Vision of the Institution

To ignite the minds of the students through academic excellence so as to bring about social transformation and prosperity.

Mission of the Institution

- To expand the frontiers of knowledge through Quality Education.
- To provide valued added Research and Development.
- To embody a spirit of excellence in Teaching, Creativity, Scholarship and Outreach.
- To provide a platform for synergy of Academy, Industry and Community.
- To inculcate high standards of Ethical and Professional Behavior.

Vision of ECE Department

In pursuit of world class excellence in the field of Electronics& Communication Engineering by imparting quality education and promoting Research.

Mission of ECE Department

- To empower students with knowledge and competencies in the field of Electronics & Communication Engineering conforming to International standards.
- To produce creative solutions essential to local and global needs in the field of Electronics & Communication Engineering.
- To mould the students professionally with a consciousness of moral values and professional ethical code**.**

Program Educational Objectives (PEOs) of ECE Department

PEO1: To provide world class Education in the principles of engineering that incorporate open ended design experience and the use of software and hardware tools related to Electronics and Communication Engineering and hence improve the employability skills of the student.

PEO2: To make the students able to function with multi-disciplinary teams that will enhance the leadership qualities and to formulate and solve engineering problems as a team which helps the student to adopt better professional conduct.

PEO3: To provide learning environment that provides open interaction for the students with faculty and staff that makes them innovative and dynamic and encourages research and motivate them to solve the problems of the society.

Program Outcomes (POs) of ECE Department

Engineering Graduates will be able to:

1. **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. **Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. **Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. **Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

11. **Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. **Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Program Specific Outcomes (PSOs) of ECE Department

1. Will be equipped with knowledge of innovative, dynamic complete design flow specialized in implementation of projects pertaining to communication system, signal processing, digital and analog IC design, embedded systems and will integrate all areas to illustrate the goal of digital India.
2. Will have the ability to analyze, design electronics and communication applications using software tools like, pSpice, XYLINX, MATLAB, Mentor Graphics and other related software's.
3. Can demonstrate the principles of semiconductor devices, digital system, Microprocessor and microcontrollers, signal processing, antenna design in fields of consumer electronics, medical, defence and spacecraft electronics industry.
4. Will have strong ethical moral values and sound fundamental foundation of technical knowledge in all core subjects which help them to explore scientific theories, ideas, methods and technologies that help in solving current and future universal societal problems through Assistive Technology Laboratory as a flat form.

II YEAR II SEMESTER									
S. No	**Subject Code**	**Subjects**	**L**	**T**	**P**	**C**	**I**	**E**	**Cat**
1.	19EC4T01	Electronic Circuits and Analysis	3	0	0	3	40	60	PC
2.	19EC4T02	Pulse and Digital Circuits	3	0	0	3	40	60	PC
3.	19EC4T03	EM Waves and Transmission lines	2	0	0	2	40	60	PC
4.	19EC4T04	Analog Communications	3	0	0	3	40	60	PC
5.	19ME4T07	Basics of Civil and Mechanical Engineering	3	0	0	3	40	60	ES
6.	19EC4P01	Lab I: EC & PDC Lab	0	0	3	1.5	40	60	PC
7.	19EC4P02	Lab II: Analog Communications Lab	0	0	3	1.5	40	60	PC
8.	19ME4P04	Lab III: Civil and Mechanical Engineering Lab	0	0	3	1.5	40	60	ES
9.	19EC4J01	Mini Project-I	0	0	3	1.5	40	60	PR
10.	19BS4I01	Logical Reasoning	0	0	2	1	40	60	MC
		`	14	1	12	21	400	600	1000

Course Name	**Electronic Circuits and Analysis**				
Year/Semester	II B. Tech/II Sem	L	T	P	C
Regulation Year	2020-2021	3	0	0	3

COURSE OBJECTIVES:

The student will be able to

• Small signal high frequency BJT transistor amplifier Hybrid-p equivalent circuit and the expressions for

conductances and capacitances are derived.

