



JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(Permanently Affiliated to JNTUH, UGC-Autonomous)
Narsampet, Warangal- 506 332(T.S)

**DEPARTMENT OF
ELECTRONICS AND COMMUNICATION ENGINEERING**

Vision and Mission of the Department

Vision:

- ❖ Towards a Global Knowledge Hub, striving continuously in pursuit of excellence in Education, Research, Entrepreneurship and Technological services to the society in the field of Electronics and Communication Engineering.
- ❖ To develop the department into a full-fledged centre of learning in various fields of Electronics & Communication Engineering keeping in view the latest developments.

Mission:

- ❖ Imparting total quality education to develop innovative, entrepreneurial and professionals fit for globally competitive environment.
- ❖ To turn out full-fledged Engineers in the field of Electronics and Communication Engineering with an overall back-ground suitable for making a

successful career either in industry/research or higher education in India and abroad.

- ❖ Fostering product oriented research for establishing a self-sustaining creative centers in Electronics and Communication Engineering to serve the societal needs."

Programme Outcomes:

PO	Programme Outcomes
PO1	Ability to apply Maths-Science-Engineering in Job and File
PO2	Ability to Identify, formulate, and solve engineering problems
PO3	Ability to use the techniques, skills and modern engineering tools necessary for engineering practice
PO4	Ability to design system / Component/Process with constraints to meet desired needs
PO5	Ability to design divide conquer experiments as well as analyze and interpret data
PO6	Ability to function on multi-disciplinary team and to exhibit team culture
PO7	Exposure necessary to understand the impact of engineering solutions in a global and societal context
PO8	A recognizing of the need for, and an ability to engage in lifelong learning

PO9	Ability for good and effective communication
PO10	Expertise with a knowledge of contemporary issues
PO11	Contribution to industry/ Academia
PO12	Understanding and demonstration of professional and ethical responsibilities

Programme Educational Objectives (PEO)

PEO1	The graduates should have a solid foundation of conceptual knowledge in mathematics, sciences and basic engineering and other support courses that are requisites for understanding the core subjects of the curriculum.
PEO2	The graduates should have the professional competency in cutting edge technologies and skills to handle modern tools to solve complex technological problems and become proficient in research, design and development of products, processes and systems as may be required in their career in Electronics engineering in a global scenario.
PEO3	The graduates should be endowed with professionalism, ethical behavior, effective communication skills, spirit of teamwork, multidisciplinary approach and ability to relate engineering issues to broader social and environmental issues..
PEO4	The graduates should have the in built capacity for lifelong learning to keep updated constantly with emerging technologies and tools and create a niche for themselves and the institute attracting high demand for

	employability an in the area of their choice in industry, in research, in academics or as an entrepreneur
PEO5	To communicate the ideas of the students for effective collaboration with other members of Engineering streams.

7	AJ1011	Physical Sciences Lab	0	0	3	2
8	AJ1014	English Language Communication Skills Lab	0	0	3	2
		Total Credits	18	0	9	23

B.Tech- R15 Autonomous

Programme Curriculum

B.Tech.ECE- I Year I-Semester

S.No	Subject code	Subject	L	T	P	Credits
1	AJ1001	Mathematics- I	4	0	0	4
2	AJ1501	Problem Solving and Computer Programming	4	0	0	4
3	AJ1013	English	3	0	0	3
4	AJ1010	Engineering Chemistry	3	0	0	2
5	AJ1008	Engineering Physics	4	0	0	4
6	AJ1502	Problem Solving and Computer Programming Lab	0	0	3	2

B.Tech ECE-I Year II semester

S.No.	Subject code	Subject	L	T	P	Credits
1	AJ2002	Mathematics – II	3	1	0	4
2	AJ2202	Electrical Circuits	4	1	0	4
3	AJ2401	Basic Electronics Engineering	4	0	0	4
4	AJ2012	Environmental Studies	3	0	0	2
5	AJ2303	Engineering Graphics	2	0	4	4
6	AJ2004	Numerical Methods	3	0	0	2
7	AJ2402	Basic Electronics Lab	0	0	3	2
8	AJ2307	Engineering Workshop & IT Work Shop	0	0	3	2
		Total Credits	19	2	10	24

B.Tech ECE-II Year I semester

S.No.	Subject code	Subject	L	T	P	Credits
1	AJ3003	Mathematics – III	4	1	0	4
2	AJ3212	Electrical Technology	3	0	0	3
3	AJ3404	Switching Theory and Logic Design	3	0	0	3
4	AJ3405	Signals and Systems	4	1	0	4
5	AJ3406	Electronic circuit Analysis	4	0	0	4
6	AJ3407	Electronic Circuit Analysis Lab	0	0	3	2
7	AJ3408	Basic Simulation Lab	0	0	3	2
8	AJ3213	Electrical Technology Lab	0	0	3	2
		Total Credits	18	2	9	24

B.Tech ECE-II Year II semester

S.No.	Subject code	Subject	L	T	P	Credits
1	AJ4409	Probability Theory and Stochastic Process	3	1	0	3
2	AJ4508	OOP & Data Structures	3	1	0	3
3	AJ4410	Pulse and Digital Circuits	4	1	0	4
4	AJ4411	Analog Communications	4	0	0	4
5	AJ4412	Electromagnetic Waves and Transmission Lines	4	0	0	4
6	AJ4413	Pulse and Digital Circuits Lab	0	0	3	2
7	AJ4509	OOP & Data Structures Lab	0	0	3	2
8	AJ4414	Analog Communication Lab	0	0	3	2
		Total Credits	18	3	9	24
9	AJMC01	Gender Sensitization	0	0	3	0

B.Tech ECE-III Year I semester**B.Tech ECE-III Year II semester****B.Tech ECE-IV Year I semester****B.Tech ECE-IV Year II semester**

Name of the Course: Mathematics – I

COURSE OUTCOMES:

- 1 By learning the first order differential equations student can able to find the solutions of many applications in engineering field.
- 2 By studying the higher order differential equation many of the transcendental equations are solvable very easily.
- 3 By studying the mean value theorems student can find roots of the algebraic and transcendental equations.
- 4 By studying the applications of integration the student able to study find area, surface and volume of a revolution.
- 5 The students understand how to find the solution of initial and boundary value problem without finding general solution by Laplace technique.

