2012-2013

ELECTRONICS&COMMUNICATION

ACADEMIC YEAR 2012-2013

S1 ECE (2012 Batch)

Sl no	Course code	Subject name
1	08.101	Engineering maths
2	08.102	Engineering Physics
3	08.103	Engineering Chemistry
4	08.104	Engineering Graphics
5	08.105	Engineering Mechanics
6	08.106	Basic Civil Engineering
7	08.107	Basic Mechanical Engineering
8	08.108	Basic Electrical & Electronics Engineering
9	08.109	Basic Communication & Information Engineering
10	08.110	Engineering Workshop

S3 ECE (2011 Batch)

Sl no	Course code	Subject name
1	08.301	Engineering Mathematics II(CMPUNERFHBTA)
2	08.302	Solid State Devices (TA)
3	08.303	Network Analysis (TA)
4	08.304	Programming in C++ & Data Structures (TA)
5	08.305	Electronics Circuits I (T)
6	08.306	Digital Electronics (T)
7	08.307	Electronics Devices Lab (TA)
8	08.308	Digital Integrated Circuits Lab (T)

S5 ECE (2010 Batch)

Sl no	Course code	Subject name
1	08.501	Engineering Mathematics IV - Complex Analysis & Linear Algebra(TA)
2	08.502	Digital Signal Processing (TA)
3	08.503	Computer Organisation & Architecture (TA)
4	08.504	Electrical Drives & Control (T)
5	08.505	Applied Electromagnetic Theory (T)
6	08.516	Fuzzy Systems & Applications
7	08.507	Communication Engineering Lab (T)
8	08.508	Digital Signal Processing Lab (T)

S7 ECE (2009 Batch)

Sl no	Course code	Subject name
1	08.701	Industrial Management (TA)
2	08.702	Optical Communication (T)
3	08.703	Microwave Engineering (T)

4	08.704	Information Theory & Coding (T)
5	08.715	Cryptography (TA)
6	08.736	MEMS (TA)
7	08.707	Industrial Electronics Lab (T)
8	08.708	Communication Systems Lab (T)
9	08.709	Seminar (TA)
10	08.710	Project design

EVEN SEMESTER

S4 ECE (2011 Batch)

Sl no	Course code	Subject name
1	08.401	Engineering Mathematics III - Probability & Random Processes (TA)
2	08.402	Humanities (CTARFHD)
3	08.403	Signals & Systems (TA)
4	08.404	Electronics Circuits II (T)
5	08.405	Analog Integrated Circuits (T)
6	08.406	Analog Communication (T)
7	08.407	Electronics Circuits Lab (T)
8	**08.408**	Analog Integrated Circuits Lab (T)

S6 ECE (2010 Batch)

Sl no	Course code	Subject name
1	08.601	Microcontroller Based System Design (TA)
2	08.602	VLSI Design (TA)
3	08.603	Control Systems (T)
4	08.604	Digital Communication (T)
5	08.605	Antenna & Wave Propagation (T)
6	08.666	Electronic Instrumentation(T)
7	08.607	Microcontroller Lab(TA)
8	08.608	Electronic Product Design & Mini Project

S8 ECE (2009 Batch)

Sl no	Course code	Subject name
1	08.801	Nanoelectronics (TA)
2	08.802	Radar & Television Engineering (T)
3	08.803	Computer Communication (T)
4	08.804	Satellite & Mobile Communication (T)
5	08.825	Microwave Devices & Circuits
6	08.816	Biomedical Engineering
7	08.807	Microwave & Optical Communication Lab

8	08.808	(T)
		Project (TA)
	08.809	Viva – Voce (TA)

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

08.101: ENGINEERING MATHEMATICS I COURSE

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	This course provides students an insight into the various applications of differentiation, partial differentiation techniques	At the end of the course, the students will be familiar with various concepts of calculus which are essential for engineering.
2	The methods for solving differential equations and the concept of linear algebra are also introduced as a part of this course.	They'll also become acquainted with the basic ideas of Laplace transforms and linear algebra
3	This course provides students an insight into the various applications of multiple integrals	
4	This course provides students an insight into the various applications of Laplace transforms.	

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

08.102: ENGINEERING PHYSICS COURSE

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	**Dynamics of mechanical and electrical oscillation using Fourier series and integrals; time and frequency representations for driven damped oscillators, resonance; one-dimensional waves in classical mechanics and electromagnetism; normal modes.**	**Solve for the solutions and describe the behavior of a damped and driven harmonic oscillator in both time and frequency domains. Damped and Forced Oscillations oscillating system problems.**
2	**The fundamental principles of photonics that complement the topics in the optics and laser courses and to help students develop problem-solving skills applicable to real-world photonics problems.**	**Define and explain the propagation of light in conducting and non-conducting media.**
3	**This course equip the students to assimilate engineering and technology through the exposure of fundamentals of Physics**	**Define and explain the physics governing laser behaviour and light matter interaction ting and non-conducting media.**
4		**Apply wave optics and diffraction theory to a range of problems**
5		**Explain and calculate the physical effects of acoustic reflections, absorption, scattering, diffusion, diffraction, and propagation losses.**
6		**Use advanced theoretical, numerical, and experimental techniques to model and analyze acoustical elements in musical instruments, the human voice, room acoustics, and audio.**

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

08.103: ENGINEERING CHEMISTRY COURSE

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To impart sound knowledge in the different fields of theoretical chemistry so as to apply it to the problems in engineering field.	The confidence level of students will be improved to tackle problems in engineering field related to chemical aspects.
2	To develop analytical capabilities of students so that they can characterize, transform and use materials in engineering and apply knowledge gained in solving related engineering problems.	The students gain capability in fabricating novel materials with properties that find various engineering applications
3	To acquire knowledge about desalination of brackish water and treatment of municipal water.	The students will be equipped to take up chemistry related topics as part of their project works during higher semesters of the course.
4	To gain the knowledge of conducting polymers, bio-degradable polymers and fibre reinforced plastics.	Develop innovative methods to produce soft water for industrial use and potable water at cheaper cost.
5	To understand mechanism of corrosion and preventive methods.	Substitute metals with conducting polymers and also produce cheaper biodegradable polymers to reduce environmental pollution. Design economically and new methods of synthesis nano materials.
6	To have an idea and knowledge about the Chemistry of Fuels.	Have the knowledge of converting solar energy into most needy electrical.

