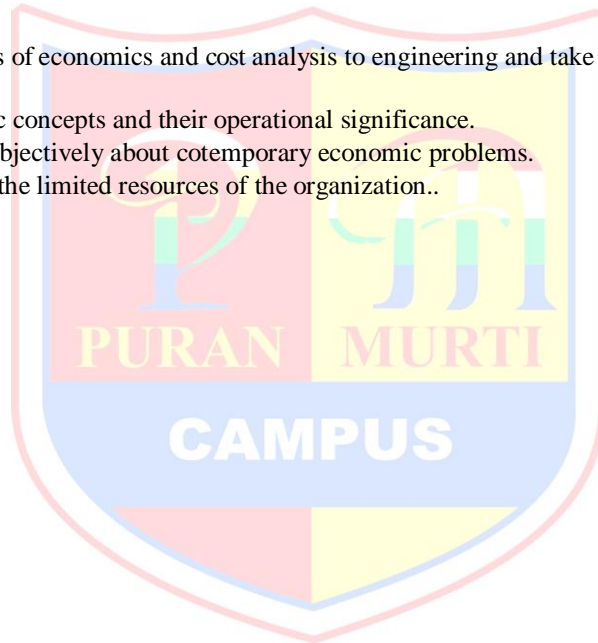4. Dwivedi D.N "Micro Economics " Pearson Education, New Delhi.

Note:
1. In Semester Examinations, the examiner will set two questions from each unit (total 8 questions in all) covering the entire syllabus. The students will be required to attend only five questions selecting atleast one question from each unit.
2. The use of scientific calculator will be allowed in the examination. However, programmable calculator and cellular phone will not be allowed.

For student admitted in B. Tech. 1st Year (C-Scheme) in 2019 and all trailing students.

Examinations and evaluation of students shall be conducted as per guidelines AICTE Examinations Reforms covering the entire syllabus. The students shall be made aware about the reforms.

COURSE OUTCOMES: Upon Successful Completion of this Course the students will :-

1. Acquire the skills to apply the basics of economics and cost analysis to engineering and take economically sound decision.
2. Acquaint the with the basic economic concepts and their operational significance.
3. Be able to think systematically and objectively about cotemporary economic problems.
4. Learn the ability to optimally utilize the limited resources of the organization..

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Subject: Constitution of India   **Subject Code: MC203C**

Study Scheme				Evaluation Scheme			Total Mark s
Lectures per week				Internal Assessment	External Assessment (Examination)		
L	T	P	Credits	Max. Marks	Max. Marks	Exam Duration	
3	-	-	3	25	75	3 hours	100

Unit 1 Philosophy of Indian Constitution:
>   Topic No 1 Ideological Basis and Salient Features of Indian Constitution,
>   Topic No 2 Fundamental Rights & Duties of the Citizens**,**
>   Topic No 3 Directive Principles of State Policy

Unit 2 Nature and Dynamics of Indian Federalism:
>   Topic No 4 Federalism: Theory and Practice in India,
>   Topic No 5 Federal Features of the Indian Constitution**,**Legislative,
>   Topic No 6 Administrative and Financial Relations between the Union and the States.

Unit 3 Union and State Legislature :
>   Topic No 7 Parliament: Composition, Functions and Working of the Parliamentary system
>   Topic No 8 State Legislature:
>   Topic No 9 Composition and Functions of Vidhan Sabha/ Vidhan Parishad

Unit 4 Centre and State: Executive and Judiciary:
>   Topic No 10 President,
>   Topic No 11 Prime Minister and Council of Ministers **,**
>   Topic No 12 Governor,
>   Topic No 13 Chief Minister and Council of Ministers**,**Judiciary:
>   Topic No 14 Supreme Court;
>   Topic No 15 High Court

Text Books:
1. Austin G., The Indian Constitution: Corner Stone of a Nation, New Delhi: Oxford University Press, 196
2. Basu D.D., An Introduction to the Constitution of India, New Delhi: Prentice Hall, 1994
3. Kothari R., Politics in India, New Delhi: Orient Language, 1970
4. Siwach J.R., Dynamics of Indian Government and Politics, New Delhi: Sterling Publishers, 1985
5. Bhambhri C.P., The Indian State--Fifty Years, New Delhi: Shipra, 1997
6. Ghai U.R., Indian Political System, Jalandhar: New Academic Publishing Company, 2010

