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

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| 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. |

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

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| 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. |

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

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| 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. |

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

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| 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. |

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

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| 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 SCR and LASERS. |

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

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| 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. |

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

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| 3EC6.1 | CO1: Analysing various electronic components. |
| 3EC6.2 | CO2: Evaluating characteristics of various opto-electronic devices. |
| 3EC6.3 | CO3: Creating circuit on PCB. |

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

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| 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. |

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

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| 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. |

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

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| 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. |

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

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| 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. |

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

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| 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. |

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

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| 4EC3.1 | CO1: Understanding the construction and working of electronic instruments i.e. CRO, generators, transducers etc. |
| 4EC3.2 | CO2: Analyzing and generating signals. |
| 4EC3.3 | CO3: Understanding temperature measuring devices i.e. Pyrometer. |

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

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| 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 |

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

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| 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. |

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

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| 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. |

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

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

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

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

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

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| 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. |

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

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| 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 |

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

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| 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. |

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

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| 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 |

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

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| 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. |

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

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| 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 |

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

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| 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. |

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

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

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

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

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

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| 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. |

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

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| 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. |

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

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| 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. |

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

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

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

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| 6EC3.1 | CO1: 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 |

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

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| 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 |

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

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| 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 |

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

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| 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. |

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

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| 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 |

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

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| 6EC8.1 | CO1: Creating assembly language programs for real time problems. |
| 6EC8.2 | CO2: Understanding embedded |

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

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| 6EC5.1 | CO1: Evaluating the parameters of microwave based devices using HFSS |
| 6EC5.3 | CO3: Creating simple microstrip patch antenna design. |

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

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| 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. |

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

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| 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 |

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

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| 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. |

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

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| 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 |

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

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| 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. |

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| **Course Name:** VHDL | 7EC4.3A | **Course Year:** | 2017-2018 |

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

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

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| 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 |

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

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| 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. |

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

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| 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. |

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

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| 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 |

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

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| 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. |

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

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| 8EC7.1 | CO1: Creating and simulating various combinational and sequential circuits. |
| 8EC7.2 | CO2: Evaluating propagation losses in optical fiber. |
| 8EC | CO4: Evaluating characteristics of optical sources i.e. LED, LASER |

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

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| 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 |