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

08.104: ENGINEERING GRAPHICS COURSE

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	Enable the students to effectively communicate graphic representation as per standards	Able to prepare the orthographic projections of points and straight lines placed in various quadrants
2	To develop imagination skill in students and represent them effectively in a paper	Demonstrate the ability to draw orthographic projections of various solids.
3	Learn to sketch and take field dimensions.	Ability to draw and interpret the sectioned views of solids
4	Learn to take data and transform it into graphic drawings.	Ability to draw the developments of various solids
5		Will be confident in preparing the isometric and perspective views of various solids.
6		Ability to draw the projections of intersection of solids and perform free hand sketching.

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

08.105: ENGINEERING MECHANICS COURSE

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To apply the principles of mechanics to practical engineering problems.	Understand the fundamental concepts of mechanics.
2	To identify appropriate structural system for studying a given problem and isolate it from its environment.	Students would be able to apply and demonstrate the concepts of resultant and equilibrium of force system.
	To develop simple mathematical model for engineering problems and carry out static analysis.	Students would be able to determine the properties of planes and solids.
4	To develop simple mathematical model for engineering problems and carry out static analysis.	Understand the concepts of moment of inertia.
5		Students would be able to apply fundamental concepts of dynamics to practical problems.
6		Understand the basic elements of vibration.

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

08.106: BASIC CIVIL ENGINEERING COURSE

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	This course imparts to the students, the fundamentals of civil engineering and creates awareness on various	At the end of the course, the students will be familiar with the different stages of building construction, various materials used for

	issues related to our living environment and their remedies	construction and environmental issues
2	To inculcate the essentials of civil engineering field to the students of all branches	The students will be able to illustrate the fundamental aspects of civil engineering
3	To provide the students an illustration of the significance of the civil engineering profession satisfying societal needs.	The students should able to plan a building
4	To inculcate the essentials of civil engineering field to the students of all branches	Students will be able to explain about surveying for making horizontal and vertical measurements.
5	.	They will able to illustrate the uses of various building materials and construction of different components of a building.
6		The students will be able to illustrate the fundamental aspects of civil engineering

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

08.107: BASIC MECHANICAL ENGINEERING COURSE

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To expose the students to the thrust areas in Mechanical Engineering and their relevance by covering the fundamental concepts	The student will be able to understand the inter dependence of the thrust areas in Mechanical Engineering and their significance leading to the development of products, processes and systems.

2	This subject covers wide areas of Mechanical Engineering and is intended for exposing the students to the various theoretical and practical aspects of thermal engineering, fluid mechanics and machines, manufacturing and power transmission.	The student can able to understand the inter dependence of the thrust areas in Mechanical Engineering and their significance leading to the development of products and systems.
3		The students can able to understand working of automobiles.
4		Able to understand about various mechanical processes.
5		
6		

COURSE OBJECTIVES AND COURSE OUTCOME FOR

08.108 BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

Sl. No.	Course Objectives	Course Outcomes
		On completion of course the students will be able to:
1	To understand the basic concepts of magnetic, AC & DC circuits	Students will be able to apply the knowledge of mathematics, science, engineering fundamentals and Electrical and Electronics Engineering for solving complex engineering problems.
2	To impart knowledge on rms,average values of ac waveforms.	Troubleshoot problems of various electric circuits.

3	To impart knowledge on constructional details, principle of operation of ELCB, MCB etc.	Enable to identify the working of various equipments of electronics.
4	To gain knowledge about the fundamentals of wiring and earthing	Perform the analysis and types of earthing.
5		To impart knowledge related to renewable energy sources and energy conservation issues, point towards sustainable development, though the Electrical engineering discipline.

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

08.109: BASIC COMMUNICATION AND INFORMATION ENGINEERING COURSE

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To get basic idea about types, specification and common values of passive components.	Student can identify the active and passive electronic components.
2	To familiarise the working and characteristics of diodes transistors, MOSFET and some measuring instruments.	Student can setup simple circuits using diodes, transistors and other electronic components.
	To understand working of diodes in circuits and in rectifiers.	Student will get fundamental idea about basic communication and entertainment electronics.

4	To understand the concept of mobile networks.	Student will get fundamental idea about mobile operation.
5	To get basic idea about types, specification and common values of passive components.	Student will get fundamental idea about different electronic circuits.
6		Student can identify the active and passive electronic components.

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

08.110: ENGINEERING WORKSHOP COURSE

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	The Engineering Workshop Practice for engineers is a training lab course spread over entire semester.	Student will be able to make various joints in the given object with the available work material.
2	The modules include training on different trades like Fitting, Carpentry, etc… which makes the students to learn how various joints are made using wood and other metal pieces.	Student will be able to know how much time a joint will take for the assessment of time
3	Familiarization of basic manufacturing hand tools and equipment like files, hacksaw, spanner chisel hammers, etc.	Knowledge achieved to explain the various manufacturing process in the basic mechanical engineering workshop sections- smithy, carpentry, assembling, welding

		etc.
4	Familiarization of various measuring devises like vernier height gauge, vernier caliper, micrometer, steel rule etc.	Identify the various hand tools used in the basic mechanical engineering workshop sections-smithy, carpentry, assembling, welding etc.
5		Able to choose different measuring devises according to the work.
6		Skill achieved to construct models by using basic mechanical workshop sections like welding, moulding, smithy, carpentry etc.