• Cascading of single stage amplifiers is discussed. Expressions for overall voltage gain are derived.

• The concept of feedback is introduced. Effect of negative feedback on amplifier characteristics is explained

and necessary equations are derived.

• Basic principle of oscillator circuits is explained and different oscillator circuits are given with their analysis.

• Power amplifiers Class A, Class B, Class C, Class AB and other types of amplifiers are analyzed.

• Different types of tuned amplifier circuits are analyzed.

UNIT I : Small Signal High Frequency Transistor Amplifier Models :

BJT at High Frequencies, Hybrid- Common Emitter, Transistor Model, Hybrid- Conductances, Hybrid capacitances, validity of hybrid pi model, determination of high frequency parameters in terms of low frequency parameters, Current Gain with Resistance Load, CE Short Circuit Current Gain, cutoff frequencies, frequency response and gain bandwidth product.

FET: Analysis of common source and common drain amplifier circuits at high frequencies.

UNIT II :

Multi Stage Amplifiers :

Classification of amplifiers, methods of coupling, cascaded transistor amplifier and its analysis, analysis of two stage RC coupled amplifier, high input resistance transistor amplifier circuits and their analysis- Darlington pair amplifier, Cascode amplifier, boot-strap emitter follower, analysis of multi stage amplifiers using FET, differential amplifier using BJT

UNIT III :

Feedback Amplifiers :

feedback principle and concept, types of feedback, classification of amplifiers, feedback topologies, characteristics of negative feedback amplifiers, generalized analysis of feedback amplifiers, performance comparison of feedback amplifiers.

UNIT IV :

Oscillators :

oscillator principle, condition for oscillations, types of oscillators, RC-phase shift and wein bridge oscillators with BJT and FET and their analysis, generalized analysis of LC oscillators, Hartley and colpitts oscillators with BJT and FET and their analysis, crystal oscillators.

UNIT V:

Power Amplifiers :

classification of amplifiers, class A power amplifiers and their analysis , harmonic distortions, class B push-pull amplifiers and their analysis , complimentary symmetry push pull amplifier, class AB power amplifier, class C power amplifier , thermal stability and heat sinks.

UNIT : VI

Tuned Amplifiers :

Introduction, Q-factor, small signal tuned amplifier, capacitance coupled single tuned amplifier , double tuned amplifiers , effect of cascading single tuned amplifiers on band width , effect of cascading double tuned amplifiers on band width , staggered tuned amplifiers.

TEXT BOOKS:

1. Integrated Electronics – J. Millman and C.C. Halkias, Mc Graw-Hill, 1972.

2. Electronic Devices and Circuits- Salivahanan, N. Suressh kumar, A. vallavaraj, tatamcgraw hill , second edition.

REFERENCES:

1. Electronic Circuit Analysis and Design – Donald A. Neaman, Mc GrawHill.

2. Electronic Devices and Circuits Theory – Robert L. Boylestad and Louis Nashelsky, Pearson/Prentice Hall, Tenth Edition.

3. Electronic Circuit Analysis-B.V.Rao,K.R.Rajeswari, P.C.R.Pantulu, K.B.R.Murthy, Pearson Publications.

4. Microelectronic Circuits-Sedra A.S. and K.C. Smith, Oxford University Press, Sixth Edition.

COURSE OUTCOMES:

After going through this course the student will be able to

• Design and analysis of small signal high frequency transistor amplifier using BJT and FET.

• Design and analysis of multi stage amplifiers using BJT and FET and Differential amplifier using BJT

• Derive the expressions for frequency of oscillation and condition for oscillation of RC and LC oscillators

and their amplitude and frequency stability concept.

• Know the classification of the power and tuned amplifiers and their analysis with performance comparison.

Course Name	**Pulse and Digital Circuits**				
Year/Semester	II B. Tech/II Sem	L	T	P	C
Regulation Year	2020-2021	3	0	0	3

PREREQUISITES:

Familiarity with concepts of EDC and ECA

COURSE OBJECTIVES:

The student will be able to

• To understand the concept of wave shaping circuits, Switching Characteristics of diode and transistor.