CO/PO	1	2	3	4	5	6	7	8	9	10	11	12
CO-1	3	3	3				2	1			2	1
CO-2	3	3	2				2	1				
CO-3	2	3	3				1	2				
CO-4	2	3	2	3	2		1	2			3	
CO-5	3	3	2	2			2	1			2	1

Name of the Course: Problem Solving and Computer Programming(PSCP).

COURSE OUTCOMES:

- 1: A strong foundation in core Computer Science and Engineering, both theoretical and applied concepts.
- 2: An ability to apply knowledge of mathematics, science, and engineering to real-world problems.
- 3: Ability to model, understand, and develop complex software for System Software as well as Application Software.

- 4: A broad education necessary to understand the impact of Computer Science and Engineering solutions in the scientific, societal, and human contexts.

CO/PO	1	2	3	4	5	6	7	8	9	10	11	12
CO-1	3	3	3			2				2	3	
CO-2	3	2	2								2	1
CO-3	2	3	3	3	3	2	1	1		2	3	2
CO-4	2	2	2	2			3	2	1	1	2	1

Name of the Course: English

Course Outcomes

1. Use of correct English Language in functional context
2. Enrichment of comprehension and fluency
3. At the end of the course, the students would be able to use the basic language skills of Listening, Speaking, Reading and Writing which make them good at professional communication
4. Gaining confidence in using language in varied situations

CO/PO	1	2	3	4	5	6	7	8	9	10	11	12
CO-1	3	2						2	3		3	
CO-2	3	2	3			2	2	2	3		2	1
CO-3	3	2	3			3	2	1	3	2	3	2
CO-4	2	1	1				3	3	3	2	3	2

Name of the Course: ENGINEERING CHEMISTRY**COURSE OUTCOMES:**

1. Applications of electrochemistry understanding different types of cells, their representation, knowledge of electrode potentials, utilization of electrical energy and its conversion into different energies. Applicability of electrodes in different fields of analysis.
2. Understanding the utility of batteries as a source of energy in many electronic gadgets & their types. Enhancement of power generation by making of fuel cells. Knowledge of need for alternate source of energy.
3. Deterioration of metal under the influence of environment, Mechanism of corrosion, Factors affecting corrosion, Prevention of corrosion using various methods & A basic knowledge of surface coatings.
4. Improving the properties of plastics by various additives, Integral role of various polymers in our life style & Applicability of plastic in automobile and textile industry.
5. Knowledge of hardness of water and its effects, Industrial utility of water especially for steam generation, Removal Methodologies of hardness.

CO/PO	1	2	3	4	5	6	7	8	9	10	11	12
CO-1	3	2	2	1			1			2	2	1
CO-2	3	3	2					2		3	2	1
CO-3	2	2	3	2	2		2	2		3	2	2
CO-4	3	3	2	1			2	3		3	3	
CO-5	3	2	2	3	2		2	2		2	3	1

Name of the Course: ENGINEERING PHYSICS**COURSE OUTCOMES:**

1. The student learns about crystalline materials and their structures.
2. The student learns about classification of solids by band theory.
3. The student learns about fabrication of semi conductors into devices.
4. The student learns about dielectrics and magnetic materials along with their engineering applications.
5. The student learns about lasers, their construction and applications in engineering field and super conductors, classifications and their applications.
6. The student learns about nano materials and their fabrication methods along with their characterization by XRD & SEM.

CO/PO	1	2	3	4	5	6	7	8	9	10	11	12
CO-1	3	3	2							1	2	1
CO-2	3	2	2								2	1
CO-3	3	3	2	2		2						
CO-4	2	1	2				3	2			3	1
CO-5	3	3	3	2	1	1	3				3	
CO-6	3	2	2	3	2	2	2	2			2	

Name of the Course: PROBLEM SOLVING AND COMPUTER PROGRAMMING LABORATORY

- 1: A strong foundation in core Computer Science and Engineering, both theoretical and applied concepts.
- 2: An ability to apply knowledge of mathematics, science, and engineering to real-world problems.
- 3: Ability to model, understand, and develop complex software for System Software as well as Application Software.
- 4: A broad education necessary to understand the impact of Computer Science and Engineering solutions in the scientific, societal, and human contexts.

CO/PO	1	2	3	4	5	6	7	8	9	10	11	12
CO-1		3	3				2	2		2	3	1
CO-2	3	3	2	2	2	2	2	1	2	1	3	2
CO-3	3	3	3	2	2		3	2			2	1
CO-4	3	3	2	3	3	2	2			1	3	1
CO-5	3	2	2	3	3	2	2			2	3	1

Name of the Course: PHYSICAL SCIENCES LABORATORY

CO/PO	1	2	3	4	5	6	7	8	9	10	11	12
CO-1	3	2	2	1			1			2	2	1
CO-2	3	3	2					2		3	2	1
CO-3	2	2	3	2	2		2	2		3	2	2
CO-4	3	3	2	1			2	3		3	3	
CO-5	3	2	2	3	2		2	2		2	3	1

B.Tech I Year II Semester

Name of the Course: ELECTRIC CIRCUITS

1. Exhaustive coverage of basic network reduction techniques and Theorems helps the students in easy reduction of Electrical circuits
2. Students gains balanced knowledge on Ac and Dc circuit analysis which helps in the analysis of Electrical machines and converter circuits
3. Coverage of Two-Port networks will helps the students to analyze the complex electronic circuits
4. Design of Filters & Attenuators will helps the students in practical design electrical & electronic circuits

CO/PO	1	2	3	4	5	6	7	8	9	10	11	12
CO-1	3	2	2	2			1			2	2	1
CO-2	3	3	2				2	2		2	2	1
CO-3	2	2	3	2	2		2	2		3	2	2
CO-4	3	3	2	3	3		2	3		3	3	1

Name of the Course : BASIC ELECTRONICS ENGINEERING

1. Understand and analyze the different types of diodes, operation and its characteristics.
2. Design and analyze the DC bias circuitry of BJT and FET.
3. Design biasing circuits using diodes and transistors.
4. To analyze and design diode application circuits, amplifier circuits and oscillators employing BJT, FET devices.

