# ST.JOSEPH'S COLLEGE OF ENGINEERING AND TECHNOLOGY

**DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**

**COURSE OUTCOME**

## Regulation : 2021

| S. No | Sem | Course Code | Course Name | Course Outcome |
|---|---|---|---|---|
| 1 | I Sem | HS3152 | Professional English - I | To use appropriate words in a professional context |
| | | | | To gain understanding of basic grammatic structures and use them in right context |
| | | | | To read and infer the denotative and connotative meanings of technical texts |
| | | | | To write definitions, descriptions, narrations and essays on various topics |
| | | | | To communicate effectively and appropriately in real life |
| 2 | | MA3151 | Matrices and Calculus | To use the matrix algebra methods for solving practical problems. |
| | | | | To apply differential calculus tools in solving various application problems |
| | | | | To use differential calculus ideas on several variable functions |
| | | | | To apply different methods of integration in solving practical problems |
| | | | | To apply multiple integral ideas in solving areas, volumes and other practical problems |
| 3 | | PH3151 | Enngineering Physics | To understand the importance of mechanics |
| | | | | To express their knowledge in electromagnetic waves. |
| | | | | To demonstrate a strong foundational knowledge in oscillations, optics and lasers. |
| | | | | To understand the importance of quantum physics. |
| | | | | To comprehend and apply quantum mechanical principles towards the formation of energy bands. |
| 4 | | CY3151 | Engineering Chemistry | To infer the quality of water from quality parameter data and propose suitable treatment methodologies to treat water |
| | | | | To identify and apply basic concepts of nanoscience and nanotechnology in designing the synthesis of nanomaterials for engineering and technology applications |
| | | | | To apply the knowledge of phase rule and composites for material selection requirements. |
| | | | | To recommend suitable fuels for engineering processes and applications |
| | | | | To recognize different forms of energy resources and apply them for suitable applications in energy sectors. |
| 5 | | GE3151 | Problem Solving and Python Programming | Develop algorithmic solutions to simple computational problems |
| | | | | Develop and execute simple Python programs. |
| | | | | Write simple Python programs using conditionals and loops for solving problems. |
| | | | | Decompose a Python program into functions. |
| | | | | Represent compound data using Python lists, tuples, dictionaries etc. |
| 6 | | GE3152 | Heritage of Tamils | NIL |
| 7 | II Sem | HS3252 | Professional English-II | To compare and contrast products and ideas in technical texts. |
| | | | | To identify and report cause and effects in events, industrial processes through technical texts |
| | | | | To analyse problems in order to arrive at feasible solutions and communicate them in the written format. |
| | | | | To present their ideas and opinions in a planned and logical manner |
| | | | | To draft effective resumes in the context of job search. |
| 8 | | MA3251 | Statistics and Numerical Methods | To apply the concept of testing of hypothesis for small and large samples in real life problems. |
| | | | | To apply the basic concepts of classifications of design of experiments in the field of agriculture. |
| | | | | To appreciate the numerical techniques of interpolation in various intervals and apply the numerical techniques of differentiation and integration for engineering problems. |
| | | | | To understand the knowledge of various techniques and methods for solving first and second order ordinary differential equations. |
| | | | | To solve the partial and ordinary differential equations with initial and boundary conditions by using certain techniques with engineering applications |
| 9 | | GE3251 | Engineering Graphics | To use BIS conventions and specifications for engineering drawing. |
| | | | | To construct the conic curves, involutes and cycloid. |
| | | | | To solve practical problems involving projection of lines. |
| | | | | To draw the orthographic, isometric and perspective projections of simple solids. |
| | | | | To draw the development of simple solids. |

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| | II Sem | | | |
| **10** | | **PH3254** | **Physics for Electronics Engineer** | To know basics of crystallography and its importance for varied materials properties |
| | | | | To gain knowledge on the electrical and magnetic properties of materials and their applications |
| | | | | To understand clearly of semiconductor physics and functioning of semiconductor devices |
| | | | | To understand the optical properties of materials and working principles of various optical devices |
| | | | | To appreciate the importance of nanotechnology and nanodevices. |
| **11** | | **BE3254** | **Electrical and Instrumentation Engineering** | To explain the working principle of electrical machines |
| | | | | To analyze the output characterizes of electrical machines |
| | | | | To choose the appropriate electrical machines for various applications |
| | | | | To explain the types and operating principles of measuring instruments |
| | | | | To explain the basic power system structure and protection schemes |
| **12** | | **EC3251** | **Citcuit Analysis** | To apply the basic concepts of circuit analysis such as Kirchoff's laws, mesh current and node voltage method for analysis of DC and AC circuits. |
| | | | | To apply suitable network theorems and analyze AC and DC circuits |
| | | | | To analyze steady state response of any R, L and C circuits |
| | | | | To analyze the transient response for any RC, RL and RLC circuits and frequency response of parallel and series resonance circuits. |
| | | | | To analyze the coupled circuits and network topologies |
| **13** | **III Sem** | **EC3351** | **Control Systems** | To compute the transfer function of different physical systems. |
| | | | | To analyse the time domain specification and calculate the steady state error. |
| | | | | To illustrate the frequency response characteristics of open loop and closed loop system response. |
| | | | | To analyse the stability using Routh and root locus techniques. |
| | | | | To illustrate the state space model of a physical system and discuss the concepts of sampled datacontrol system. |
| **14** | | **EC3352** | **Digital Systems Design** | To use Boolean algebra and simplification procedures relevant to digital logic. |
| | | | | To design various combinational digital circuits using logic gates. |
| | | | | To analyse and design synchronous sequential circuits. |
| | | | | To analyse and design asynchronous sequential circuits. |
| | | | | To build logic gates and use programmable devices. |
| **15** | | **EC3353** | **Electronic Devices and Circuits** | To explain the structure and working operation of basic electronic devices |
| | | | | To design and analyze amplifiers |
| | | | | To analyze frequency response of BJT and MOSFET amplifiers |
| | | | | To design and analyze feedback amplifiers and oscillator principles |
| | | | | To design and analyze power amplifiers and supply circuits |
| **16** | | **CS3353** | **C Programming and Data Structures** | To develop C programs for any real world/technical application |
| | | | | To apply advanced features of C in solving problems |
| | | | | To write functions to implement linear and non-linear data structure operations |
| | | | | To suggest and use appropriate linear/non-linear data structure oerations for solving a given problem |
| | | | | To appropriately use sort and search algorithms for a given application |
| **17** | | **EC3354** | **Signals and Systems** | To determine if a given system is linear/causal/stable |
| | | | | To determine the frequency components present in a deterministic signal |
| | | | | To characterize continuous LTI systems in the time domain and frequency domain |
| | | | | To characterize discrete LTI systems in the time domain and frequency domain |
| | | | | To compute the output of an LTI system in the time and frequency domains |
| **18** | | **MA3355** | **Rando Process and Linear Algebra** | To explain the fundamental concepts of advanced algebra and their role in modern mathematics and applied contexts. |
| | | | | To demonstrate accurate and efficient use of advanced algebraic techniques. |
| | | | | To apply the concept of random processes in engineering disciplines. |
| | | | | To understand the fundamental concepts of probability with a thorough knowledge of standard distributions that can describe certain real-life phenomenon. |
| | | | | To understand the basic concepts of one and two dimensional random variables and apply them to model engineering problems. |