• To study the design and analysis of various Multivibrators.

• To understand the functioning of different types of time-base Generators.

• To learn the working of logic families & Sampling Gates.

UNIT I

LINEAR WAVESHAPING:

High pass, low pass RC circuits, their response for sinusoidal, step, pulse, square, ramp and exponential inputs. RC network as differentiator and integrator; Attenuators , its applications in CRO probe.

UNIT II

NON-LINEAR WAVE SHAPING :

Diode clippers, Transistor clippers, clipping at two independent levels, Transfer characteristics of clippers, Emitter coupled clipper; Clamping operation, clamping circuits using diode with different inputs, Clamping circuit theorem, practical clamping circuits, Transfer characteristics of clampers.

UNIT III

SWITCHING CHARACTERISTICS OF DEVICES :

Diode as a switch, piecewise linear diode characteristics, Design and analysis of Transistor as a switch, Design of transistor switch,

Bistable Multivibrator: Analysis And Design of Fixed Bias, Self Bias Bistable Multi Vibrator, Collector Catching Diodes, Triggering of Binary Circuits, Emitter Coupled Bistable Multivibrator (Schmitt Trigger).

UNIT IV

Monostable Multivibrator:

Analysis and Design of Collector Coupled Monostable Multi vibrator, Triggering of Monostable Multivibrator, Applications of Monostable Multivibrator.

Astable Multivibrator:

Analysis and Design of Collector Coupled Astable Multivibrator, Application of Astable Multivibrator as a Voltage to Frequency Converter.

UNIT V

VOLTAGE TIME BASE GENERATORS:

General features of a time base signal, Methods of generating time base waveform Exponential Sweep Circuits, Negative Resistance Switches, basic principles in Miller and Bootstrap time base generators, Transistor Miller time base generator, Transistor Bootstrap time base generator.

UNIT VI

LOGIC FAMILIES & SAMPLING GATES:

LOGIC FAMILIES: Diode Logic, Transistor Logic, Diode-Transistor Logic, Transistor-Transistor Logic, Emitter Coupled Logic, AOI Logic

SAMPLING GATES: Basic Operating Principles of Sampling Gates, Diode Unidirectional Sampling Gate and

Two-Diode Bi-Directional Sampling Gate, Four-Diode gatesApplications of Sampling Gates.

TEXT BOOKS:

1. Pulse, Digital and Switching Waveforms - J. Millman and H. Taub, McGraw-Hill

2. Pulse and Digital Circuits – A. Anand Kumar, PHI, 2005

REFERENCES:

1. Pulse, Digital and Switching Waveforms - J. Millman and H. Taub, Mothiki S Prakash Rao McGraw-Hill, Second Edition, 2007.

2. Solid State Pulse circuits - David A. Bell, PHI, 4th Edn., 2002

3. Pulse & Digital Circuits by Venkata Rao,K,Ramasudha K, Manmadha Rao,G., Pearson,2010

COURSE OUTCOMES:

After going through this course the student will be able to

• Design linear and non-linear wave shaping circuits.

• Apply the fundamental concepts of wave shaping for various switching and signal generating circuits.

• Design different multivibrators and time base generators.

• Utilize the non sinusoidal signals in many experimental research areas.

Course Name	**EM Waves and Transmission lines**				
Year/Semester	II B. Tech/II Sem	L	T	P	C
Regulation Year	2020-2021	2	0	0	2

PREREQUISITES:

Familiarity with concepts of M-1 and EDC.