CO/PO	1	2	3	4	5	6	7	8	9	10	11	12
CO-1	3	3	3	2	2	2	2	2		2	3	1
CO-2	3	3	3	3	3			1		2	3	1
CO-3	2	2	3	2	2		2	2		3	3	2
CO-4	3	3	2	3	3	2	2	1		2	3	1

Name of the Course: ENVIRONMENTAL STUDIES

1. Understanding of Ecosystem,
2. Natural resources depletion of natural resources & prevention of natural resources.
3. Biodiversity Protection, sharing of the biodiversity.
4. Environmental pollution Understanding of water, soil, noise, air pollutions and their control measurements.

CO/PO	1	2	3	4	5	6	7	8	9	10	11	12
CO-1	3	2	2				3	2		2	2	1
CO-2	3	3	3			2	2	2		3	3	1
CO-3	2	2	2				3	2		3	2	1
CO-4	3	3	2	2	1		2	1		3	3	2

Name of the Course : ENGINEERING GRAPHICS

COURSE OUTCOMES:

1. Understand and draw the different types of conic sections
2. Analyze the projections of points, straight lines, plane surfaces, solids at different positions and angles.
3. Convert orthographic views into isometric views and vice versa.
4. Perform sections of solids, development of surfaces and their applications in human life.

CO/PO	1	2	3	4	5	6	7	8	9	10	11	12
CO-1	3	2	2	1			1			2	2	1
CO-2	3	3	2					2		3	2	1
CO-3	2	2	3	2	2		2	2		3	2	2
CO-4	3	3	2	1			2	3		3	3	

Name of the Course : NUMERICAL METHODS

COURSE OUTCOMES

1. The students can learn about the algebraic and transcendental equation and they find the roots of the equation by iterative methods.
2. The students can interpretive the large data of interpolation through formulae of interpolation.
3. Students learn how to fit the curve by using least squares method.
4. By studying Trapezoidal rule and Simpson's rule to improve the differentiation and integration techniques.
5. By studying the Runge-kutta methods student can able to bring out approximate solutions of first order ordinary differential equations and can be extended to higher order

CO/PO	1	2	3	4	5	6	7	8	9	10	11	12
CO-1	3	2	2	1			1				2	
CO-2	3	3	2		3			2		2	2	1
CO-3	3	3	3	2	2		2	2		2	3	2
CO-4	3	3	2	2	2	3	2	3		3	3	
CO-5	3	3	3	3	2		2	2		2	3	1

Name of the Course : BASIC ELECTRONICS LABORATORY

COURSE OUTCOMES

1. Identify circuit components with their color coding and specifications.
2. Ability to operate and work with multimeters, function generators, Power supply and CRO
3. Ability to perform experiments to perform device characteristics.
4. Able to design the circuits with the given specifications.

CO/PO	1	2	3	4	5	6	7	8	9	10	11	12
CO-1	3	2	2			1	1			2	2	1
CO-2	3	3	2			2		2		3	2	1
CO-3	2	2	3	2	2	1	2	2		3	2	2
CO-4	3	3	3	3	3	2	2	3		3	3	2

Name of the Course : ENGINEERING WORKSHOP & IT WORKSHOP

COURSE OUTCOMES:

1. Know the fundamental knowledge of various trades and their usage in real time applications.
2. Gain knowledge of Welding, Black smithy, Fitting, and house wiring.
3. Understand the basis for analyzing power tools in construction and wood working, electrical engineering and mechanical engineering.
4. Use basic concepts of computer hardware for assembly and disassembly.

CO/PO	1	2	3	4	5	6	7	8	9	10	11	12
CO-1	3	3	3	2		2	2			2	2	1
CO-2	3	3	2	2		2		2		3	3	1
CO-3	2	2	3	2	2	1	2	2		3	3	2
CO-4	3	3	2	3	2	2	2	3		3	3	1

B.Tech II Year I Semester

Name of the course: MATHEMATICS – III

COURSE OUTCOMES:

1. By studying complex variable the students identifying ordinary point, singular point and regular point for the given ordinary differential equations.
2. By using the z-transforms students find the particular solution of the differential equation without finding the general solution
3. Students are able to solve the applications of differential equations with boundary and initial conditions.

CO/PO	1	2	3	4	5	6	7	8	9	10	11	12
CO-1	3	3	3	2		2	2			2	2	1
CO-2	3	3	2	2		2		2		3	3	1
CO-3	2	2	3	3	2	1	2	2		2	3	2

Name of the course: ELECTRICAL TECHNOLOGY

COURSE OUTCOMES:

1. Filters and attenuators.
2. The operation of Transformers, DC machines and AC Machines.
3. With which he/she can able to apply the above conceptual things to real world problems and applications

CO/PO	1	2	3	4	5	6	7	8	9	10	11	12
CO-1	3	3	3	2		2	2			2	2	
CO-2	3	3	2	2		2		2		2	3	1
CO-3	2	3	3	3	2	1	2	2		3	3	2

Name of the course: SWITCHING THEORY AND LOGIC DESIGN(STLD)

COURSE OUTCOMES:

1. Digital Fundamentals like Number systems and their inter conversions, K-map simplifications for logic circuits.
2. Design, Analyze and Interpret Combinational and Sequential Digital Circuits.