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

08.301 ENGINEERING MATHEMATICS II

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	**This course provides students a basic understanding of vector calculus, Fourier series and Fourier transforms which are very useful in many engineering fields.**	**At the end of the course, the students will have the basic concepts of vector analysis.**
2	**Partial differential equations and its applications are also introduced as a part of this course.**	**At the end of the course, the students will have the basic concepts of Fourier series, Fourier transforms which they can use later to solve problems related to engineering fields.**
3		**At the end of the course, the students will have the basic concepts of Partial differential equations**
4		

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

08.302 SOLID STATE DEVICES COURSE

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:

1	This course provides students an insight into the basic semiconductor concepts and a sound understanding of current semiconductor devices and technology so that their applications to electronics and optoelectronics circuits and systems can be appreciated.	The course will provide the students with knowledge on electronic structure, charge carrier statistics, and transport properties in semiconductors
2	Introduce students to the physics of semiconductors and the inner working of semiconductor devices Provide students the insight useful for understanding new semiconductor devices and technologies.	Students will be able to understand the charge transport in p-n junctions and metal-semiconductor contacts
3		Students understand the principles of field effect (MOSFET) and bipolar junction (BJT) transistors
4		Students understands the principles of light-emitting diodes (LED) and laser diodes (LD), photoconductors/photodiodes, and photovoltaic solar cells.

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

NETWORK THEORY (08.303)

Sl.No.	Course Outcomes	Subject Learning Outcomes Or Course Outcomes
		On Completion Of Course Student Will Be Able To:
1	To understand the basics of network elements, mesh and node analysis, Laplace transform in circuits,network theorems	Learn the basic elements of networks , how to solve an electrical network,to simplify networks using theorems.
2	To know the network functions for the one port and two port, familiar with the parameters of two-port network and attenuators.	Learn to apply parameters in electronics circuits for analysis & application of attenuators.
3	To know resonance in series and parallel circuits,to familiarize coupled circuits and introduction to filters.	Learn the resonance and design a circuit with resonanace, coupled circuit and application in electrical field.
4		Learn the Thevenin's theorem, Norton's theorem, Super position theorem, Reciprocity

		theorem, Millman theorem, Maximum Power Transfer theorem. Signal representation .
5		Discuss the transient analysis of RL, RC, and RLC networks, use of initial and final value theorems
6		Discuss frequency response plots Bode plots .
7		Explain the Filter approximations Butterworth, Chebyshev and inverse Chebyshev functions
8		Give the importance of frequency transformations - transformations to high pass, band pass and band elimination.

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

08.304 Programming in C++ & Data Structures COURSE

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To provide strong foundation in programming and in C++	After successful completion of the course, the students will have the confidence and knowledge to write useful, complex and multifunction programs.
2		Students will learn the concept of fundamentals of Computer, Arithmetic & logic gates, Assembly language, high level language, compiler and assembler and operating systems , Algorithm & flow chart.
		Students will learn the concept of C character set identifiers and keywords, data type & sizes, variable names, declaration, statements
4		Students will learn the concept of Flow of Control and program Structures

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

08.305: ELECTRONIC CIRCUITS I

Sl No.	Course Objectives	Course Outcomes
1	To explain the basic wave shaping circuits using R, L and C	Can evaluate R-L-C dc circuits and complete response of R-L and R-C transient circuits.
2	To understand real mathematical model of a diode and to solve diode circuits.	Design various diode circuits like clippers, clampers and rectifiers.
3	To introduce the voltage regulator circuits.	Design of transistor voltage regulators.
4	To explain the DC analysis of BJT circuits	To be able to analyze DC biasing circuits.
5	To develop the basic understanding of amplifier designing and its analysis using hybrid model	Explain classification of amplifiers and analyze the CE, CB, CC amplifiers using small signal hybrid model and derive the voltage gain, current gain, input impedance and output impedance.
6	To study and analyze the performance of FETs on the basis of their operation and working.	Design and analyze different types of the MOS amplifiers and their frequency response by using the small signal model.
7	To make students aware of amplifier operation at low and high frequency and its frequency responses.	Design and analyze single stage amplifiers and their frequency response, its gain band width product and effect of coupling and bypass capacitors in amplifiers.
8	To make students learn about different types of Power amplifiers.	Design and analyze different types of power amplifiers and compare them in terms of efficiency.
		Design and analyze basic circuits using diodes.
		Design and analyze different BJT and FET amplifier circuits.

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

08.306LOGIC CIRCUITS DESIGN

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To understand different positional number systems and conversions.	Compare various positional number systems and binary codes
2	To introduce basic postulates of Boolean algebra and show the correlation between Boolean expression	Apply Boolean algebra in logic circuit design
3	To analysis and design various combinational circuits and sequential circuits	Design combinational and sequential circuits
4	To study the fundamentals of HDL	Design and implement digital systems using basic programmable blocks
5	To design and implement synchronous sequential circuits	Formulate various digital systems using HDL. Capability to deal with different logic families.
6		Design Mealy Moore machine systems.

COURSE OBJECTIVE AND COURSE OUTCOME FOR

08.307:ELECTRONIC DEVICES LAB

Sl NO:	COURSE OBJECTIVE	COURSE OUTCOMES
1	To study basic electronic components	Measure voltage,frequency and phase of any waveform using CRO.
2	To observe characteristics of electronic devices	Generate sine, square and triangular waveforms with required frequency and amplitude using function generator
3	Analyze the characteristics of different electronic devices such as diodes, transistors etc., and simple circuits like rectifiers,amplifiers etc.,	Analyze the characteristics of different electronic devices such as diodes, transistors etc., and simple circuits like rectifiers,amplifiers etc.,
4		Build a common emitter/base/collector amplifier and measure its voltage gain.
5		Study the characteristics of MOSFET ,JFET,SCR etc…

COURSE OBJECTIVE AND COURSE OUTCOME FOR

08.308: DIGITAL INTEGRATED CIRCUITS LAB

Sl NO:	COURSE OBJECTIVE	COURSE OUTCOMES
1	To acquire the basic knowledge of digital logic levels and application of knowledge to understand digital electronics circuits.	Have a thorough understanding of the fundamental concepts and techniques used in digital electronics. .
2	To prepare students to perform the analysis.	The ability to understand, analyze and design various combinational and sequential circuits.
3	The design of various digital electronic circuits	The ability to identify and prevent various hazards and timing problems in a digital design.
4		To develop skill to build, and troubleshoot digital circuits.