COURSE OBJECTIVES:

The student will be able to

1. Fundamentals of steady electric and magnetic fields using various laws

2. The concept of static and time varying Maxwell equations and power flow using pointing theorem

3. Wave characteristics in different media for normal and oblique incidence

4. Various concepts of transmission lines and impedance measurements

UNIT I:

Electrostatics:

Coulomb's Law, Electric Field Intensity&Electric Flux Density, Gauss Law and Applications, Electric work&Potential, Divergence,Maxwell's Equations for Electrostatic Fields, . Convection and Conduction Currents, Continuity Equation, Poisson's and Laplace's Equations; Conditions at a Boundary Surface : Dielectric-Dielectric and Dielectric-Conductor Interfaces Illustrative Problems.

UNIT II: Magneto Statics :

Biot-Savart Law,, Magnetic Flux Density, Ampere's Circuital Law and Applications, Maxwell's Two Equations for Magnetostatic Fields, Magnetic Scalar and Vector Potentials. Conditions at a Boundary Surface : Dielectric-Dielectric and Dielectric-Conductor Interfaces

UNIT III: Time Varying Fields:

Induced emf,Faraday's Law ,Types of Induced emf , Displacement Current Density,Inconsistency of Ampere's Law and Maxwell's Equations in piont and Integral Forms and Word Statements.

UNIT IV: EM Wave Characteristics - I:

Plane Waves – Definition,Wave Equations for Conducting , Perfect Dielectric Media, hormonically time varrying field, Relations Between E & H, Wave Propagation in Lossy dielectrics, lossless dielectrics, free space and good conductors, skin depth, Surface Impedance. Poynting Vector and Poynting Theorem – Applications,Polarization & Types. Illustrative Problems.

UNIT V: EM Wave Characteristics – II:

Reflection and Refraction of Plane Waves – Normal Incidences, for dielectric boundary and conducting boundary, Standing wave,SWR. Reflection and Refraction of Plane Waves – Oblique Incidence, types-vertical polaraisation and horizontal polaraisation, Brewster Angle, Critical Angle and Total Internal Reflection, Illustrative Problems.

UNIT VI: Transmission Lines :

Types, Parameters, Equivalent circuit Transmission Line Equations, Infinite Line ,Primary & Secondary Constants, Attenuation constant , Phase constant , velocity, characteristic impedance for different transmission lines , Input Impedance Relations for SC and OC Lines, Reflection Coefficient, VSWR. characteristic impedance in terms of Reflection Coefficient ,Impedance Transformations $\lambda/4$, $\lambda/2$, $\lambda/8$ Lines –. Quarter wave transformer, Illustrative Problems.

TEXT BOOKS:

1. Elements of Electromagnetic – Matthew N.O. Sadiku, Oxford Univ. Press, 3rd ed., 2001.

2. Electromagnetic Waves and Radiating Systems – E.C. Jordan and K.G. Balmain, PHI, 2nd Edition, 2000.

REFERENCES:

1. Engineering Electromagnetics – William H. Hayt Jr. and John A. Buck, TMH, 7th ed., 2006.

2.Engineering Electromagnetics:Nathan Ida, Springer(India)Pvt.Ltd., New Delhi, 2nd ed., 2005.

3 Transmission Lines and Networks–Umesh Sinha,S Prakashan (Tech. India pub New Delhi, 2001.

4.Electromagnetic Waves and Transmission Lines-U.A.Bakshi &A.V.Bakshi, Technical pub

5. Electromagnetic Waves and Transmission Lines-Y.Mallikharjuna Reddy,Universities press

COURSE OUTCOMES:

After going through this course the student will be able to

1. Determine E and H using various laws and applications of electric & magnetic fields

2. Apply the Maxwell equations to analyze the time varying behavior of EM waves

3. Gain the knowledge in uniform plane wave concept and characteristics of uniform plane wave in various media

4. Calculate Brewster angle, critical angle and total internal reflection

5. Derive the expressions for input impedance of transmission lines

6. Calculate reflection coefficient, VSWR etc. using smith chart

Course Name	**Analog Communications**				
Year/Semester	II B. Tech/II Sem	L	T	P	C
Regulation Year	2020-2021	3	0	0	3

PREREQUISITES:

Familiarity with concepts of RVSP and M-1

COURSE OBJECTIVES:

The student will be able to

1. Familiarize with the fundamentals of analog communication systems

2. Familiarize with various techniques for analog modulation and demodulation of signals

3. Distinguish the figure of merits of various analog modulation methods

4. Develop the ability to classify and understand various fuctional blocks of radiao transmitters and receivers

5. Familiarize with basic techniques for generating and demodulating various pulse modulated signals

UNIT I AMPLITUDE MODULATION :

Introduction to communication system, Need for modulation, Frequency Division Multiplexing , Amplitude Modulation, Definition, Time domain and frequency domain description, single tone modulation, power relations in AM waves, Generation of AM waves, square law Modulator, Switching modulator, Detection of AM Waves; Square law detector, Envelope detector.

UNIT II DSB & SSB MODULATION :

Double side band suppressed carrier modulators, time domain and frequency domain description, Generation of DSBSC Waves, Balanced Modulators, Ring Modulator, Coherent detection of DSB-SC Modulated waves, COSTAS Loop. Frequency domain description, Frequency discrimination method for generation of AM SSB Modulated Wave, Time domain description, Phase discrimination method for generating AM SSB Modulated waves. Demodulation of SSB Waves, Vestigial side band modulation: Frequency description, Generation of VSB Modulated wave, Time domain description, Envelope detection of a VSB Wave pulse Carrier, Comparison of AM Techniques, Applications of different AM Systems.

UNIT III ANGLE MODULATION :

Basic concepts, Frequency Modulation: Single tone frequency modulation, Spectrum Analysis of Sinusoidal FM Wave, Narrow band FM, Wide band FM, Constant Average Power, Transmission bandwidth of FM Wave - Generation of FM Waves, Direct FM, Detection of FM Waves: Balanced Frequency discriminator, Zero crossing detector, Phase locked loop, Comparison of FM & AM.

UNIT IV TRANSMITTERS & RECEIVERS:

Classification of Transmitter, AM Transmitter, Effect of feedback on performance of AM Transmitter, FM Transmitter – Variable reactance type and phase modulated FM Transmitter, frequency stability in FM Transmitter.

Radio Receiver - Receiver Types - Tuned radio frequency receiver, Superhetrodyne receiver, RF section and Characteristics - Frequency changing and tracking, Intermediate frequency, AGC, FM Receiver, Comparison with AM Receiver, Amplitude limiting.

UNIT V NOISE :

Review of noise and noise sources, noise figure, Noise in Analog communication Systems, Noise in DSB& SSB System, Noise in AM System, Noise in Angle Modulation Systems, Threshold effect in Angle Modulation System, Pre-emphasis & de-emphasis

UNIT VI PULSE MODULATION :

Time Division Multiplexing,, Types of Pulse modulation, PAM (Single polarity, double polarity) PWM: Generation & demodulation of PWM, PPM, Generation and demodulation of PPM, TDM Vs FDM.

TEXT BOOKS:

1. Principles of Communication Systems – H Taub & D. Schilling, Gautam Sahe, TMH, 2007 3rd Edition.

2. Communication Systems – B.P. Lathi, BS Publication, 2006.

REFERENCES:

1. Principles of Communication Systems - Simon Haykin, John Wiley, 2nd Ed…

2. Electronics & Communication System – George Kennedy and Bernard Davis, TMH 2004.

3. Communication Systems– R.P. Singh, SP Sapre, Second Edition TMH, 2007.

4. Fundamentals of Communication Systems - John G. Proakis, Masond, Salehi PEA, 2006.

5. Electronic Communication systems – Tomasi, Pearson.

COURSE OUTCOMES:

After going through this course the student will be able to

1. Differentiate various Analog modulation and demodulation schemes and their spectral characteristics.

2. Analyze noise characteristics of various analog modulation methods

3. Analyze various functional blocks of radiao transmitters and receivers

4. Design simple analog systems for various modulation techniques.

Course Name	**Basics of Civil and Mechanical Engineering**				
Year/Semester	II B. Tech/II Sem	L	T	P	C
Regulation Year	2020-2021	3	0	0	3

PREREQUISITES:

Familiarity with concepts of M1 and M2

COURSE OBJECTIVES:

The student will be able to

- To be aware of the different fields of Civil Engineering, such as Surveying, Structural and Transportation Engineering.
- To provide the basic concepts of various mechanical systems
- To expose to a wide range of equipment and their utility in a practical situation.
- To provide the fundamentals of manufacturing methods, IC engines, heat transfer and transmission systems that usually exist in engineering.