CO/PO	1	2	3	4	5	6	7	8	9	10	11	12
CO-1	3	3	3	3	2	2	2	1		2	3	2
CO-2	3	3	3	3	3	3	2	2		2	3	1

Name of the course: SWITCHING THEORY AND LOGIC DESIGN (STLD)

COURSE OUTCOMES:

1. Understand about various types of signals, classify them, analyze them, and perform various operations on them.
2. Understand about various types of systems, classify them, analyze them and understand their response behavior.
3. Appreciate use of transforms in analysis of signals and system.
4. Carry simulation on signals and systems for observing effects of applying various properties and operations.
5. Create strong foundation of communication and signal processing to be studied in the subsequent semester

CO/PO	1	2	3	4	5	6	7	8	9	10	11	12
CO-1	3	3	3				2				2	1
CO-2	3	3	2	2		2	2	2		3	3	1
CO-3	2	2	3	2	2	1	2	2		1	2	2
CO-4	3	3	2	3	2	2	2	3		2	3	1
CO-5	3	2	3	3	3	1	1	2		1	3	1

Name of the course: ELECTRONIC CIRCUIT ANALYSIS

COURSE OUTCOMES:

1. Design and Analyze the DC bias circuitry of BJT and FET.
2. Analysis the different types of amplifiers, operation and its characteristics
3. Design circuits like amplifiers, oscillators using the transistors.

CO/PO	1	2	3	4	5	6	7	8	9	10	11	12
CO-1	3	3	3	3	2	1	2			2	3	1
CO-2	3	3	2	2		2		2		3	2	1
CO-3	3	3	3	3	3	1	2	2		2	3	2

Name of the course: SIGNALS AND SYSTEMS

COURSE OUTCOMES

1. Understand about various types of signals, classify them, analyze them, and perform various operations on them.
2. Understand about various types of systems, classify them, analyze them and understand their response behavior.
3. Appreciate use of transforms in analysis of signals and system.
4. Carry simulation on signals and systems for observing effects of applying various properties and operations.
5. Create strong foundation of communication and signal processing to be studied in the subsequent semester

CO/PO	1	2	3	4	5	6	7	8	9	10	11	12
CO-1	3	3	3				2				2	1
CO-2	3	3	2	2		2	2	2		3	3	1
CO-3	2	2	3	2	2	1	2	2		1	2	2
CO-4	3	3	2	3	2	2	2	3		2	3	1
CO-5	3	2	3	3	3	1	1	2		1	3	1

Name of the course: ELECTRONIC CIRCUIT ANALYSIS LAB

COURSE OUTCOMES:

1. Design and Analyze the DC bias circuitry of BJT and FET.
2. Analysis the different types of amplifiers, operation and its characteristics
3. Design circuits like amplifiers, oscillators using the transistors

CO/PO	1	2	3	4	5	6	7	8	9	10	11	12
CO-1	3	3	3	3	2	1	2			2	3	1
CO-2	3	3	2	2		2		2		3	2	1
CO-3	3	3	3	3	3	1	2	2		2	3	2

Name of the course: BASIC SIMULATION LAB

COURSE OUTCOMES

1. Understand about various types of signals, classify them, analyze them, and perform various operations on them.
2. Understand about various types of systems, classify them, analyze them and understand their response behavior.
3. Appreciate use of transforms in analysis of signals and system.
4. Carry simulation on signals and systems for observing effects of applying various properties and operations.
5. Create strong foundation of communication and signal processing to be studied in the subsequent semester

CO/PO	1	2	3	4	5	6	7	8	9	10	11	12
CO-1	3	3	3				2				2	1
CO-2	3	3	2	2		2	2	2		3	3	1
CO-3	2	2	3	2	2	1	2	2		1	2	2
CO-4	3	3	2	3	2	2	2	3		2	3	1
CO-5	3	2	3	3	3	1	1	2		1	3	1

Name of the course: ELECTRICAL TECHNOLOGY LAB

COURSE OUTCOMES:

1. Filters and attenuators.
2. The operation of Transformers, DC machines and AC Machines.
3. With which he/she can able to apply the above conceptual things to real world problems and applications

CO/PO	1	2	3	4	5	6	7	8	9	10	11	12
CO-1	3	3	3	2		2	2			2	2	
CO-2	3	3	2	2		2		2		2	3	1
CO-3	2	3	3	3	2	1	2	2		3	3	2

B.Tech II Year II Semester

Name of the Course : PROBABILITY THEORY AND STOCHASTIC PROCESS(PTSP)

COUSE OUTCOMES:

1. Apply mathematical background and sufficient experience so that the student can solve probabilistic problems in signal processing and Communication Engineering.
2. Apply the basic methodology of “probabilistic thinking” and to apply it to problems;
3. Understand basic concepts of probability theory and random variables, multiple random variables, Conditional probability and conditional expectation, joint distribution and independence, mean square estimation.
4. Understand the difference between time averages and statistical averages Analysis of random process and

application to the signal processing in the communication system.

- Apply sums and integrals to compute probabilities, means, and expectations.

CO/PO	1	2	3	4	5	6	7	8	9	10	11	12
CO-1	3	3	3	2		2	2			2	3	
CO-2	3	3	2	2	1	2		2		2	3	1
CO-3	2	3	3	3	2		2	2		2	2	1
CO-4	3	2	2	1			3	2		1	3	
CO-5	3	3	3	2	2		2	1			2	1

Name of the Course: Object Oriented Programming and Data Structures(OOP & DS)

COURSE OUTCOMES:

- A strong foundation in core Computer Science and Engineering, both theoretical and applied concepts.
- An ability to apply knowledge of mathematics, science, and engineering to real-world problems.
- Ability to model, understand, and develop complex software for System Software as well as Application Software.
- An ability to communicate effectively, both in writing and oral.
- A recognition of the need for, and an ability to engage in life-long learning.

CO/PO	1	2	3	4	5	6	7	8	9	10	11	12
CO-1	3	3	3			2					2	
CO-2	3	3	2	3	3	2	2	2		2	3	1
CO-3	3	3	3	3	2		2	2		2	2	1
CO-4	3	2	2	3	2		3	2		1	3	
CO-5	3	3	3	2	2		2	1			3	1

Name of the Course: Pulse and Digital Circuits(PDC)

COURSE OUTCOMES:

- Understand the applications of diode as integrator, differentiator, clipper and clamper circuits.
- Learn various switching devices such as diode, transistor, SCR.
- Difference between logic gates and sampling gates.
- Design multivibrators for various applications, synchronization.

