Course Name: Electronics Devices & circuits	3EC1A	**Course Year:**	2017-2018

3EC1.1	CO1: Analyzing diode and its applications in rectifier, regulator, multipliers etc.
3EC1.2	CO2: Evaluating characteristics and applications of BJT and FET.
3EC1.3	CO3: Understanding differential amplifier and its applications.

Course Name: Data Structures & Algorithms	3EC2A	**Course Year:**	2017-2018

3EC2.1	CO1: Understanding data arranging techniques in linear and non linear data structures and analyzing their complexity.
3EC2.2	CO2: Evaluating searching and sorting algorithms and other operations on data structures.
3EC2.3	CO3: Applying the data structure that efficiently models the information in a problem.

Course Name: Digital Electronics	3EC3A	**Course Year:**	2017-2018

3EC3.1	CO1: Understanding Boolean algebra, conversions and minimization techniques.
3EC3.2	CO2: Creating various combinational and sequential circuits
3EC3.3	CO3: Understanding different logic families
3EC3.4	CO4: Creating of circuits using different minimization techniques.

Course Name: Circuit Analysis & Synthesis	3EC4A	**Course Year:**	2017-2018

3EC4.1	CO1: Understanding various theorems and its applications in complex networks.
3EC4.2	CO2: Evaluating the stability of systems by various techniques.
3EC4.3	CO3: Understanding and creating circuits using network functions.
3EC4.4	CO4: Understanding resonance conditions in different circuits.

Course Name: Electromagnetic Properties of Materials	3EC5A	**Course Year:**	2017-2018

3EC5.1	CO1: Understanding the fabrication and applications of various types of materials i.e. magnetic, semiconductor, superconductive and nano materials.
3EC5.2	CO2: Understanding the applications of sensor materials..

Course Name: Advanced Engineering Mathematics-1	3EC6A	**Course Year:**	2017-2018

3EC6.1	CO1: Applying Laplace, Fourier, and Z Transform solve differential equations with boundary conditions.
3EC6.2	CO2: Differentiate and Integrate complex function, Contour Integration and Integrals using residues.
3EC6.3	CO3: Solving circuit differential equations by the help of Laplace transforms.

Course Name: Electronic Instrumentation Workshop	3EC7A	**Course Year:**	2017-2018

3EC7.1	CO1: Analysing various electronic components.
3EC7.2	CO2: Evaluating characteristics of various opto-electronic devices.
3EC7.3	CO3: Creating circuit on PCB.

Course Name: Computer Programming Lab-I	3EC8A	**Course Year:**	2017-2018

3EC8.1	CO1: Applying various techniques on linear/non linear data structures to solve various computing problems.
3EC8.2	CO2: Analyzing recursive/non recursive functions to perform various operations on data structures.
3EC8.3	CO3: Creating a suitable data structure and algorithm to solve a real world problem

Course Name: Electronics Device Lab	3EC9A	**Course Year:**	2017-2018

3EC9.1	CO1: Understanding devices like multimeter, generator, CRO etc.
3EC9.2	CO2: Creating the characteristic graph of various diodes, amplifiers, filters and rectifiers.
3EC9.3	CO3: Analysing the behaviour of differential amplifier.

Course Name: Digital Electronics Lab	3EC10A	**Course Year:**	2017-2018

3EC10.1	CO1: Evaluating truth table of basic gates.
3EC10.2	CO2: Analyzing and designing various combinational and sequential circuits.
3EC10.3	CO3: Creating small projects.

Course Name: Business Entrepreneurship	3EC11A	**Course Year:**	2017-2018

3EC11.1	CO1: Understand the fundamentals of entrepreneurship and distinct entrepreneurial traits.
3EC11.2	CO2: Analyse the parameters to assess the opportunity and design strategies for successful entrepreneur.
3EC11.3	CO3: Understand government policies and Demonstrate the components like sales tax, VAT etc.

Course Name: Analog Electronics	4EC1A	**Course Year:**	2017-2018

3EC4.1	CO1: Understanding concept of feedback and its application in oscillators and amplifiers.
3EC4.2	CO2: Analyzing circuits using equivalent models.
3EC4.3	CO3: Understanding the concepts of Schmitt trigger and 555 timer.

Course Name: Random Variables and Stochastic Processes	4EC2A	**Course Year:**	2017-2018

3EC9.1	CO1: Understand the concept of Probability, Random Variables and apply the conditions of various Probability Distributions on Research related problems.
3EC9.2	CO2: Understand the concept of multiple random variable and Central limit theorem.
3EC9.3	CO3: Understand the concept of Stochastic Process and its applications in Electronics Communication System.

Course Name: Electronic Measurement and Instrumentation	4EC3A	**Course Year:**	2017-2018

4EC3.1	CO1: Understanding the construction , errors and working of electronic instruments i.e. CRO, generators, transducers etc.
4EC3.2	CO2: Generating and analyzing the frequency components of a wave and its distortion
4EC3.3	CO3: Understanding different types of AC bridges (i.e.Maxwell inductance, Anderson bridge) and measurement of inductance, capacitance and frequency.