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

(08.501): ENGINEERING MATHEMATICS – IV

COMPLEX ANALYSIS AND LINEAR ALGEBRA COURSE

Sl.No.	Course Outcomes	Subject Learning Outcomes Or Course Outcomes On Completion Of Course Student Will Be Able To:
1	Identify and construct complex-differentiable functions	Determine whether a given function is differentiable, and if so find its derivative.
2	Use the general Cauchy integral theorem and formula.	Find parametrizations of curves, and compute line integrals directly
3	Use conformal mapping	Construct conformal mappings between many kinds of domain.
4		Determine whether a sequence of analytic functions converges uniformly on compact sets. Express some functions as infinite series or products

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

DIGITAL SIGNAL PROCESSING (08.502)

Sl.No.	Course Outcomes	Subject Learning Outcomes Or Course Outcomes
		On Completion Of Course Student Will Be Able To:
1	To understand the basics of digital signal processing, and signal transforms.	Learn the basic elements of digital signal processing frequency domain sampling, properties of DFT,FFT.
2	To study the design of FIR and IIR filters..	Discuss various methods to design IIR and FIR filters like window method, frequency sampling method , impulse invariance, bilinear transformation.
3	To study the finite word length effects in FIR and IIR filters.	Learn the quantization noise, round off errors, input and output quantization error, limit cycles in IIR filters, round off errors in FFT algorithm.
4		Discuss multi-rate digital signal processing- decimation and interpolation
5		Learn the applications of multi-rate signal processing- sub band coding, trans-multiplexers. computer architecture for signal processing -.
6		Learn the programming tools for DSP processors.

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

08.503 COMPUTER ORGNISATION AND ARCHITECTURE

Sl. No.	Course objective	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To impart knowledge in computer organization and architecture	To understand the functional units of computer. To understand the basics of Von-Neumann, Hardvard, CISC, RISC architecture and steps for executing a program.
2	To impart knowledge in machine language programming	To learn the techniques of measurement of computer performance. To understand assembly instructions and machine level programming.
	To develop understanding in pipelining, IO accessing techniques and memory structures.	To learn computer arithmetic and to discuss addressing modes, instruction set, instruction format (General and MIPS.
4	To understand the characteristics and techniques involved with different types of memory.	To design the datapath and control unit of MIPS instruction set.
5		To learn the concepts of pipelining. To learn the basic architecture of 8086 microprocessor.
6		To learn the characteristics and techniques involved in different types of memory, interfacing IO devices with processor.

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

08.504 ELECTRICAL DRIVES & CONTROL COURSE

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To understand the characteristics and operational features of important power electronic devices	Gain knowledge on DC Machines – Generator and Motor
2	Understanding the basic working principles of DC and AC machines	Gain knowledge on Power semiconductor Devices
		Gain the knowledge on Phase controlled Rectifiers
4		Gain the knowledge on both DC and AC Electric drives

COURSE OBJECTIVES AND COURSE OUTCOMES FOR
08.505 APPLIED ELECTROMAGNETIC THEORY

SI NO	Course Objective	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to :
1	To impart knowledge on the basic concepts of electric and magnetic fields.	understand the basic concepts of electromagnetic theory
2	To educate scientifically about Maxwell equations and Poynting theorem.	Understand the EM wave in different media. Polarization of wave .
3	To become familiar with propagation of signal through transmission lines and waveguides.	Understand different characteristics of EM wave when it is passed through the transmission lines.
4	To become familiar with propagation of signal through transmission lines and waveguides.	Calculate different parameters of EM wave using smith chart.

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

08.516 Fuzzy Systems & Applications

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	Provide an understanding of the basic mathematical elements of the theory of fuzzy sets.	Be able to distinguish between the crisp set and fuzzy set concepts through the learned differences between the crisp set characteristic function and the fuzzy set membership function.
2	Provide an emphasis on the differences and similarities between fuzzy sets and classical sets theories.	Be able to define fuzzy sets using linguistic words and represent these sets by membership functions.
	Provide a brief introduction to fuzzy arithmetic concepts.	Become familiar with fuzzy relations and the properties of these relations.
4		Become knowledgeable of conditional fuzzy propositions and fuzzy inference systems.
5		Become aware of the use of fuzzy inference systems in the design of intelligent or humanistic systems.
6		Have acquired the ability of thinking differently and have become capable, when necessary, to apply a new thinking

		methodology to real life problems including engineering ones.

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

08.708 COMMUNICATION ENGINEERING LAB

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To provide experience on design, testing, and analysis of few electronic circuits used for communication engineering.	Simulate & validate the various functional modules of a communication system.
2	To understand basic transmission concepts and to develop strong concepts in fundamentals.	Demonstrate their knowledge in base band signaling schemes through implementation of FSK, PSK and DPSK.
3		Apply various channel coding schemes & demonstrate their capabilities towards the improvement of the noise performance of communication system.