CO/PO	1	2	3	4	5	6	7	8	9	10	11	12
CO-1	3	3	3	2		1	2			2	3	
CO-2	3	3	2	2	1			2		2	3	1
CO-3	2	3	3	2	2		2	2		2	2	1
CO-4	3	2	2	3	3	1	3	2		1	3	

- radar transmitters and receivers.
- To learn various radars like MTI, Doppler and tracking radars and their comparison
- Explain principles of navigation, in addition to approach and landing aids as related to navigation
- Describe about the navigation systems using the satellite.

Name of the Course: MIXED SIGNAL DESIGN

(Professional Elective – VI)

Course out comes:

1. To understand the designing of combinational and sequential logic circuits
2. To understand the Analog CMOS modeling
3. To understand the basic building blocks of switched capacitor
4. To understand the designing of A/D and D/A converters
5. To understand PLL circuits

Name of the Course: MULTIMEDIA AND SIGNAL CODING

(Professional Elective-VI)

Course Outcomes

- Upon completing the course, the student will be able to:
- Understand the fundamentals behind multimedia signal processing.
- Understand the fundamentals behind multimedia compression.
- Understand the basic principles behind existing multimedia compression and communication standards.
- Understand future multimedia technologies.

- Apply the acquired knowledge to specific multimedia related problems and projects at work.
- Take advanced courses in this area.

Name of the Course: ANALOG COMMUNICATIONS

COURSE OUTCOMES

1. Conceptually understand the baseband signal & system.
2. Identify various elements, processes, and parameters in communication systems and describe their functions, effects, and interrelationship.
3. Understand basic knowledge of AM, FM transmission & reception.

CO/PO	1	2	3	4	5	6	7	8	9	10	11	12
CO-1	3	3	3	2		2	2			2	3	
CO-2	3	3	2	2	1	2		2		2	3	1
CO-3	3	3	3	3	2		2	2		2	2	1

Name of the Course : ELECTROMAGNETIC WAVES & TRANSMISSION LINES

COURSE OUTCOMES:

1. Understands fundamental theory and concepts of electromagnetic waves
2. Understands fundamentals of transmission lines, and their practical Applications.
3. Analyze the propagation, reflection, and transmission of plane waves in bounded and unbounded media

CO/PO	1	2	3	4	5	6	7	8	9	10	11	12
CO-1	3	3	3	2		2	2			2	2	1
CO-2	3	3	2	2	1			2		2	3	1
CO-3	3	3	3	3	2		2	2		2	2	1

3. Difference between logic gates and sampling gates.
4. Design multivibrators for various applications, synchronization.

CO/PO	1	2	3	4	5	6	7	8	9	10	11	12
CO-1	3	3	3	2		1	2			2	3	
CO-2	3	3	2	2	1			2		2	3	1
CO-3	2	3	3	2	2		2	2		2	2	1
CO-4	3	2	2	3	3	1	3	2		1	3	

Name of the Course : PULSE AND DIGITAL CIRCUITS LAB

COURSE OUTCOMES:

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

1. Understand the applications of diode as integrator, differentiator, clipper and clamper circuits.
2. Learn various switching devices such as diode, transistor, SCR.

Name of the Course : ANALOG COMMUNICATIONS LAB

Name of the Course : OBJECT ORIENTED PROGRAMMING & DATA STRUCTURES LAB

COURSE OUTCOMES:

CO-1: A strong foundation in core Computer Science and Engineering, both theoretical and applied concepts.

CO-2: An ability to apply knowledge of mathematics, science, and engineering to real-world problems.

CO-3: Ability to model, understand, and develop complex software for System Software as well as Application Software.

CO-4: An ability to communicate effectively, both in writing and oral.

CO-5: A recognition of the need for, and an ability to engage in life-long learning.

CO/PO	1	2	3	4	5	6	7	8	9	10	11	12
CO-1	3	3	3	2		1	2			2	3	
CO-2	3	3	3	2	1		2	2		2	3	1
CO-3	3	3	3	2	2		2	2		2	2	1
CO-4	3	2	2	3	3	2	3	2		1	3	
CO-5	3	2	2	3	3	2	3	2		1	3	

LEARNING OUTCOMES:

1. Understanding of fundamental concepts of abstract data types and general standard data structures.
2. Ability to design linear data structures stacks, queues and linked lists.
3. Ability to design nonlinear data structures, trees and graphs, and to implement their operations.
4. Ability to implement different searching and sorting techniques.
5. Ability to apply different searching and sorting techniques for real world problems..

COURSE OUTCOMES:

- Students will have developed a better understanding of important issues related to gender in contemporary India.
- Students will be sensitized to basic dimensions of the biological, sociological, psychological and legal aspects of gender. This will be achieved through discussion of materials derived from research, facts, everyday life, literature and film.
- Students will attain a finer grasp of how gender discrimination works in our society and how to counter it. Students will acquire insight into the gendered division of labor and its relation to politics and economics.
- Men and women students and professionals will be better equipped to work and live together as equals. Students will develop a sense of appreciation of women in all walks of life.

- Through providing accounts of studies and movements as well as the new laws that provide protection and relief to women, the textbook will empower students to understand and respond to gender violence.

CO/PO	1	2	3	4	5	6	7	8	9	10	11	12
CO-1	3	3	1				2			2	1	2
CO-2	3	3	2				3			2	2	2
CO-3	3	2	1				2			2	2	2
CO-4	3	2	2				2	1		1	2	1
CO-5	3	2	2				2			1	2	1

B.TECH

III YEAR

I & II SEMESTER

Name of the Course : DIGITAL COMMUNICATIONS

Course Outcomes:

At the end of the course, the student will be able to:

- Understand basic components of Digital Communication Systems.
- Design optimum receiver for Digital Modulation techniques.
- Analyze the error performance of Digital Modulation Techniques.
- Understand the redundancy present in Digital Communication by using various source coding techniques.
- Know about different error detecting and error correction codes like block codes, cyclic codes and convolution codes and to understand advantage of spread spectrum

CO/PO	1	2	3	4	5	6	7	8	9	10	11	12
CO-1	3	3	3	2		1	2			2	2	
CO-2	3	2	3	3	2		2	2		2	3	1
CO-3	3	3	3	2	2		2	2		2	2	1
CO-4	3	2	2	2	2		2	1		1	3	
CO-5	3	2	3	3	3	2	3	2		2	3	1

Name of the Course : DIGITAL DESIGN THROUGH HDL

Course out comes:

By the end of this course, students should be able to:

- Describe the verilog hardware description languages (HDL).
- Design digital circuits and write behavioral models of digital circuits

- write register transfer level(RTL) models of digital circuits
- Verify behavioral and RTL models
- describe standard cell libraries and FPGAs and synthesize RTL models to standard cell libraries and FPGAs.