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| **Electronic Devices & Circuits 3EC1A** | | | | | | | | | | | | |
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| **Cos** |
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| **2** | **M** | **M** | **-** | **-** | **L** | **-** | **-** | **-** | **-** | **-** | **-** | **-** |
| **3** | **M** | **M** | **-** | **-** | **L** | **-** | **-** | **-** | **-** | **-** | **-** | **-** |
| **Data Structures & Algorithms 3EC2A** | | | | | | | | | | | | |
| **POs** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** |
| **Cos** |
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| **2** | **M** | **M** | **-** | **L** | **M** | **-** | **-** | **-** | **-** | **-** | **-** | **-** |
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| **Digital Electronics 3EC3A** | | | | | | | | | | | | |
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| **2** | **H** | **M** | **H** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** |
| **3** | **L** | **L** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** |
| **4** | **H** | **H** | **H** | **-** | **M** | **L** | **L** | **-** | **L** | **-** | **L** | **L** |
| **Circuit Analysis & Synthesis 3EC4A** | | | | | | | | | | | | |
| **Pos** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** |
| **Cos** |
| **1** | **H** | **H** | **-** | **-** | **L** | **-** | **-** | **-** | **-** | **-** | **-** | **-** |
| **2** | **M** | **L** | **L** | **L** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** |
| **3** | **M** | **M** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** |
| **4** | **M** | **L** | **L** | **L** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** |
| **Electromagnetic Properties of Materials 3EC5A** | | | | | | | | | | | | |
| **POs** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** |
| **Cos** |
| **1** | **-** | **-** | **M** | **M** | **-** | **M** | **L** | **-** | **L** | **-** | **L** | **M** |
| **2** | **L** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** |
| **Advanced Engineering Mathematics-1 3EC 6A** | | | | | | | | | | | | |
| **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 Device Lab 3EC 9A** | | | | | | | | | | | | |
| **POs**  **COs** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** |
| **1** | **L** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** |
| **2** | **M** | **L** | **-** | **L** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **L** |
| **3** | **M** | **L** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** |
| **Analog Electronics 4EC1A** | | | | | | | | | | | | |
| **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 4EC2A** | | | | | | | | | | | | |
| **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** |
| |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | **Electromagnetic Field Theory 4EC4A** | | | | | | | | | | | | | | **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 4EC5A** | | | | | | | | | | | | |
| **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 4EC6A** | | | | | | | | | | | | |
| **POs**  **COs** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** |
| **1** | **H** | **H** | **L** | **M** | **L** | **L** | **L** | **L** | **L** | **L** | **L** | **L** |
| **2** | **M** | **H** | **L** | **L** | **L** | **L** | **L** | **L** | **L** | **L** | **L** | **L** |
| **3** | **M** | **H** | **L** | **M** | **L** | **L** | **L** | **L** | **L** | **L** | **L** | **L** |
| **4** | **M** | **M** | **L** | **L** | **L** | **L** | **L** | **L** | **L** | **L** | **L** | **L** |
| |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | **Analog Electronics Lab 4EC8A** | | | | | | | | | | | | | | **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 5EC1A** | | | | | | | | | | | | | | **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** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | | **Telecommunication Engineering 5EC3A** | | | | | | | | | | | | | | | **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 Communication5EC4A** | | | | | | | | | | | | |
| **POs**  **Cos** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** |
| **1** | **M** | **L** | **L** | **L** | **L** | **M** | **M** | **L** | **L** | **H** | **L** | **H** |
| **2** | **H** | **H** | **L** | **H** | **M** | **M** | **H** | **M** | **L** | **H** | **L** | **H** |
| **3** | **H** | **H** | **L** | **M** | **L** | **L** | **L** | **M** | **L** | **H** | **L** | **M** |
| **4** | **M** | **L** | **L** | **M** | **L** | **M** | **M** | **M** | **L** | **H** | **L** | **H** |
|  | | | | | | | | | | | | |
| **Microwave Engg.-1 5EC5A** | | | | | | | | | | | | |
| **POs**  **COs** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** |
| **1** | **H** | **H** | **L** | **M** | **H** | **M** | **M** | **L** | **L** | **L** | **L** | **L** |
| **2** | **M** | **H** | **L** | **M** | **L** | **L** | **L** | **L** | **L** | **L** | **L** | **L** |
| **3** | **H** | **M** | **L** | **M** | **H** | **M** | **H** | **M** | **L** | **H** | **L** | **H** |
| **4** | **H** | **L** | **L** | **L** | **H** | **M** | **H** | **M** | **L** | **M** | **L** | **M** |
| |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | **Biomedical Instrumentation (5EC6.1A)** | | | | | | | | | | | | | | **POs**  **COs** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | | **1** | **2** | **2** | **-** | **-** | **-** | **1** | **-** | **-** | **-** | **-** | **-** | **2** | | **2** | **2** | **2** | **-** | **-** | **-** | **1** | **-** | **-** | **-** | **-** | **1** | **2** | | **3** | **1** | **2** | **-** | **-** | **-** | **1** | **-** | **-** | **-** | **-** | **-** | **2** | | | | | | | | | | | | | |
| **Microprocessors 6EC2A** | | | | | | | | | | | | |
| **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 6EC3A** | | | | | | | | | | | | |
| **POs**  **COs** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** |
| **1** | **H** | **H** | **L** | **M** | **L** | **M** | **H** | **L** | **L** | **L** | **L** | **M** |
| **2** | **H** | **L** | **H** | **M** | **L** | **M** | **H** | **L** | **L** | **M** | **L** | **L** |
| **3** | **H** | **M** | **L** | **L** | **L** | **H** | **H** | **M** | **L** | **M** | **L** | **M** |
| **4** | **H** | **M** | **L** | **L** | **L** | **H** | **H** | **M** | **L** | **M** | **L** | **M** |
| **Digital Communication 6EC4A** | | | | | | | | | | | | |
| **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 6EC5A** | | | | | | | | | | | | | | **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 6EC6.3A** | | | | | | | | | | | | |
| **POs**  **COs** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** |
| **1** | **2** | **1** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **1** |
| **2** | **2** | **1** | **-** | **-** | **-** | **1** | **1** | **-** | **-** | **-** | **-** | **1** |
| **3** | **2** | **-** | **-** | **-** | **1** | **1** | **1** | **-** | **-** | **-** | **-** | **1** |
| **Antenna & Wave Propagation 7EC1A** | | | | | | | | | | | | |
| **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 7EC2A** | | | | | | | | | | | | | | | | | | | | **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 7EC3A** | | | | | | | | | | | | | | | | | | | | **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 7EC4A** | | | | | | | | | | | | | | | | | | | **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** | | | | | | | | | | | | | |
| **IC Technology 8EC1A** | | | | | | | | | | | | |
| **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** | **-** | **-** | **H** | **M** | **-** | **-** | **-** | **-** | **M** |
| **3** | **H** | **L** | **L** | **-** | **-** | **L** | **L** | **-** | **-** | **-** | **-** | **M** |
| **Radar & TV Engineering 8EC2A** | | | | | | | | | | | | |
| **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 8EC3A** | | | | | | | | | | | | |
| **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 8EC4A** | | | | | | | | | | | | | | **PO’s** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | | **CO’s** | | **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 8EC6A** | | | | | | | | | | | | | | **POs** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | | **Cos** | | **1** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **L** | **M** | **L** | **L** | | **2** | **-** | **L** | **L** | **L** | **-** | **-** | **-** | **-** | **M** | **H** | **M** | **M** | | **3** | **-** | **L** | **L** | **-** | **L** | **-** | **-** | **L** | **H** | **H** | **H** | **M** |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | **Project 8EC8A** | | | | | | | | | | | | | | **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** | | | | | | | | | | | | | |