Course Name: Electromagnetic Field Theory	4EC4A	**Course Year:**	2017-2018

4EC4.1	CO1: Remembering about coordinate systems and its conversion.
4EC4.2	CO2: Evaluating electric and magnetic field of different charge and current configurations.
4EC4.3	CO3- Analyzing about nature of waves.
4EC4.4	CO4- Understanding the basic concepts of antennas and its types

Course Name: Optimization Techniques	4EC5A	**Course Year:**	2017-2018

4EC4.1	CO1: Understanding the problems of optimization, its formulation and LPP with certain techniques.
4EC4.2	CO2: Analyzing the concept of optimal solutions of Nonlinear programming problems.
4EC4.3	CO3: Analyzing certain techniques that will help students to solve problems of electronics engineering with reference to optimization.

Course Name: Advanced Engineering Mathematics-II	4EC6A	**Course Year:**	2017-2018

4EC6.1	CO1. Evaluating numerical methods for interpolation, numerical differentiation and integration for differential equations
4EC6.2	CO2. Understanding recurrence relation, generating function, simple properties of Bessel's and Legendre's functions and students can solve simple variational problems using Euler's equation.
4EC6.3	CO3. Understanding the concept of probability distribution for discrete and continuous random variables.
4EC6.4	CO4. Analyzing the problems of electronics engineering with the help of such functions.

Course Name: Computer Programming Lab-II	4EC7A	**Course Year:**	2017-2018

4EC7.1	CO1: Understand and applying Object oriented features and C++ concepts.
4EC7.2	CO2: Analyzing the concept of polymorphism and inheritance.

Course Name: Analog Electronics Lab	4EC8A	**Course Year:**	2017-2018

4EC8.1	CO1: Creating the characteristic graph of various amplifiers, oscillators and filters.
4EC8.2	CO2: Analysing the behaviour and applications of op-amp

Course Name: Measurement and Instrumentation Lab	4EC9A	**Course Year:**	2017-2018

4EC9.1	CO1: Analyzing the characteristics of various transducers and measuring instruments.
4EC9.2	CO3: Understanding the concept of earthing and grounding with applications.

Course Name: Humanities and Social Sciences	4EC10A	**Course Year:**	2017-2018

4EC10.1	CO1: Understanding history of Indian constitution and society problems.
4EC10.2	CO2: Analyzing Indian economy.
4EC10.3	CO3: Analyzing the architecture of Indian history.

Course Name: Signals & Systems	5EC1A	**Course Year:**	2017-2018

5EC1.1	CO1: Understanding basic signals and their properties
5EC1.2	CO2: Evaluating periodic and non periodic signals in Fourier, Laplace and Z-transform.
5EC1.3	CO3: Understanding the concept of sampling and its applications.
5EC1.4	CO4: Understanding the concept of decimation and interpolation

Course Name: Linear Integrated Circuits	5EC2B	**Course Year:**	2017-2018

5EC2.1	CO1: Understanding Operational amplifier and its applications like oscillators, convertors, filters etc.
5EC2.2	CO2: Analyzing 555 timer and PLL.
5EC2.3	CO3: Applying its application in convertors i.e. D/A to A/D.

Course Name: Telecommunication Engg.	5EC3A	**Course Year:**	2017-2018

5EC3.1	CO1: Understanding transmission line and its applications.
5EC3.2	CO2: Analyzing different medium for transmission of signals.
5EC3.3	CO3: Understanding mobile communication

Course Name: Analog Communication	5EC4A	**Course Year:**	2017-2018

5EC4.1	CO1: Analyze how information is put on electronic systems for storage and delivery through detailed understanding of AM, FM and PM.
5EC4.2	CO2: Understanding and analyzing the noise performance
5EC4.3	CO3: Analyzing the application of modulation in mobile communication.

Course Name: Microwave Engg. –I	5EC5A	**Course Year:**	2017-2018

5EC5.1	CO1: Analyzing the concept of transmission lines used at GHz frequency range
5EC5.2	CO2: Evaluating various parameters for microwave based devices.
5EC5.3	CO3: Understanding Radar based devices used at microwave devices.

Course Name: Biomedical Instrumentation	5EC6.1A	**Course Year:**	2017-2018

5EC6.1	CO1: Analyzing human body sub-systems i.e. respiratory, nervous etc and their diagnosis and therapy.
5EC6.2	CO2: Understanding transducers, electrodes, safety measures and various diagnostic equipments for bio potentials i.e. EEG, ECG, ESR etc.
5EC6.3	CO3: laparoscope and body temperature.

Course Name: Electronic Engineering Design Lab	5EC7A	**Course Year:**	2017-2018

5EC7.1	CO1: Analyzing op-amp and its applications i.e. scalar, differentiator, filters, oscillators etc.
5EC7.2	CO2: Creating circuits on PSpice.