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

DIGITAL SIGNAL PROCESSING LAB

Sl.No.	Course Outcomes	Subject Learning Outcomes Or Course Outcomes
		On Completion Of Course Student Will Be Able To:
1	Enable the students to explore the concepts of design, simulation and implementation of basic signals using MATLAB	Study the implementation of basic signals in MATLAB
2	Enable the students to explore the concepts of design, simulation and implementation of various operations in digital signal procerssing using MATLAB	Implement the convolution operations in MATLAb
3	Familiarize with the DSP kit	Understand the implementation of FIR and IIR filters in MATLAB
4	Implement the basic operations of DSP using kit	Familiarize the properties and architecture of DSP processor kit TMS320C6713
5		Implement the basic DSP operation in DSP kit

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

08.701 INDUSTRIAL MANAGEMENT COURSE

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	Assume managerial and leadership roles in their chosen professional careers while working in multidisciplinary teams.	perform the Management Functions.
2	Engage in continuous learning by seeking out opportunities for higher education or ongoing training related to their employment.	compare selected Theories of Management.
		perform the functions in the Marketing Mix
4		use basic Business Application Software.
5		assess ethical issues in Business situations.

COURSE OBJECTIVES AND COURSE OUTCOMES FOR OPTICAL COMMUNICATION COURSE (08.702)

Sl.No.	Course Outcomes	Subject Learning Outcomes Or Course Outcomes
		On Completion Of Course Student Will Be Able To:
1	To understand the basics of fibers, losses in fibers, types and principle of optical sourses and detectors	Learn the basic elements of optical fiber transmission link, fiber modes configurations and structures
2	To know the receiver and amplifier structures,	Discuss the channel

	familiar with the design of optical communication link	impairments like losses and dispersion
3	To recognise the multigigabit systems and soliton based sytsems.	Learn the various optical source materials, LED structures, quantum efficiency, Laser diodes
4		Learn the fiber optical detectors such as PIN APD diodes, noise performance in photo detector, receiver operation and configuration
5		Discuss the basic receiver structures and amplifier configurations
6		Apply the link and power budget analysis in the design of digital optical link.
7		Explain the components and principle of operation of WDM systems
8		Give the importance of soliton based systems and light wave networks in optical communication

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

08.703 MICROWAVE ENGINEERING

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	**Differentiate between conventional tubes and microwave tubes.**	**Develop the basic skills necessary for designing a wide variety of practical microwave components.**
2	**Explain the principle of microwave amplifiers and oscillators and analyze their parameters.**	**Evaluate the fundamental parameters of microwave solid state devices.**
3	**Describe the principle and**	**Understand important and fundamental microwave engineering parameters and**

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
	characteristics of microwave solid state devices.	terminology
4	Discuss advantages of microwave communication systems\.	Identify the types of repeaters and different FM microwave radio stations.

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

08.704 INFORMATION THEORY AND CODING COURSE

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To give a basic idea about the information theory.	This course enables the student to get idea about the information content of the message according to various application and its calculation
2	To get a knowledge about various coding schemes.	This course enables the students to design a lossless transmission system on the basis of channel capacity and source coding theorem
		The course makes the students aware about the noise present in communication channels and how it is affecting to corrupt the code and how it can be corrected
4		The students are introduced about the advanced coding techniques
5		The students can understand about coding techniques for data compression.
6		

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

08.715 Cryptography

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To understand the mathematical concepts of various Encryption	account for the cryptographic theories, principles and techniques that are used to establish security properties
2	To discuss authentication and digital signature algorithms.	mathematical concepts of various Encryption.
3	To study the design of different general purpose and application specific security Protocols and standards.	authentication and digital signature algorithms.
4		design of different general purpose and application specific security Protocols and standards.

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

08.736 MEMS

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	Introduction to MEMS and micro fabrication	Be familiar with the important concepts applicable to MEMS, their fabrication.
2	To study the essential material properties	Be fluent with the design, analysis and testing of MEMS.
3	To study various sensing and transduction technique	Apply the MEMS for different applications.
4	To know various fabrication and machining process of MEMS	Analyze the engineering science and physics of MEMS devices at the micro-scale including: electrostatics, thermodynamics, piezoresistive, piezoelectric, magnetism, microfluidics, and

		optics.
5	Applications of microsensors and microactuators	Identify situations where MEMS sensors and actuators would be ideal for application to various products.
6	Getting access to fabrication and testing in academia and industry	

COURSE OBJECTIVES AND COURSE OUTCOME FOR
08.707 INDUSTRIAL ELECTRONICS LAB

Sl.No.	Course Objectives	Course Outcomes
		On completion of the course the student will be able to
1.	Design and test inductor-based circuits	Design inductors, transformer primary and secondary windings and test them
2	Design various gate drive circuits	Design and implement the power BJT and MOFET based gate driver circuits
3	Implement different relay control circuits	Design and implement temperature controlled and light controlled ON/OFF relay circuits
4.	Design firing circuits and PWM generators	Design and implement Sine Triangle PWM generator and linear ramp firing circuits
5.	Implement different types of converters and inverters	Design and implement step-up and step-down converters and push-pull inverters
6.	Implement different applications of SCR	Design and implement electronic dimmer circuit and battery charging circuit using SCR

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

08.708 COMMUNICATION SYSTEMS LAB

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To provide experience on design, testing, and analysis of few electronic circuits used for communication engineering.	Simulate & validate the various functional modules of a communication system.
2	To understand basic transmission concepts and to develop strong concepts in fundamentals.	Demonstrate their knowledge in base band signaling schemes through implementation of FSK, PSK and DPSK.
3		Apply various channel coding schemes & demonstrate their capabilities towards the improvement of the noise performance of communication system.