CO4: Be able to manipulate simple Boolean expressions using the theorems and postulates of Boolean algebra and to minimize combinational functions.

CO5: Be able to design and analyze combinational circuits and to use standard combinational functions/building block to build more complex circuits.

CO6: Be able to learn the internal organization of popular 8086 microprocessors

CO/PO	1	2	3	4	5	6	7	8	9	10	11	12
CO-1	3	3	3	2		2				2	3	
CO-2	3	3	3	3	2	2	2	1		2	3	1
CO-3	3	3	3	2	2						3	1
CO-4	3	2	2	3	3	2	3	2		1	2	
CO-5	3	2	2	3	3	2	3	2		1	3	

LEARNING OUTCOMES:

1. Understand the basic components of a computer, including CPU, memories, and input/output, and their organization, Ability to use memory and I/O devices effectively.

2. Understand the cost performance tradeoff in designing memory hierarchy and instruction sets, able to explore the hardware requirements for cache memory and virtual memory.

Name of the Course : COMPUTER ORGANIZATION

COURSE OUTCOMES:

CO1: Ability to model, understands, and develops complex software for system software as well as application software

CO2: The broad education necessary to understand the impact of computer science and engineering solutions in the scientific, societal and human contexts

CO3: Knowledge of contemporary issues be able to manipulate numeric information in different forms, e.g., different bases, signed integers, various codes such as ASCII, Gray, and BCD.

CO/PO	1	2	3	4	5	6	7	8	9	10	11	12
CO-1	3	3	3	2		1	2			2	3	
CO-2	3	3	3	2	1		3	2			3	1
CO-3	3	3	3	2	2		2	2		3	2	1
CO-4	3	2	2	3	3	2				1	3	
CO-5	3	2	2	3	3	2	3	2		1	3	

CO-6	3	2	2	2	2	2		1		1	3	
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Name of the Course : IC Applications

COURSE OUTCOMES:

After completion of this course, students will have....

- A thorough understanding of Operational amplifiers with Linear Integrated Circuits.
- Understanding of the Different families of Digital Integrated Circuits and their characteristics.
- Also student will able to design circuits using Operational amplifiers for various applications.

CO/PO	1	2	3	4	5	6	7	8	9	10	11	12
CO-1	3	3	3	2		1	2			2	2	
CO-2	3	3	3	2	1		2	2		2	2	1
CO-3	3	3	3	3	3		2	2		2	3	1

Name of the Course : MANAGERTAL ECONOMICS AND FINANCIAL ANALYSIS

(Open Elective-I)

COURSE OUTCOMES:

1. Understand and appreciate the importance of certain basic issues governing the business operations namely: demand and supply, production function, cost analysis, markets, forms of business organizations, capital budgeting and financial accounting and financial analysis.

Name of the Course : DATABASE MANAGEMENT SYSTEMS

(Open Elective-I)

Course outcomes:

- 1: A strong foundation in core Computer Science and Engineering, both theoretical and applied concepts.
- 2: Ability to model, understand and develop complex software for system software as well as application software.
- 3: The broad education necessary to understand the impact of Computer Science and Engineering solutions in the scientific, societal and human contexts.
- 4: A Knowledge of Contemporary Issues.

Learning outcomes:

1. Ability to understand the fundamental concepts of database management.
2. Ability to design and query databases, as well as understand the internals of databases.
3. Ability to define basic functions of DBMS & RDBMS.
4. Ability to describe database development process and to apply the Relational Database Model

to understand the Logical and Physical aspects of the DBMS architecture.

5. Ability to analyze database models & entity relationship models and to draw the E-R diagram

for the given case study.

6. Ability to use Structured Query Language (SQL) with complex queries.

Name of the Course : DISASTER MANAGEMENT AND MITIGATION

(Open Elective-I)

Outcomes:

On completion of this course, students will be able to

1. Integrate knowledge and to analyze, evaluate and manage the different public health aspects of disaster events at a local and global levels, even when limited information is available.

2. Describe, analyze and evaluate the environmental, social, cultural, economic, legal and organizational aspects influencing vulnerabilities and capacities to face disasters.
3. Work theoretically and practically in the processes of disaster management (disaster risk reduction, response, and recovery) and relate their interconnections, particularly in the field of the Public Health aspects of the disasters.
4. Manage the Public Health aspects of the disasters.

Name of the Course : ELECTRONIC MEASUREMENTS AND INSTRUMENTATION

(Professional Elective-I)

Course Outcomes:

Upon a successful completion of this course, the student will be able to.

- Describe the fundamental concepts and principles of instrumentation.
- Explain the operations of the various instruments required in measurements.
- Apply the measurement techniques for different types of tests.
- To select specific instrument for specific measurement function.
- Learners will apply knowledge of different oscilloscopes like CRO, DSO.
- Students will understand functions, specification, and applications of signal analyzing instruments.

Name of the Course : DATA ACQUISITION SYSTEMS (Professional Elective – I)

Course outcomes:

After completion of this course, student will be able to...

- Understand the fundamentals of data acquisition, characteristics and specifications of various components used in DAS and associate performance metrics
- Familiarize different methods of ADC's characteristics, specifications and applications of various commercial IC's
- Familiarize different methods of DAC's, specifications and applications and various interfacing issues of ADC's and DAC's to a microprocessor/PC
- Identify sources of error, their reduction techniques.
- Understand the Principles, construction of display devices and applications of data converters.