UNIT – I

Introduction: Civil Engineering, branches of Civil Engineering, contribution to society, Scope**,**

Civil Engineering Materials: Bricks – stones – sand – cement – concrete – steel sections, glass, wood, FRP

Surveying: Objectives – types – classification – principles – measurements of distances – angles – leveling – determination of areas – illustrative examples.

UNIT – II

Sub Structure: Types, Bearing capacity – Requirement of good foundations. Superstructure: Brick masonry – stone masonry – beams – columns – lintels – roofing – flooring – plastering– Types of Bridges and Dam

Building planning

Residential, Institutional and industrial – functional requirements. – Basics of Interior Design and Landscaping.

UNIT- III

Roads- Benefits- Classifications - Traffic signs

Bridges-components of Bridges - Dam-Purpose of reservoir.

Environmental Engineering: Protected water supply, water treatment methods-sewage treatment- Pollution-Types-causes-remedial measures

UNIT-IV

Engineering Materials: Classification, Properties of Materials. Composites: Fiber reinforced composites, Metal Matrix Composites. Smart materials: Piezoelectric materials, shape memory alloys.

Manufacturing Processes: Metal Casting: Steps involved in Casting process – Advantages and applications, Metal Working: Hot Working and Cold Working, Metal Forming: Extrusion, Forging, Rolling and Drawing

Welding: Arc Welding, Gas Welding, Soldering, and Brazing

Machine Tool: Lathe classification, specifications, and operations.

UNIT-V

Internal Combustion Engines: Classification of IC engines, basic engine components and nomenclature, working principle of engines, Four strokes and two stroke petrol and diesel engines, comparison of CI and SI engines, comparison of four stroke and two stroke engines.

Heat Transfer: Modes of heat transfer, Laws of heat transfer and simple problems.

Belts – Ropes and chains: Belt and rope drives open belt and cross belt drives. Gears: classification of gears, applications.

UNIT-VI

Additive Manufacturing: Introduction to Additive Manufacturing (AM), Comparison between AM and Conventional Manufacturing, Applications of AM, Steps in AM.

Hybrid Electric Vehicles: History of hybrid and electric vehicles, social and environmental importance of hybrid and electric vehicles, impact of modern drive-trains on energy supplies.

Robotics &Automation: Robot anatomy, classification based on robots configuration; Polar, cylindrical, Cartesian and spherical, Applications. Automation**:** Definition, NC/ CNC machines: Basic elements with simple block diagrams, advantages and disadvantages.

TEXT BOOKS:

1. Dr. B.C. Punmia, Ashok Kumar Jain, Arun Kr. Jain, "Basic Civil Engineering", Laxmi Pulications
2. Elements of Mechanical Engineering, M.L. Mathur, F.S.Metha & R.P.Tiwari Jain Brothers Publs, 2009.
3. Production Technology by P.N.Rao by I & II McGraw-Hill publications.
4. Internal Combustion Engines by V Ganesan by Tata McGraw-Hill publications.
5. Chua Chee Kai, Leong Kah Fai, Lim Chu-Sing-Rapid Prototyping Principles and Applications (2nd Edition) (2003)
6. Hybrid Electric Vehicle Technology 1st Editionby Automotive Research and Design, ISBN-13: 978-0826900661
7. Industrial Robotics by GROOVER published by Tata McGraw-Hill education private limited
8. Computer-Aided Design and Manufacturing by Mikell P. Groover& Emory W. Jimmers, Jr. published by Pearson Education