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

08.709 SEMINAR

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	**To identify various real world problems.**	**Collect, organize and analyse information about emerging technologies/ market demands/ current trends.**
2	**To develop and enhance leadership skills.**	**Demonstrate interpersonal skills.**
3	**To improve communication skills, presentation skills and other soft**	**Awareness in keeping in with view new innovations and inventions.**

	skills.	
4	**To improve the stage courage and confidence.**	
5	**To set the stage for future recruitment by potential employers.**	

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

08.710 PROJECT DESIGN

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	**To introduce the students to various emerging fields in electronics and communication.**	**Exhibit the strength and grip on the fundamentals of the subjects studied in the previous semesters.**
2	**To provide an opportunity to exercise the creative and innovative qualities in group project environment,**	**An ability to utilise technical resources**
3	**To excite the imagination of aspiring engineers, innovators and technopreneurs.**	**An ability to write technical documents and give oral presentation related to work completed.**
4	**To have hands-on experience in the students related field so that they can relate and reinforce what has taught in the classroom.**	**Perform requirement analysis and identify design methodologies.**

EVEN SEMESTER

(s4)   COURSE OBJECTIVES AND COURSE OUTCOME FOR

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ENGINEERING MATHEMATICS - III
08.401 PROBABILITY & RANDOM PROCESSES

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Sl.No.	Course Objectives	Course Outcomes
		On completion of the course the student will be able to
1.	To expose the students to the basics of probability theory and random processes essential for their subsequent study of analog and digital communication	Understand the axiomatic formulation of modern Probability Theory and think of random variables as an intrinsic need for the analysis of random phenomena.
2	To provide a basic understanding of random variables and probability distributions.	Characterize probability models and function of random variables based on single & multiples random variables.
3.		Evaluate and apply moments & characteristic functions and understand the concept of inequalities and probabilistic limits.
4.		

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**COURSE OBJECTIVES AND COURSE OUTCOME FOR
08.402 HUMANITIES**

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Sl.No.	Course Objectives	Course Outcomes
		On completion of the course the student will be able to
1.	**To explore the way in which economic forces operate in the Indian Economy.**	**The students will be acquainted with its basic concepts, terminology, principles and assumptions of Economics.**
2	**The subject will cover analysis of sectors, dimensions of growth, investment, inflation and the role of government will also be examined.**	**It will help students for optimum or best use of resources of the country**
3.	**The principle aim of this subject is to provide students with some basic**	**It helps students to use the understanding of Economics of daily life**

	techniques of economic analysis to understand the economic processes with particular reference to India.	
4.	To give basic concepts of book keeping and accounting	The students will get acquainted with the basics of book keeping and accounting

COURSE OBJECTIVES AND COURSE OUTCOME FOR
08.403 SIGNALS AND SYSTEMS

Sl.No.	Course Objectives	Course Outcomes
		On completion of the course the student will be able to
1.	Understanding the fundamental characteristics of Signals and Systems	Classify systems based on their properties and determine the response of an LTI system using convolution
2	Understanding signals and systems in terms of both the time and transform domains, taking advantage of the complementary insights and tools that these different perspectives provide	Analyze the spectral characteristics of continuous time and discrete time periodic and aperiodic signals using Fourier analysis
3.	Understand the basic concepts of random process	Apply the Laplace transform and Z-transform for analysis of continuous time and discrete time signals and systems
4.	Development of the mathematical skills to solve problems involving convolution, sampling and modulation	Understand the process of sampling and the effect of under sampling
		Understand the basic concepts and terms associated with random process

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

08.404: ELECTRONIC CIRCUITS II

Sl No.	Course Objectives	Course Outcomes

1	Learn Differential amplifiers using BJT and MOSFET	Design and analyze differential amplifiers and their frequency response
2	To learn the basics of tuned amplifiers such as single tuned, double tuned, stagger tuned & power amplifiers.	Design and analyze the effects of cascading on single, double tuned amplifiers on bandwidth and explain their stability.
3	To understand the concept of multistage amplifiers	To be able to design &analysis of multistage amplifier and its frequency response
4	To study and analyze the performance of negative as well as positive feedback circuits.	Analyze the use of feedback in circuits.
5	To study different oscillator circuits	Will be able to analyze and design oscillators
6	To make students aware timing circuits and sweep circuits	Design and analyze the multivibrator circuits and sweep circuits
7		
8		

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

08.405 ANALOG INTEGRATED CIRCUITS COURSE

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To understand the basic principles of analog integrated circuits. To equips the students with a sound understanding of fundamental concepts of operational amplifiers. To understand some applications of analog integrated circuits	Infer the DC and AC characteristics of operational amplifiers and its effect on output and their compensation techniques. Elucidate and design and analyze the linear and non-linear applications of an opamp and special application Ics. Able to design and analyze oscillators and multivibrators.
2	To know the diversity of operations that the op amp can perform in a wide	Able to design, classify and comprehend the working principle of data converters.

		Able to design and analyze filters, switched capacitors.
3	To study the different types of ICs and its applications.	Able to work on analog multipliers, design Voltage regulators, PLL and its application in communication.

COURSE OBJECTIVE AND COURSE OUTCOME FOR

08.406 ANALOG COMMUNICATION

Sl no	Course Objective	Course Outcome
		On completion of course the student will be able to
1	To explain the various communication methods used in analog signal transmission using amplitude modulation method	Discuss various types of amplitude modulation methods in analog system , it's various parameters to determine it's performance and some details about pulse modulation
2	To explain the various communication methods used in analog signal transmission using angle modulation method	Discuss various types of frequency and phase modulation methods in analog system , it's various parameters to determine it's performance
3	To create awareness on the noises that effect a communication system and To impart basic knowledge on public telephone systems.	Explain the various types of noise in communication system and also study about the basic communication using telephone system and its basic loops and structures

COURSE OBJECTIVE AND COURSE OUTCOME FOR

08.407: ELECTRONIC CIRCUITS LAB

Sl NO:	COURSE OBJECTIVE	COURSE OUTCOMES
1	Design and construct simple electronic circuits to accomplish a specific function	To study about differential amplifiers, power amplifiers, feedback amplifiers, cascade amplifiers etc…
2	Understand their capabilities and limitations and make decisions regarding their best utilization in a specific situation.	To study and compare different oscillators and multivibrators.
3	Students should have to acquire reasonable proficiency in the analysis and design of basic electronic circuits.	Study the frequency response of tuned amplifiers
4	Introduction to SPICE and simulation of experiments	Students able to design the circuit and generate circuit layout using SPICE