Course Name: Microwave Engineering Lab	5EC8A	**Course Year:**	2017-2018

5EC8.1	CO1: Analyzing the characteristics of microwave devices i.e. gunn diode, magic tee etc.
5EC8.2	CO2: Analyzing printed antenna input characteristics.

Course Name: Communication Lab-I	5EC9A	**Course Year:**	2017-2018

5EC9.1	CO1: Creating transmitted and received waveforms of AM, FM.
5EC9.2	CO2: Creating transmitted and received waveforms of PAM, PPM.

Course Name: Signal Processing Lab	5EC10A	**Course Year:**	2017-2018

5EC10.1	CO1: Creating and analyzing elementary signals i.e. unit step, ramp etc.
5EC10.2	CO2: Analyze the concepts to simulate the Fourier series, Fourier transform and Laplace transform.
5EC10.3	CO3: Generating random sequences with arbitrary distributions.

Course Name: Professional Ethics and Disaster Management	5EC11A	**Course Year:**	2017-2018

5EC11.1	CO1:Understanding the concepts of social and professional values
5EC11.2	CO2: Analyzing the importance of engineering.
5EC11.3	CO3: Evaluating the effect of disasters.

Course Name: Microwave Engg.-II	6EC1A	**Course Year:**	2017-2018

6EC1.1	CO1: Analyzing the operation and characteristics of microwave diodes.
6EC1.2	CO2: Analyzing klystrons, magnetrons etc. for microwave generation and amplification
6EC1.3	CO3: Understanding applications of smart antenna.

Course Name: Microprocessors	6EC2A	**Course Year:**	2017-2018

6EC2.1	CO1: Implementing real time problems using assembly language.
6EC2.2	CO2: Analyzing applications of embedded systems.

Course Name: Industrial Electronics	6EC3A	**Course Year:**	2017-2018

6EC3.1	CO1: Understanding different semiconductor power devices and their applications
6EC3.2	CO2: Analyzing various techniques to control the speed of motors
6EC3.3	CO3: Analyzing mitigation factors for parameters affecting the performance of power systems

Course Name: Digital Communication	6EC4A	**Course Year:**	2017-2018

6EC4.1	CO1: Analyzing analog to digital Conversion Techniques and Line Coding like PCM,DM,ADM and Manchester, AMI.
6EC4.2	CO2: Evaluating different digital modulation techniques like ASK, BPSK, QPSK and Information theory, error detection and correction Techniques.
6EC4.3	CO3: Application of digital communication i.e. CDMA

Course Name: Control Systems	6EC5A	**Course Year:**	2017-2018

6EC5.1	CO1: Understanding the analogy between electromechanical systems.
6EC5.2	CO2: Evaluating system stability by following methods i.e. Routh Hurwitz, Root Locus, Nyquist, Bode etc.
6EC5.3	CO3: Analyzing different system in time domain and state variable model

Course Name: Optical Fiber Communication	6EC6.3A	**Course Year:**	2017-2018

6EC6.3	CO1: Understanding optical fibre technology for sophisticated modern telecommunication systems.
6EC6.3	CO2: Analyzing fundamental behavior and operation of the individual components, their interactions with other devices in an optical fiber link.
6EC6.3	CO3: Understanding photonic based devices.

Course Name: Communication Lab-II	6EC7A	**Course Year:**	2017-2018

6EC7.1	CO1: Creating transmitted and received waveforms of TDM, PAM, TDM-PCM.
6EC7.2	CO2: Creating digitally modulated and demodulated waveforms of ASK, PSK
6EC7.3	CO3: Analyzing optical fibre communication

Course Name: Microprocessor Lab	6EC8A	**Course Year:**	2017-2018

6EC8.1	CO1: Creating assembly language programs for real time problems.
6EC8.2	CO2: Understanding coding and interfacing of microcontroller.

Course Name: RF Simulation Lab	6EC9A	**Course Year:**	2017-2018

6EC9.1	CO1: Evaluating the parameters of microwave based devices using HFSS

6EC9.2	CO2: Creating simple microstrip patch antenna design.

Course Name: Industrial Electronics Lab	6EC10A	**Course Year:**	2017-2018

6EC10.1	CO1: Evaluate the characteristics of different Semiconductor Power devices i.e. SCR, DIAC, TRIAC etc.
6EC10.2	CO2: Analyze different power electronic convertors, choppers and motor drivers.

Course Name: Personality Development & General Aptitude	6EC11A	**Course Year:**	2017-2018

6EC11.1	CO1: Understanding principles, processes and practices of human resource management.
6EC11.2	CO2: Applying HR concepts and techniques in strategic planning to improve organizational performance.

Course Name: Antenna and Wave Propagation	7EC1A	**Course Year:**	2017-2018

7EC1.1	CO1: Understanding the basic skills required for designing a wide variety of practical antennas and antenna arrays.
7EC1.2	CO2: Analyzing the propagation of the wave in different atmospheric medium, ionosphere, troposphere propagation
7EC1.3	CO3: Creating and analyzing the defects introduced in the structures.