Course Outcomes: Upon successful completion of this course,students will be able:

1. To understand basic features of the constitution and rights and duties of Indian citizens
2. To understand the basic structure of Centre and State Government
3. To get acquainted with the nature of parliamentary form of Government
   To have knowledge of the executive and judiciary powers in Indian democratic set-up

Scheme of End Semester Examinations (Major Test):

1. The duration of examinations will be three hours.
2. Nine questions of 15 marks each will be set out of which the students will have to attempt five questions in all.
3. First question of 15 marks will be compulsory. It will cover all the four units of the syllabus. The nature of the questions in each unit will depend upon the nature of content therein. The questions may have sub-parts with marks assigned against each.
4. Question No 02 to 09 of 15 marks each will be set from the four units of the syllabus --- two from each unit.
5. In addition to first compulsory question the students will have to attempt four more questions, selecting one from each unit.

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Subject: Environmental Studies   **Subject Code: MC201C**

Study Scheme				Evaluation Scheme			Total Mark s
Lectures per week				Internal Assessment	External Assessment (Examination)		
L	T	P	Credits	Max. Marks	Max. Marks	Exam Duration	
3	-	-	3	25	75	3 hours	100

UNIT – I Environmental Studies and Environmental Pollution

Topic No 1 The Multidisciplinary Nature of Environmental Studies,
Topic No 2 Introduction to Environment:
Topic No 3 Definition, Scope, and importance of environmental studies;
Topic No 4 Need for public awareness.
Topic No 5 Environmental Pollution: Definition, Cause and effects
Topic No 6 Air pollution,
TopicNo7 Water pollution
Topic No8 Soil pollution,
Topic No 9 Marine pollution,
Topic No10 Noise pollution,
Topic No 11 Role of an individual in prevention of pollution,
Topic No 12 Pollution case studies

UNIT – II Natural Resources:

Topic No13 Water resources: over-utilization, floods, drought, dams-benefits and problems;
Topic No14 Mineral resources: Use and exploitation, environmental effects;
Topic No15 Food resources: changes caused by modern agriculture, fertilizer-pesticide Problems, water logging,
Topic No16 Energy resources: Growing energy needs, renewable and non renewable energy Sources;
Topic No17 Land resources: Land as a resource, land degradation, man induced landslides,
Topic No18 Soil erosion and desertification.

UNIT – III Ecosystems and Biodiversity

Topic No 19 Concept of an ecosystem,
Topic No 20 Structure and function,
Topic No 21 Energy flow,
Topic No 22 Ecological succession,
Topic No 23 Ecological pyramids.
Topic No24 Concept of Biodiversity, definition and types,
Topic No25 Hot-spots of biodiversity; threats to biodiversity,
Topic No26 Endangered and endemic species of India, Conservation of biodiversity.

UNIT - IV Social Issues and Environment

Topic No 27 Water conservation,
Topic No 28 Rain water harvesting,
Topic No 29 Environmental ethics: Issues and possible solutions.
Topic No 30 Climate change, global warming,
Topic No 31 acid rain,
Topic No 32 Ozone layer depletion,
Topic No 33 Public awareness.
Topic No34 Population growth, variation among nations,
Topic No35 Family Welfare Programmed.
Topic No 36 Human Population and the Environment

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Topic No 37 Population growth,

Topic No 38 Population explosion,

Topic No 39 Women and Child Welfare.

Field Work –

1. Visit to a local area to document environmental assets—river/forest/grassland/hill/ mountain.
2. Visit to a local polluted site—Urban/Rural/Industrial/Agricultural.
3. Study of common plants, insects, birds.
4. Study of simple ecosystems—pond, river, hill slopes, etc

REFERNCE BOOKS:

1. A Textbook of Environmental Studies by Asthana D.K. and Asthana Meera
2. Fundamental Concepts in Environmental Studies by Mishra D.D.
3. Environmental Studies by S.C Sharma M.P Poonia
4. Textbook of Environmental Studies for Undergraduate by Erach Bharucha
Environmental Studies: Third Edition by R. Rajagopalan

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