COURSE OBJECTIVE AND COURSE OUTCOME FOR

08.408:ANALOG INTEGRATED CIRCUITS LAB

Sl NO:	COURSE OBJECTIVE	COURSE OUTCOMES
1	Develop the ability to analyze and design analog electronic circuits using	Design, construct, and take measurement of various analog circuits to compare

	discrete components	experimental results in the laboratory with theoretical analysis
2	Observe the amplitude and frequency responses of common amplification circuits	Familiarization of Op-amp and its frequency responses,
3	Developed the capability to analyze and design simple circuits containing non-linear elements such as transistors using the concepts of load lines, operating points and incremental analysis	Astable, Monostable and Schmitt trigger circuit using Op -Amps. Triangular and square wave generators using Op- Amplifier
4		Difference Amplifier and Instrumentation amplifier
5		Wien bridge oscillator using op-amplifier with amplitude stabilization and amplitude control, RC Phase shift Oscillator. Triangular and square wave generators using Op- Amplifier
		555. ICs and voltage regulator ICs

(s6) COURSE OBJECTIVES AND COURSE OUTCOMES FOR

08.601 MICROCONTROLLER BASED SYSTEM DESIGN COURSE

Sl. No.	Course objective	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	**To understand the basic operating concepts of microcontrollers.**	**To understand the general features of microcontroller, microprocessor and**

		embeddedsystems.
2	**To communicate with various devices using the microcontroller.**	**To learnthe basics architecture, instruction set, assembly language programming of 8051 microcontroller.**
3	**To design and develop various microcontroller based systems.**	**To learn the basic concepts of using timers, interrupts, serial ports with 8051.**
4	**To program the controller to make various peripherals work for specified applications.**	**To Understand basics of peripheral interfacing(ADC, DAC, Stepper Motor, LCD, Keyboard) and their programming with 8051 microcontroller.**
5		**To learn the basic architecture, memory, ports , timers of PIC microcontroller.**
6		**To learn the architecture, instruction set, interrupts of ARM processor. To understand various development and debugging tools.**

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

08.602 VLSI DESIGN

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	Explain device physics of MOS	Be familiar with the important concepts

	transistor, challenges in device scaling to submicron regime and short channel effects.	applicable to CMOS chip, their fabrication.
2	Identify state of the art in unit processes to fabricate CMOS chip and develop an idea on the environmental impacts of the processes.	Draw stick diagram and layout of inverters and gates.
3	Explain the characteristics of CMOS inverters and design static and dynamic logic using CMOS.	Be fluent with the design, analysis and testing of CMOS IC.
4	Design data path elements like adders and multiplers in different algorithms,memory elements like RAM,ROM,PLAs.	Distinguish between different test generation methods and explain reliability aspects of VLSI circuits.

COURSE OBJECTIVE AND COURSE OUTCOME FOR

8.603CONTROL SYSTEM

Sl no	Course Objective	Course Outcome
		On completion of course the student will be able to
1	To explain the modeling of the Control System using various methodologies	Discuss various types of system ,to find the response ,find the error, to design the system and know its response
2	To find the various time domain and frequency domain representation and find its response	Explained various types of time domain and frequency domain representation methods and to find whether it works on controlled basis
3	To design a lead or lag network And represent a system in state space	Interpret various state representation and test that help to design a control system in state space and in a controlled manner

COURSE OBJECTIVES AND COURSE OUTCOMES FOR
08.604 DIGITAL COMMUNICATION

SI NO	Course Objective	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to :
1	To understand the concept of Digital representation of analog source	Understand the concept of sampling and quantization
2	To introduce to various aspects of distortion less data transmission	Understand the concept of matched filtering and correlative coding
3	To have idea on geometrical representation of signals	Understand the idea of geometrical representation of signals
4	To compare Error performance of various band pass modulation techniques.	Understand the Error performance of various band pass modulation techniques
5		Understand the concept of Spread Spectrum communication

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

08.605 ANTENNA AND WAVE PROPAGATION

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To study various antennas, arrays and radiation patterns of antennas.	Understand important and fundamental antenna engineering parameters and terminology,
2	To learn the basic working of antennas	Learn the basic concepts of electromagnetic

		wave radiation and reception
3	To understand various techniques involved in various antenna parameter measurements.	Develop the basic skills necessary for designing a wide variety of practical antennas and antenna arrays.
4	To understand the radio wave propagation in the atmosphere	Evaluate the fundamental parameters of antennas and arrays operating at various frequencies from LF to Microwave applications.
5	Introduce students to the various types and models of Radio wave propagation affecting Communication Systems. Introduction to Diversity principles..	Evaluate basic propagation models in mobile radio systems.
6	To improve the design and problem solving skills	Identify the atmospheric and terrestrial effects on radio wave propagation

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

08.666 Electronic instrumentation

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To understand various measurements techniques available	Students will able to explain the working of various electronic instruments
2	To understand basic working of instruments used for instruments	Students will able to understand dynamic charateristis of instruments.
3	To study the different bridge circuits.	Students can get the concept of different

		bridge circuits
4	To understand errors in measurements.	Students will able to study instrument design techniques .
5	To get the applications of various instruments.	Students will able to understand the applications of different instruments

COURSE OBJECTIVES AND COURSE OUTCOME FOR
08.607MICROCONTROLLER LAB

SI NO	Course Objective	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to :
1	To understand fundamental operating concepts of microprocessors and microcontrollers	Students will get programming experiments using 8051 trainer kit.
2	To apply this knowledge to more advanced structures	Students will get fundamental idea about interfacing experiments
3	To understand low level programming	Students will get realization of boolean experiments using port.
4	To understand fundamental operating concepts of PIC microcontroller	Students will get fundamental idea of microcontrollers in engineering applications