Course Name: Digital Signal Processing	7EC2A	**Course Year:**	2017-2018

7EC2.1	CO1: Analyzing of filters i.e. FIR, IIR
7EC2.2	CO2: Use of transforms in signal analysis, characterization and manipulation
7EC2.3	CO3: Understanding adaptive signal processing and auto cross correlation

Course Name: Digital Image Processing	7EC3A	**Course Year:**	2017-2018

7EC3.1	CO1: Analyze image, its operation and filtering.
7EC3.2	CO2: Evaluation of image through morphological and image compression.
7EC3.3	CO3: Understanding of image recognization using biometric and stegnography.

Course Name: Wireless Communication	7EC4A	**Course Year:**	2017-2018

7EC4.1	CO1: Understanding mobile radio propagation, fading, diversity concepts

	and the channel modeling.
7EC4.2	CO2: Analyzing wireless communication systems with key 3G (e.g., CDMA) and 4G (OFDM) technologies
7EC4.3	CO3: Understanding satellite communication
7EC4.4	CO4: Understanding adhoc networks

Course Name: VLSI Design	7EC5A	**Course Year:**	2017-2018

7EC5.1	CO1: Understanding modes, types, characteristics and fabrication of MOS
7EC5.2	CO2: Creating combinational and sequential digital circuits and layouts using CMOS technology.
7EC5.3	CO3: Understanding CMOS Design rules via advanced Tanner Tools.

Course Name: VHDL	7EC6.3A	**Course Year:**	2017-2018

7EC6.3.1	CO1: Understanding the design flow of different integrated circuits.
7EC6.3.2	CO2: Understanding the fundamentals, advantages of VHDL and writing code for combinational and sequential circuits.

Course Name: Signal & Image Processing Lab	7EC7A	**Course Year:**	2017-2018

7EC7.1	CO1: Implementing various DSP Algorithms using MATLAB Software package.
7EC7.2	CO2: Analyzing and observing magnitude and phase characteristics (Frequency response Characteristics) of digital FIR, IIR Butterworth and Chebyshev filters.

Course Name: Wireless Communication Lab	7EC8A	**Course Year:**	2017-2018

7EC8.1	CO1: Evaluate antenna return loss, gain, radiation characteristics, and polarization.
7EC8.2	CO2: Understanding and analyzing RADAR, satellite, CDMA-DSSS, and GPS trainer.

Course Name: Practical Training & Industrial Visit	7EC9A	**Course Year:**	2017-2018

7EC9.1	CO1: Applying the applications of electronics and communication engineering concepts and principles learned in classroom.
7EC9.2	CO2: Analyzing awareness of the engineering and technological aspects in the electronics and communication industries.
7EC9.3	CO3: Improving interpersonal skill by communicating directly with industrial personnel.

7EC9.4	CO4: Analyzing the roles and ethics of engineers in related industries.
7EC9.5	CO5: Analyzing the impact of industrial processes on health, safety, environment and society.

Course Name: IC Technology	8EC1A	**Course Year:**	2017-2018

8EC1.1	CO1: Understanding crystal, its defects, operation and different techniques to make it high quality.
8EC1.2	CO2: Analyzing applications of MOS IC technology.
8EC1.3	CO3: Understanding crystal structure and novel devices

Course Name: Radar and TV Technology	8EC2A	**Course Year:**	2017-2018

8EC2.1	CO1: Understanding the characteristics and applications of radar.
8EC2.2	CO2: Analyzing the architecture and features of television.
8EC2.3	CO3: Understanding the real life applications of RADAR systems.

Course Name: MEMS and Nanotechnology	8EC3A	**Course Year:**	2017-2018

8EC3.1	CO1: Analyzing the characteristics, fabrication and patterning techniques of nanotechnology.
8EC3.2	CO2: Understanding nano electronics and changes in their properties and applications i.e. electrical, magnetic, mechanical and optical.
8EC3.3	CO3: Understanding sensors like pressure, nano etc.

Course Name: Microcontroller and Embedded Systems	8EC4.3A	**Course Year:**	2017-2018

8EC4.3.1	CO1: Implementing real time problems using assembly language.
8EC4.3.2	CO2: Analyzing hardware interfacing of microcontroller with LED's, sensors.
8EC4.3.3	CO3: Understanding the functioning of PIC and ARM microcontroller

Course Name: RF Fabrication Lab	8EC5A	**Course Year:**	2017-2018

8EC5.1	CO1: Implement planar transmission line, couplers and filters.
8EC5.2	CO2: Analyze methods to determine circuit properties of microwave devices.