Name of the Course : **CONTROL SYSTEMS
(Professional Elective-I)**

OUTCOMES:

After going through this course, the student gets knowledge on

1. Open loop and closed loop systems, concept of feedback in control systems, mathematical modeling and transfer function derivations of translational and rotational systems and transfer functions of servomotors and concepts of synchros.
2. Transfer function representation through block diagram algebra and signal flow graphs,

3. Time response analysis of different ordered systems through their characteristic equation and time-domain specifications.
4. Stability analysis of control systems in s-domain through R-H criteria and root-locus techniques.
5. Frequency response analysis through bode diagrams.

With which he/she can be able to apply the above conceptual things to real world electrical and Electronic problems and applications

Name of the Course : IC and HDL SIMULATION LAB

Name of the Course : DIGITAL COMMUNICATION LAB

Name of the Course : VALUE EDUCATION, HUMAN RIGHTS AND LEGISLATIVE PROCEDURES

MICRO PROCESSORS AND MICRO CONTROLLERS

Course Outcomes:

- Understands the internal architecture and organization of 8085 and 8086, 8051 and ARM processors/controllers.
- Understands the interfacing techniques to 8086 and 8051 and can develop assembly language programming to design microprocessor/ micro controller based systems.

Name of the Course : DIGITAL SIGNAL PROCESSING

Course Outcomes: Learner will be able to...

1. To understand the concept of DT Signal and perform signal manipulation.
2. Understand the Properties of DFT in mathematical problem solving, and FFT Algorithms.
3. Understand the Physical Realization of Digital filters.
4. Understand Design of Digital filters.
5. Understand the Multirate DSP Techniques and applications.

Name of the Course : ANTENNAS AND WAVE PROPAGATION

OUTCOMES: Upon completion of the course, students will be able to:

- Explain the various types of antennas and wave propagation.
- Write about the radiation from a current element.
- Analyze the antenna arrays, aperture antennas and special antennas such as frequency independent and broad band

Name of the Course : PROJECT PLANNING AND MANAGEMENT

(OPEN ELECTIVE-II)

Student Learning Outcomes:

- Upon satisfactory completion of the course, the learner should be able to:
 1. Recognize issues in a realistic project scenario.
 2. Employ work breakdown structures (WBS) in a project application.
 3. Demonstrate the use of appropriate network scheduling techniques.

- 4. Produce a project proposal.
- 5. Discuss the implementation of a proposed plan.
-

Name of the Course :) NEURAL NETWORKS AND FUZZY LOGIC

(Open Elective- II)

OUTCOMES:

1. After going through this course the student gets a thorough knowledge on, biological neurons and artificial neurons,
2. Comparative analysis between human and computer, artificial neural network models, characteristics of ANN's, different types of activation functions, learning strategies, learning rules, perceptron models, single and multi layer feed-forward and feed—back neural networks
3. Back-propagation algorithm, Kolmogorov Theorem, different types of associative memories and basics of fuzzy logic,
4. concept of classical and fuzzy sets, fuzzy logic system components Fuzzification and Defuzzification,
5. With which he/she can able to apply the above conceptual things to real-world electrical and electronics problems and applications.

Name of the Course : MICRO, SMALL & MEDIUM ENTERPRISES MANAGEMENT

(Open Elective- II)

Course outcomes: This course will enable them to know the basics like process and procedure to set up a small

enterprise which over a time may culminate into a large enterprise.

Name of the Course : EMBEDDED SYSTEMS

Professional Elective-II

Course Outcomes:

Upon completion of this course, the student will be able to:

- Understand and design embedded systems
- Learn basic of OS and RTOS
- Understand types of memory and interfacing to external world
- Understand embedded firmware design approaches.

Name of the Course : TELECOMMUNICATION SWITCHING NETWORKS

(Professional Elective – II)

Course Outcomes:

On Completion of This Course, It is Expected That the Student Will Be Able To:

- Understand The Main Concepts Of Telecommunication Network Design
- Analyze And Evaluate Fundamental Telecommunication Traffic Models
- Understand Basic Modern Signaling System

- Solve Traditional Interconnection Switching System Design Problems
- Understand The Concept Of Packet Switching

Name of the Course : DATA COMMUNICATION AND NETWORKING

(Professional Elective – II)

COURSE OUTCOMES:

After completion of this course, students will be able to...

- identify the various issues and challenges in the architecture of a computer network
- analyze the ISO/OSI seven layers in a network
- realize protocols at different layers of a network hierarchy
- evaluate security issues in a network
- concludes duties of layer and aspects of security.

Name of the Course : DIGITAL SIGNAL PROCESSING LAB

Name of the Course : MICRO PROCESSORS AND MICRO CONTROLLERS LAB

Name of the Course : ADVANCED ENGLISH COMMUNICATION SKILLS LAB

Name of the Course : ENERGY STUDIES

B.TECH

IV YEAR

I & II SEMESTER

Name of the Course : VLSI TECHNOLOGY

Course Outcomes

- Upon completing the course, the student will be able to:
- Understand the fundamentals of VLSI design flow.
- Understand the fundamentals behind integrated circuit design and manufacturing process.
- Understand the basic principles of design rules and scaling standards.
- Apply the acquired knowledge to projects at work.
- Take advanced courses in this area.

Name of the Course : MICRO WAVE AND OPTICAL COMMUNICATION ENGINEERING

Course Outcomes:

At the end of the course, the student will be able to:

- Understand basic components of Micro-Wave Communication Systems.
- Understand S Parameters for different Micro-Wave Devices.
- Understand basics of Optical Fiber.
- Understand the working principle of optical sources, detector.
- Understand various Optical Modulation techniques

Name of the Course : DIGITAL IMAGE PROCESSING

(PROFESSIONAL ELECTIVE – III)

Course Outcomes:

Upon successfully completing the course, the student should:

- Have an appreciation of the fundamentals of Digital Image Processing including the topics of filtering, transforms and morphology, and image analysis and compression.