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

08.608 ELECTRONIC PRODUCT DESIGN AND MINIPROJECT LAB

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	*Explain the stages of product development process.*	Identify and decide the stages of product development process.
2	*Predict the reliability of electronic products.*	Design and construct reliable electronic products considering safety aspects.
3	*Design electronic products considering safety aspects and hazardous environment.*	Assemble electronic circuits using modern hardware after simulation the circuit.
4	*Assemble electronic circuits using modern hardware after simulation the circuit.*	
5	*Construct products considering environmental safety and sustainable development.*	

COURSE OBJECTIVE AND COURSE OUTCOME FOR

08.801:NANO ELECTRONICS

Sl NO:	COURSE OBJECTIVE	COURSE OUTCOMES
1	To study the basics of nano electronics and nano technology	Able to know the basics of nano electronics,impacts ,limitations and methods od fabrications of nano materials,characteristic tools
2	Identify the significance of nano level fabrication of particles and layers and their characterization	Discuss trends in Microelectronics and Optoelectronics and basic properties of two dimensional semiconductor, Transport of charge in Nanostructures under Electric field and magnetic fields

3	Analyze nanoscale devices like SET,QW laser,CNT transiters,RTD etc	Explains Nanoelectonic devices and systems

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

08.802 RADAR AND TELEVISION ENGINEERING

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	**Identify the types of radars and different navigation systems.**	**Learn the basic concepts of radar modulator and radar receivers.**
2	**Explain the principle of colour TV systems and analyze their parameters.**	**Understand important and fundamental radar engineering parameters and terminology**
3	**Describe the principle and characteristics of digital TV and analyze their parameters.**	**Develop the basic skills necessary for designing a wide variety of practical radar components.**

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

08.803 COMPUTER COMMUNICATION

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	• To educate concepts, vocabulary and techniques currently used in the area of computer networks.	Identify the OSI and TCP/IP layers and their tasks. Distinguish between the OSI reference and the TCP/IP suite of protocols. Interpret and explain physical, logical and port addresses.

2	• To master the terminology and concepts of the OSI model and the TCP/IP model.	Delve into the application of analog medium like TV and Cable for data networks and computer communication and networking.
3	• To be familiar with wireless networking concepts	Discuss the data link layer of internet model and classify the various protocols in data link layer Inquire about issues related to framing, flow and error control
4		Discuss the problems and solutions associated with delivery and forwarding of packets.

COURSE OBJECTIVES AND COURSE OUTCOMES FOR SATELLITE AND MOBILE COMMUNICATION(08.804)

Sl.No.	Course Outcomes	Subject Learning Outcomes Or Course Outcomes On Completion Of Course Student Will Be Able To:
1	To understand different satellite orbits ,launching methods and satellite link analysis	Able to calculate the orbital determination and launching methods
2	Introduction to mobile communication and mobile propagation, discuss the possible multiple access techniques	Design antennas to provide Uplink and Down link Frequency.
3	To discuss the CDMA techniques in cellular communication	Explain the cellular concepts and cellular system capacity improvement methods
4		Modelling the link power budget in mobile communication
5		Learn various multiple access techniques
6		Understand the CDMA technique in cellular environment
7		Discuss the importance of space diversity techniques and MIMO systems in mobile communication

COURSE OBJECTIVES AND COURSE OUTCOME FOR
08.625 MICROWAVE DEVICES AND CIRCUITS

Sl.No.	Course Objectives	Course Outcomes
		On completion of the course the student will be able to
1.	Understanding the fundamental characteristics of Microwave network analysis	Apply tools like Scattering matrix and Signal flow graph in analyzing various microwave networks
2	To study different impedance matching techniques using lumped elements	Design single-stub, double-stub and quarter wave impedance matching networks using lumped elements
3	Understand the physics of various devices used at microwave frequencies	Explain the structure and working of microwave devices such as Gunn diode, IMPATT,TRAPPAT and MESFET
4.	Understand the of basic microwave amplifiers, oscillators and filter design	Design a single stage microwave amplifier, one-port negative resistance oscillator, low pass filters and band pass filters
5.	Understand the working of microwave passive devices	Explain the working of circulators and isolators and derive their S-matrix
6	Understand various components used in microwave integrated circuits	Design and analyze microwave planar transmission lines such as micro strip line, coupled strip line and micro strip coupled lines
		Design various distributed and lumped elements in microwave circuits

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

08.816 BIOMEDICAL ENGINEERING

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To know the Origin of Bioelectric potential and their measurements using appropriate electrodes and Transducers	Design instruments useful to the medical community
2	To understand how to measure various biochemical and nonelectrical parameters of human system	Evaluate alternate assumptions, approaches, procedures, tradeoffs, and results related to engineering and biological problems.

3		Design a variety of electronic and computer based devices
4		Design software for biomedical instrumentation, medical imaging, physiological measurement.

COURSE OBJECTIVES AND COURSE OUTCOMES FOR
08.807 Microwave & Optical communication lab.

SI NO	Course Objective	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to :
1	To provide experience on design, testing, and analysis of few electronic devices and circuits used for microwave and optical communication engineering.	Understand the characterectics of GUNN diode,Reflexklystron,E-plane ,H plane,Directional coupler etc
2		Understand the concept measurement of VSWR,Antenna pattern, Impedance,Dielectric Constant etc
3		Measure the relation between wavelength,freequency .
4		Understand the charecterestics of laser diode ,LED.
5		Stydy different losses of optical fibre communication.

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

08.808 PROJECT

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	**To introduce the students to various**	**Exhibit the strength and grip on the**

	emerging fields in electronics and communication.	**fundamentals of the subjects studied in the previous semesters.**
2	**To provide an opportunity to exercise the creative and innovative qualities in group project environment,**	**An ability to utilise technical resources**
3	**To excite the imagination of aspiring engineers, innovators and technopreneurs.**	**An ability to write technical documents and give oral presentation related to work completed.**
4	**To have hands-on experience in the students related field so that they can relate and reinforce what has taught in the classroom.**	**Perform requirement analysis and identify design methodologies.**