Course Name: Industrial Economics and Management	8EC6	**Course Year:**	2017-2018

8EC6.1	CO1: Understand the role of economic principles in the organisational structure and how to sketch the cash flow diagram, as applied to engineering firms
8EC6.2	CO2: Analyse and evaluate the various new industrial policies to calculate common capital appraisal techniques.
8EC6.3	CO3: Evaluate and implement functions of management with emerging managerial tools to be a successful entrepreneur.

Course Name: VLSI Design and Optical Fiber Lab	8EC7A	**Course Year:**	2017-2018

8EC7.1	CO1: Creating and simulating various combinational and sequential circuits.
8EC7.2	CO2: Evaluating propagation losses in optical fiber.
8EC7.3	CO3: Evaluating characteristics of optical sources i.e. LED, LASER

Course Name: Project	8EC8A	**Course Year:**	2017-2018

8EC8.1	CO1: Understand and review the available literature on the chosen problem
8EC8.2	CO2: Apply the methodology to solve the identified problem
8EC8.3	CO3: Analyze the principles and tools for the problem.
8EC8.4	CO4: Create the technique to solve the problem.
8EC8.5	CO5: Prepare and present project report

3.1.2. CO-PO matrices of courses selected in 3.1.1 (six matrices to be mentioned; one per semester from 3rd to 8th semester) (05)

Note : Enter correlation level s1, 2 or 3 as defined below : 1 : Slight(Low) 2 : Moderate(Medium) 3 : Substantial(High) If there is no correlation, put 1

Electronic Devices & Circuits												
POs / Cos	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
1	**H**	**L**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
2	**H**	**H**	**L**	**-**	**L**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
3	**M**	**M**	**-**	**-**	**L**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Data Structures & Algorithms												
POs / Cos	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
1	**M**	**M**	**-**	**L**	**M**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
2	**M**	**M**	**-**	**L**	**M**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
3	**L**	**M**	**-**	**M**	**M**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Digital Electronics												

Pos / Cos	1	2	3	4	5	6	7	8	9	10	11	12
1	M	M	L	-	-	-	-	-	-	-	-	-
2	H	M	H	-	-	-	-	-	-	-	-	-
3	L	L	-	-	-	-	-	-	-	-	-	-
4	H	H	H	-	M	L	L	-	L	-	L	L
Circuit Analysis & Synthesis												
Pos / Cos	1	2	3	4	5	6	7	8	9	10	11	12
1	H	H	-	-	L	-	-	-	-	-	-	-
2	M	L	L	L	-	-	-	-	-	-	-	-
3	M	M	-	-	-	-	-	-	-	-	-	-
4	M	L	L	L	-	-	-	-	-	-	-	-
Electromagnetic Properties of Materials												
POs / Cos	1	2	3	4	5	6	7	8	9	10	11	12
1	H	H	-	-	-	-	-	-	-	-	-	H
2	H	M	M	-	-	L	L	-	L	L	-	L
Advanced Engineering Mathematics-1												
POs COs	1	2	3	4	5	6	7	8	9	10	11	12
1	M	M	L	-	-	-	-	-	-	-	-	L
2	M	L	L	L	-	-	-	-	-	-	-	L
3	M	L	L	-	-	-	-	-	-	-	-	L
Electronic Instrumentation Workshop												
POs COs	1	2	3	4	5	6	7	8	9	10	11	12
1	M	-	-	-	-	-	-	-	-	-	L	L
2	M	-	-	-	-	-	-	-	-	-	L	L
3	M	L	L	L	-	-	-	-	-	-	L	L
Computer Programming Lab-I												
POs COs	1	2	3	4	5	6	7	8	9	10	11	12
1	M	M	L	L	H	-	-	-	-	-	M	L
2	M	M	L	L	H	-	-	-	-	-	M	L
3	M	M	L	L	H	-	-	-	-	L	M	L
Electronic Device Lab												
POs COs	1	2	3	4	5	6	7	8	9	10	11	12
1	L	-	-	-	-	-	-	-	-	-	-	-
2	M	L	-	L	-	-	-	-	-	-	-	L
3	M	L	-	-	-	-	-	-	-	-	-	-

Digital Electronics Lab												
POs COs	1	2	3	4	5	6	7	8	9	10	11	12
1	H	L	-	H	-	-	-	-	-	-	-	H
2	H	H	M	H	-	-	M	-	-	-	-	H
3	H	H	M	H	H	H	H	-	H	-	H	H

Business Entrepreneurship												
POs COs	1	2	3	4	5	6	7	8	9	10	11	12
1	M	-	-	-	-	L	L	L	L	-	L	L
2	M	-	-	-	-	L	L	L	L	-	L	L
3	M	-	-	-	-	L	L	L	L	-	L	L

Analog Electronics												
POs COs	1	2	3	4	5	6	7	8	9	10	11	12
1	M	M	-	L	-	-	-	-	-	-	-	-
2	H	M	-	M	-	-	-	-	-	-	-	L
3	L	-	-	-	-	-	-	-	-	-	-	-