Name of the Course : OPERATING SYSTEMS

(Open Elective-III)

Course outcomes:

1. Understand the basics of operating systems like kernel, shell, types and views of operating systems
2. Describe the various CPU scheduling algorithms and remove deadlocks.
3. Explain various memory management techniques and concept of thrashing.
4. Use disk management and disk scheduling algorithms for better utilization of external memory.
5. Recognize file system interface, protection and security mechanisms.
6. Explain the various features of distributed OS like Unix, Linux, windows etc

Learning outcomes:

1. Apply optimization techniques for the improvement of system performance.
2. Ability to understand the synchronous and asynchronous communication mechanisms in their respective OS.
3. Learn about minimization of turnaround time, waiting time and response time and also maximization of throughput with keeping CPU as busy as possible.
4. Ability to compare the different OS

Name of the Course : LOW POWER VLSI DESIGN

(Professional Elective-III)

Course Outcomes:

Learner understood

1. The basic concepts on Low Power Design Concepts
2. Power Dissipation aspects and Mechanism
3. Low Power Design methods to Digital Circuits and Memories

**Name of the Course : ENGINEERING SYSTEM
MODELLING & SIMULATION**

(OPEN ELECTIVE-III)

Course outcomes: Upon completion of this course, students will be able to...

- Understand the Concepts of systems, models and simulation and properties of stochastic generators, Different simulation software and building simulation models, modeling time driven systems and exogenous signals and analysis.

- Understands Optimization of systems and modeling.

**Name of the Course : CLOUD COMPUTING AND IOT
(Open Elective-III)**

Outcomes :

Upon completion of this course, students will be able to...

- Assess the knowledge and the important role of cloud computing in the development of various applications
- Describe the of various services offered in cloud computing
- Summarize the knowledge of underlying technologies used in cloud computing
- identify the security related issues involved in cloud computing
- Explain in a concise manner how the general Internet as well as Internet of Things work.
- Understand constraints and opportunities of wireless and mobile networks for Internet of Things.
- Use basic measurement tools to determine the real-time performance of packet based networks.
- Analyze trade-offs in interconnected wireless embedded sensor networks.

**Name of the Course : BIG DATA MANAGEMENT
(Open Elective-III)**

Outcomes:

Upon completion of this course, students will be able to

- Understand advances of Big data Management and applications

- Analyze and report unstructured data
- Apply Hadoop Map reduce frame work for building Big data applications
- Design Big data applications capable of using Hadoop distributed file system

Name of the Course : WIRELESS COMMUNICATIONS AND NETWORKS

(Professional Elective-IV)

Outcomes of the subject:

- Understand the principles of wireless communication systems, and different generation of wireless networks.
- Understand the basic concepts of cellular systems and multiple access technique in wireless networks.
- Understand the principles of mobile radio propagation and fading.
- Familiar with some of the existing and emerging wireless standards.
- Understand the concept of orthogonal frequency division multiplexing.

Name of the Course : SATELLITE COMMUNICATIONS (Professional Elective-IV)

OUTCOMES: Learners will be able to:

- Analyze the satellite orbits.

- Analyze the earth segment and space segment.
- To understand the satellite access methods.
- To understand the earth station technology.
- To Design various satellite applications.

Name of the Course : REAL TIME OPERATING SYSTEMS

(Professional Elective-IV)

Course Outcomes

- Upon completing the course, the student will be able to:
- Understand the fundamentals of operating system.
- Understand the fundamentals behind real time operating systems concepts.
- Understand the advanced principles of RT Linux, VX Works by their case studies.
- Apply the acquired knowledge to projects at work.
- Take advanced courses in this area.

Name of the Course : e-CAD and VLSI LABORATORY

Name of the Course : MICROWAVE ENGINEERING & OPTICAL COMMUNICATION LAB

Name of the Course : WIRELESS SENSOR NETWORKS

(Professional Elective -V)

Course outcomes:

Upon completion of the subject student will be able to

- Understand the Concept of sensor networks, challenges and architectures of sensor networks

- Analyze the Networking technologies and MAC protocols for wireless sensor networks
- Understand the different routing, transport layer and security protocols in WSN
- Analyze the Infrastructure establishment and security issues in WSN
- Understand the Sensor network platforms tools and applications of WSN's

Name of the Course : DIGITAL SIGNAL PROCESSORS AND ARCHITECTURES

(Professional Elective - V)

Course outcomes:

Upon completion of the subject student will be able to

- Understand the digital signal processing system, sampling , DFT and FFT , decimation and interpolation
- Familiarize the Architectures of programming DSP devices
- Understand the different types of programmable DSP processors and addressing modes
- Understand the Analog DSP devices and architectures and micro signal architecture
- Familiarize Interfacing memory and I/O interfacing to programmable DSP devices

Name of the Course : RF CIRCUIT DESIGN

(Professional Elective – V)

Course Outcomes:

At the end of the course, the student will be able to:

- Understand basic components of Micro-Wave Communication Systems.
- Understand basics of advanced amplifiers.
- Understand basics of RFID Systems.
- Understand the Various Optical Sources.
- Understand various integrated circuits.

Name of the Course : RADAR SYSTEMS AND NAVIGATIONAL AIDS

(Professional Elective – VI)

Course Outcomes:

Upon completion of the course, students will be able to:

- Understand the principle of radar system and derive the Range equation and the nature of detection
- Understand various technologies involved in the design of radar transmitters and receivers.
- To learn various radars like MTI, Doppler and tracking radars and their comparison
- Explain principles of navigation, in addition to approach and landing aids as related to navigation
- Describe about the navigation systems using the satellite.

Name of the Course : MIXED SIGNAL DESIGN

(Professional Elective – VI)

Course out comes:

1. To understand the designing of combinational and sequential logic circuits
2. To understand the Analog CMOS modeling

3. To understand the basic building blocks of switched capacitor
4. To understand the designing of A/D and D/A converters
5. To understand PLL circuits

Name of the Course : MULTIMEDIA AND SIGNAL CODING

(Professional Elective-VI)

Course Outcomes

- Upon completing the course, the student will be able to:
- Understand the fundamentals behind multimedia signal processing.
- Understand the fundamentals behind multimedia compression.
- Understand the basic principles behind existing multimedia compression and communication standards.
- Understand future multimedia technologies.
- Apply the acquired knowledge to specific multimedia related problems and projects at work.
- Take advanced courses in this area.