REFERENCES:

1. Ramamrutham. S, "Basic Civil Engineering", Dhanpat Rai Publishing Co. (P) Ltd. (1999).
2. Seetharaman S. "Basic Civil Engineering", Anuradha Agencies, (2005).
3. Theory of machines by Rattan McGraw-Hill publications
4. Mechanical Engineering Science K R Gopala Krishna, Subhas publications
5. Thermal Engineering, Ballaney, P.L., Khanna Publishers, 2003.
6. Electric and Hybrid Vehicles 1st Edition, Kindle Edition by Tom Denton,ISBN-13: 978-1138842373
7. Robotics (Industrial Robotics) by P.Jaganathan (Local Author) Lakshmi Publications.

COURSE OUTCOMES:

After going through this course the student will be able to

- To impart basic knowledge on civil engineering
- The students will be able to analyze the material on the basis of their properties and thus assigning different weightage to their use for technical purposes
- To provide exposure on the fundamental elements of civil engineering structures
- Identify engineering materials, their properties, manufacturing methods encountered in engineering practice.

- Understand the basics of internal combustion engines, heat transfer and mechanism of power transfer through belt, rope, chain and gear drives.
- Understand the working of hybrid electric vehicles, basics of robotics and automation.

Course Name	**EC & PDC Lab**				
Year/Semester	II B. Tech/II Sem	L	T	P	C
Regulation Year	2020-2021	0	0	3	1.5

LIST OF EXPERIMENTS

List of Experiments :(Minimum of Ten Experiments has to be performed)

1. Two Stage RC Coupled Amplifier
2. Voltage-Series Feedback Amplifier
3. Current-Shunt Feedback Amplifier
4. RC Phase Shift Oscillator
5. Darlington Pair Amplifier
6. Single Tuned Voltage Amplifier
7. Linear wave shaping
8. Non Linear wave shaping – Clippers
9. Non Linear wave shaping – Clampers
10. Transistor as a switch
11. Study of Logic Gates & Some applications
12. Sampling Gates
13. Astable Multivibrator
14. Monostable Multivibrator
15. UJT Relaxation Oscillator
16. Schmitt Trigger

Equipment required:

Software:

i. Multisim/ Equivalent Industrial Standard Licensed simulation software tool.

ii. Computer Systems with required specifications

Hardware:

10. Regulated Power supplies
11. Analog/Digital Storage Oscilloscopes
12. Analog/Digital Function Generators
13. Digital Multimeters
14. Decade Résistance Boxes/Rheostats
15. Decade Capacitance Boxes
16. Ammeters (Analog or Digital)
17. Voltmeters (Analog or Digital)
18. Active & Passive Electronic Components

Course Name	**Analog Communications Lab**				
Year/Semester	II B. Tech/II Sem	L	T	P	C
Regulation Year	2020-2021	0	0	3	1.5

LIST OF EXPERIMENTS

List of Experiments (Twelve experiments to be done- **The students have to calculate the relevant parameters**) -

(a. Hardware, b. MATLAB Simulink, c. MATLAB Communication tool box)

1. Amplitude Modulation - Mod. & Demod.
2. AM - DSB SC - Mod. & Demod.
3. Spectrum Analysis of Modulated signal using Spectrum Analyser
4. Diode Detector
5. Pre-emphasis & De-emphasis
6. Frequency Modulation - Mod. & Demod.
7. AGC Circuits
8. Sampling Theorem
9. Pulse Amplitude Modulation - Mod. & Demod.
10. PWM , PPM - Mod. & Demod.
11. PLL

Equipments & Software required:

Software :

i) Computer Systems with latest specifications
ii) Connected in Lan (Optional)
iii) Operating system (Windows XP)
iv) Simulations software (Simulink & MATLAB)

Equipment:

1. RPS - 0 – 30 V
2. CRO - 0 – 20 M Hz.
3. Function Generators - 0 – 1 M Hz
4. Components
5. Multimeters
6. Spectrum Analyser