Random Variables & Stochastic Processes												
POs COs	1	2	3	4	5	6	7	8	9	10	11	12
1	H	M	M	L	H	-	-	-	-	M	M	H
2	H	H	M	H	H	L	-	-	-	M	M	H
3	H	H	H	M	H	L	-	-	-	H	M	H

Electronic Measurement & Instrumentation												
POs COs	1	2	3	4	5	6	7	8	9	10	11	12
1	M	M	L	L	-	-	-	-	-	-	-	L
2	M	M	L	M	-	-	-	-	-	-	-	L
3	M	M	L	L	-	-	-	-	-	-	-	L

Electromagnetic Field Theory												
POs COs	1	2	3	4	5	6	7	8	9	10	11	12
1	H	H	-	M	-	-	-	-	-	-	-	M
2	M	M	L	M	-	L	-	-	-	-	-	M
3	M	L	L	L	-	L	L	-	-	-	-	M
4	M	M	L	L	L	M	M	-	L	L	L	M

Optimization Techniques												
POs COs	1	2	3	4	5	6	7	8	9	10	11	12
1	M	L	L	-	-	-	-	-	L	-	-	L
2	M	M	L	-	-	-	-	-	L	-	-	L
3	M	M	L	L	-	-	-	-	L	-	-	L

Advanced Engineering Mathematics-II												
POs COs	1	2	3	4	5	6	7	8	9	10	11	12
1	M	M	L	-	-	-	-	-	-	-	-	L
2	M	L	L	L	-	-	-	-	-	-	-	L
3	M	L	L	-	-	-	-	-	-	-	-	L

Computer Programming Lab-II												
POs COs	1	2	3	4	5	6	7	8	9	10	11	12
1	H	M	M	L	H	-	-	L	L	-	L	L
2	H	M	M	L	H	-	-	L	L	-	L	L
3	H	M	M	L	H	-	-	L	L	-	L	L

Measurement and Instrumentation Lab												
POs COs	1	2	3	4	5	6	7	8	9	10	11	12
1	M	M	L	-	-	-	-	-	-	-	-	L
2	M	L	L	L	-	-	-	-	-	-	-	L

Humanities and Social Sciences												
POs COs	1	2	3	4	5	6	7	8	9	10	11	12
1	M	-	-	-	-	L	L	-	-	-	-	L
2	M	-	-	-	-	L	L	-	-	-	-	L
3	M	-	-	-	-	L	L	-	-	-	-	L

Analog Electronics Lab												
POs COs	1	2	3	4	5	6	7	8	9	10	11	12
1	M	M	-	M	-	-	-	-	-	-	-	L
2	H	M	-	M	-	-	-	-	-	-	-	L

Signals & Systems												
POs COs	1	2	3	4	5	6	7	8	9	10	11	12
1	M	M	M	L	L	-	-	-	-	-	-	-
2	M	M	M	M	L	-	-	-	-	-	-	L
3	M	L	L	L	-	-	-	-	-	-	-	-

4	**L**	**L**	**L**	**L**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Linear Integrated Circuits

POs COs	1	2	3	4	5	6	7	8	9	10	11	12
1	**M**	**M**	**L**	**M**	**-**	**L**	**L**	**-**	**-**	**-**	**-**	**L**
2	**L**	**L**	**L**	**L**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**L**
3	**M**	**L**	**L**	**M**	**-**	**-**	**-**	**-**	**L**	**-**	**L**	**L**

Telecommunication Engineering

POs COs	1	2	3	4	5	6	7	8	9	10	11	12
1	**M**	**L**	**L**	**L**	**-**	**L**	**L**	**-**	**-**	**-**	**-**	**M**
2	**M**	**L**	**L**	**L**	**-**	**L**	**L**	**-**	**-**	**-**	**-**	**M**
3	**H**	**M**	**L**	**L**	**-**	**M**	**L**	**-**	**L**	**L**	**L**	**H**

Analog Communication

POs Cos	1	2	3	4	5	6	7	8	9	10	11	12
1	**M**	**M**	**M**	**M**	**-**	**L**	**L**	**-**	**L**	**-**	**L**	**L**
2	**M**	**M**	**M**	**M**	**-**	**L**	**L**	**-**	**L**	**-**	**L**	**L**
3	**M**	**M**	**M**	**M**	**L**	**L**	**L**	**-**	**L**	**-**	**L**	**L**

Microwave Engg.-1

POs COs	1	2	3	4	5	6	7	8	9	10	11	12
1	**H**	**H**	**H**	**M**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
2	**M**	**-**	**-**	**M**	**M**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
3	**H**	**M**	**M**	**-**	**-**	**M**	**M**	**-**	**-**	**-**	**-**	**-**

Biomedical Instrumentation (5EC6.1A)

POs COs	1	2	3	4	5	6	7	8	9	10	11	12
1	**M**	**M**	**L**	**-**	**-**	**L**	**-**	**-**	**-**	**-**	**-**	**M**
2	**M**	**M**	**L**	**-**	**-**	**L**	**-**	**-**	**-**	**-**	**L**	**M**
3	**L**	**M**	**L**	**-**	**-**	**L**	**-**	**-**	**-**	**-**	**-**	**M**

Electronic Engineering Design Lab

POs COs	1	2	3	4	5	6	7	8	9	10	11	12
1	**M**	**L**	**L**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
2	**M**	**L**	**M**	**L**	**M**	**-**	**-**	**-**	**-**	**-**	**L**	**L**

Microwave Engg. Lab												
POs COs	1	2	3	4	5	6	7	8	9	10	11	12
1	M	M	-	-	-	L	-	-	-	-	-	-
2	M	M	L	L	L	L	-	-	-	-	-	-

Commm Lab-I												
POs COs	1	2	3	4	5	6	7	8	9	10	11	12
1	M	M	-	-	-	-	-	-	-	-	-	L
2	M	M	-	-	-	-	-	-	-	-	-	L

Signal Processing Lab												
POs COs	1	2	3	4	5	6	7	8	9	10	11	12
1	H	M	L	L	H	-	-	-	L	-	L	L
2	H	M	L	L	H	-	-	-	L	-	L	L
3	H	M	L	L	H	L	-	-	L	-	L	L

Professional Ethics and Disaster Management												
POs COs	1	2	3	4	5	6	7	8	9	10	11	12
1	M	-	L	-	-	L	-	H	-	-	-	L
2	M	-	L	-	-	L	-	H	-	-	-	L
3	M	-	L	-	-	L	-	H	-	-	-	L

Microwave Engg. II (EC6.1A)												
POs COs	1	2	3	4	5	6	7	8	9	10	11	12
1	H	M	-	-	-	-	-	-	-	-	-	-
2	H	M	-	L	-	-	-	-	-	-	-	-
3	M	H	H	-	H	L	-	-	-	-	-	-

Microprocessors												
POs COs	1	2	3	4	5	6	7	8	9	10	11	12
1	M	M	M	M	M	-	-	-	-	-	L	L
2	H	M	H	H	M	L	-	-	-	-	M	M

Industrial Electronics												
POs COs	1	2	3	4	5	6	7	8	9	10	11	12
1	M	-	M	-	-	-	-	-	-	-	-	L

2	**M**	**-**	**M**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**L**	**M**
3	**M**	**M**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**M**

Digital Communication

POs COs	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
1	**H**	**L**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
2	**M**	**H**	**-**	**H**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
3	**M**	**M**	**L**	**L**	**-**	**-**	**L**	**-**	**-**	**-**	**L**	**L**

Control Systems

Pos COs	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
1	**M**	**L**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**L**	**-**	**L**
2	**H**	**H**	**L**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
3	**H**	**H**	**-**	**-**	**L**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Optical Fiber Communication

Pos COs	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
1	**M**	**L**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**L**
2	**M**	**L**	**L**	**-**	**-**	**L**	**L**	**-**	**-**	**-**	**-**	**L**
3	**M**	**-**	**-**	**-**	**L**	**L**	**L**	**-**	**-**	**-**	**-**	**L**

Industrial Electronics Lab

POs COs	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
1	**M**	**–**	**M**	**–**	**L**	**-**	**–**	**–**	**–**	**–**	**–**	**L**
2	**M**	**–**	**M**	**–**	**L**	**-**	**–**	**–**	**–**	**–**	**L**	**L**

Microprocessor Lab

POs COs	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
1	**H**	**M**	**-**	**-**	**M**	**L**	**-**	**-**	**-**	**-**	**H**	**-**

2	L	-	-	-	-	-	-	-	-	-	-	L

Communication Lab-II

POs COs	1	2	3	4	5	6	7	8	9	10	11	12
1	M	M	L	-	-	-	L	-	L	-	L	L
2	M	M	L	-	-	-	L	-	L	-	L	L
3	H	L	L	L	L	L	L	-	L	-	L	L

RF Simulation Lab

POs COs	1	2	3	4	5	6	7	8	9	10	11	12
1	M	M	M	M	H	L	-	-	L	-	L	M
2	M	M	M	M	H	L	-	-	L	-	L	M

Personality Development & General Aptitude

POs COs	1	2	3	4	5	6	7	8	9	10	11	12
1	M	-	M	-	-	M	-	-	L	M	-	M
2	M	-	M	-	-	M	-	-	L	M	-	M

Antenna & Wave Propagation

POs COs	1	2	3	4	5	6	7	8	9	10	11	12
1	H	M	M	M	H	M	M	-	M	M	M	M
2	H	-	M	-	-	H	H	-	-	-	-	M
3	H	M	M	M	H	M	M	-	M	M	M	M

Digital Signal Processing

POs COs	1	2	3	4	5	6	7	8	9	10	11	12
1	M	M	M	M	L	-	-	-	L	-	M	M
2	M	M	M	M	L	-	-	-	L	-	M	M
3	L	L	L	L	-	-	-	-	-	-	-	M

Digital Image Processing

POs COs	1	2	3	4	5	6	7	8	9	10	11	12
1	H	L	M	-	M	-	-	-	-	-	-	M
2	H	M	L	L	L	-	-	-	-	-	-	M
3	M	L	L	L	-	M	-	-	L	L	L	M

Wireless Communication

POs COs	1	2	3	4	5	6	7	8	9	10	11	12
1	M	-	-	-	-	L	-	-	-	-	-	M
2	M	L	-	-	-	L	L	-	-	-	L	M
3	M	-	M	-	-	M	L	-	-	-	L	M
4	M	L	L	L	L	L	-	-	L	L	L	L