Course Name	**Civil and Mechanical Engineering Lab**				
Year/Semester	II B. Tech/II Sem	L	T	P	C
Regulation Year	2020-2021	0	0	3	1.5

LIST OF EXPERIMENTS

At least 5 experiments to be done from each Part
PART – A

CIVIL ENGINEERING

1. Determination of the fineness of cement
2. Determination of particle size distribution of coarse and fine aggregates
3. Determination of specific gravity of fine and coarse aggregates
4. Determination of water absorption of Bricks
5. Determination of efflorescence of Bricks
6. Determination of Compressive strength of concrete
7. Determination of elevation of various points by using Total Station
8. Determination of Dissolved Oxygen(DO) present in given water sample

PART – B

MECHANICAL ENGINEERING

1. Preparation of sand mould cavity.
2. Preparation of i) Butt joint and ii) Lap joint by Arc Welding.
3. Perform Turning and facing for a given work piece using CNC lathe machine.
4. Making an aluminum casting for a given pattern using a casting process.
5. Thermal conductivity of a metal rod.
6. Performance test on a 4-stroke CI Engine at constant speed.
7. Performance Test on 2-Stroke SI engines.
8. Making a metal joint using brazing and soldering process.

Course Name	**Logical Reasoning**				
Year/Semester	II B. Tech/II Sem	L	T	P	C
Regulation Year	2020-2021	0	0	2	1

Course Objectives:

Enable the students to

1. Be familiar with different relations in a family, concepts of clocks and calendars.
2. Find position and order of a person /object , routes between points.
3. Understand the techniques of coding and decoding .
4. Understand the validity of statements and inferences from them.
5. Draw valid conclusions from given statements.
6. Understand the concept of analogy and properties of dice.

Syllabus

UNIT –I:Blood Relations, Directions, Clocks & Calendars.

Blood relations -family tree, types of problems on blood relations- first person narrating type-coded relation-puzzle relation, direction-distance-direction and distance problems, angle between hands -correct or incorrect time, day of a date-repeated calendars.

UNIT- II: Ranks & Position, Puzzles.

Ranks-based on positions ,counting ,comparisons , puzzles-table based, selection based, seating based, graph and network Based .

UNIT –III: Coding & Decoding, Series.

Coding and decoding-letter coding, number coding, symbol coding, substitution and mixed type, Symbols and notations, series-number, letter and word type , missing term.

UNIT –IV: Critical Reasoning-I.

Syllogisms, logical consistency, inference & degree of truth, assertion & reason.

UNIT – V: Critical Reasoning-II

Statement & assumption, statement &conclusion, cause & effect, decision making.

UNIT –VI: Non Verbal Reasoning

Series, odd-man out, analogies, mirror & water images, paper cutting & folding, figure formation, cubes & dice .

Text Books:

1. Dr. R.S. Aggarwal , A Modern Approach to Verbal & Non-Verbal Reasoning Sultan Chand Publications, 2018.

References:

1. B.S.Sijwali and Indu Sijwali, A New Approach to Reasoning Verbal & Non-Verbal, Arihant Publishers, 2016.
2. M.K. Pandey, Analytical Reasoning , Bsc Publishing Co. Pvt. Ltd 2009.

Course Outcomes:

After completing this course, the students will be able to

1. Identify the relation between given persons, find the direction and distance from starting point, find angle between hands at given time and vice-versa, find day of given date and vice-versa.
2. Find the position and rank of a person/object in an arrangement, arranging in order using given data.
3. Decode the given code pattern and code given word in terms of alphabet, numbers, symbols and mixed, identify missing term in the pattern/series.
4. Draw a valid conclusion from the statements, consistency of inference drawn, valid reason from given assertions.
5. Identify the cause for the assumed effect, take decision logically from the given data.
6. Identify the odd one in the given series/group, number opposite any face of dice, figure completion from a folded figure.