VLSI Design

POs COs	1	2	3	4	5	6	7	8	9	10	11	12
1	H	M	M	M	-	-	M	-	-	-	-	M
2	H	M	M	M	M	-	M	-	-	-	-	M
3	H	M	M	M	H	-	M	-	-	-	-	M

VHDL

POs COs	1	2	3	4	5	6	7	8	9	10	11	12
1	M	M	-	M	H	-	-	-	L	-	M	M
2	M	M	-	M	H	-	-	-	L	-	M	M

Signal and Image Processing Lab

POs COs	1	2	3	4	5	6	7	8	9	10	11	12
1	M	M	M	M	H	L	-	-	L	-	M	M
2	M	M	M	M	H	L	-	-	L	-	M	M

Wireless Comm Lab

POs COs	1	2	3	4	5	6	7	8	9	10	11	12
1	M	M	M	M	-	M	L	-	L	-	M	M
2	M	M	M	M	-	M	L	-	L	-	M	M

Practical Training and Industrial Visit

POs COs	1	2	3	4	5	6	7	8	9	10	11	12
1	M	L	L	L		L	L	-	L	L	L	M
2	M	L	L	L		L	L	-	L	L	L	M
3	M	-	-	-	-	-	-	H	L	-	-	M
4	M	-	-	-	-	-	-	H	L	-	-	M
5	M	-	-	-	-	H	H	H	-	H	-	M

IC Technology

POs COs	1	2	3	4	5	6	7	8	9	10	11	12
1	H	H	M	-	-	H	M	-	-	-	-	M
2	H	H	M	-	-	-	M	-	-	-	-	H

3	**H**	**L**	**L**	**-**	**-**	**-**	**L**	**-**	**-**	**-**	**-**	**M**
Radar & TV Engineering												
POs COs	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
1	**M**	**L**	**L**	**L**	**-**	**M**	**L**	**-**	**-**	**-**	**-**	**M**
2	**M**	**L**	**L**	**L**	**-**	**M**	**L**	**-**	**-**	**-**	**-**	**M**
3	**M**	**L**	**L**	**L**	**-**	**M**	**L**	**-**	**-**	**-**	**-**	**M**
MEMS and Nanotechnology												
POs COs	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
1	**H**	**M**	**M**	**H**	**-**	**M**	**M**	**-**	**-**	**-**	**-**	**M**
2	**H**	**-**	**L**	**L**	**-**	**M**	**M**	**-**	**-**	**-**	**-**	**M**
3	**H**	**H**	**H**	**H**	**-**	**M**	**M**	**-**	**M**	**M**	**M**	**H**

Embedded Systems												
PO's CO's	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
1	M	L	L	L	L	-	-	-	-	L	L	L
2	H	M	M	L	M	-	-	-	L	M	M	L
3	H	M	L	L	M	M	L	-	L	L	H	M

Industrial Economics and Management												
POs Cos	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
1	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**L**	**M**	**L**	**L**
2	**-**	**L**	**L**	**L**	**-**	**-**	**-**	**-**	**M**	**H**	**M**	**M**
3	**-**	**L**	**L**	**-**	**L**	**-**	**-**	**L**	**H**	**H**	**H**	**M**
Project												
POs COs	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
1	**H**	**H**	**H**	**H**	**L**	**-**	**-**	**-**	**H**	**L**	**-**	**M**
2	**H**	**H**	**H**	**M**	**H**	**M**	**M**	**-**	**H**	**L**	**M**	**H**
3	**H**	**H**	**H**	**M**	**H**	**M**	**M**	**-**	**H**	**M**	**M**	**H**
4	**H**	**H**	**H**	**M**	**M**	**M**	**M**	**-**	**H**	**M**	**L**	**H**

5	**M**	**M**	**M**	**M**	**L**	**-**	**-**	**H**	**H**	**H**	**M**	**H**

VLSI and Optical Fiber Lab

PO's / CO's	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
1	M	L	-	L	H	-	-	-	-	-	M	H
2	H	M	M	L	-	M	M	-	-	-	-	H
3	H	M	L	L	-	M	M	-	-	-	-	L

RF Fabrication Lab

PO's / CO's	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
1	M	L	L	L	H	-	-	-	-	-	-	L
2	H	M	M	L	H	-	-	-	-	-	-	L