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| **19** | **IV Sem** | **EC3451** | **Linear Integrated Circuits** | To design linear and nonlinear applications of OP – AMPS |
| | | | | To design applications using analog multiplier and PLL |
| | | | | To design ADC and DAC using OP – AMPS |
| | | | | To generate waveforms using OP – AMP Circuits |
| | | | | To analyze special function ICs |
| **20** | | **EC3452** | **Electromagnetic Fields** | To relate the fundamentals of vector, coordinate system to electromagnetic concepts |
| | | | | To analyze the characteristics of Electrostatic field |
| | | | | To interpret the concepts of Electric field in material space and solve the boundary conditions |
| | | | | To explain the concepts and characteristics of Magneto Static field in material space and solve boundary conditions. |
| | | | | To determine the significance of time varying fields |
| **21** | | **EC3401** | **Networks and Security** | To explain the Network Models, layers and functions. |
| | | | | To categorize and classify the routing protocols. |
| | | | | To list the functions of the transport and application layer. |
| | | | | To evaluate and choose the network security mechanisms. |
| | | | | To discuss the hardware security attacks and countermeasures. |
| **22** | | **EC3491** | **Communication Systems** | To gain knowledge in amplitude modulation techniques |
| | | | | To understand the concepts of Random Process to the design of communication systems |
| | | | | To gain knowledge in digital techniques |
| | | | | To gain knowledge in sampling and quantization |
| | | | | To understand the importance of demodulation techniques |
| **23** | | **EC3492** | **Digital Signal Processing** | To apply DFT for the analysis of digital signals and systems |
| | | | | To design IIR and FIR filters |
| | | | | To characterize the effects of finite precision representation on digital filters |
| | | | | To design multirate filters |
| | | | | To apply adaptive filters appropriately in communication systems |
| **24** | | **GE3451** | **Environmental Sciences and Sustainability** | To recognize and understand the functions of environment, ecosystems and biodiversity and their conservation. |
| | | | | To identify the causes, effects of environmental pollution and natural disasters and contribute to the preventive measures in the society. |
| | | | | To identify and apply the understanding of renewable and non-renewable resources and contribute to the sustainable measures to preserve them for future generations. |
| | | | | To recognize the different goals of sustainable development and apply them for suitable technological advancement and societal development. |
| | | | | To demonstrate the knowledge of sustainability practices and identify green materials, energy cycles and the role of sustainable urbanization. |
| **25** | | **EC3501** | **Wireless Communication** | To Understand The Concept And Design Of A Cellular System. |
| | | | | To Understand Mobile Radio Propagation And Various Digital Modulation Techniques. |
| | | | | To Understand The Concepts Of Multiple Access Techniques And Wireless Networks |
| | | | | To Characterize a wireless channel and evolve the system design specifications |
| | | | | To Design a cellular system based on resource availability and traffic demands. |
| **26** | | **EC3552** | **VLSI and Chip Design** | To In depth knowledge of MOS technology |
| | | | | To Understand Combinational Logic Circuits and Design Principles |
| | | | | To Understand Sequential Logic Circuits and Clocking Strategies |
| | | | | To Understand Memory architecture and building blocks |
| | | | | To Understand the ASIC Design Process and Testing. |
| **27** | | **EC3551** | **Transmission Lines and RF** | To Explain the characteristics of transmission lines and its losses. |
| | | | | To Calculate the standing wave ratio and input impedance in high frequency transmission lines. |
| | | | | To Analyze impedance matching by stubs using Smith Charts. |
| | | | | To Comprehend the characteristics of TE and TM waves. |
| | | | | To Design a RF transceiver system for wireless communication |

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| **28** | **V Sem** | **CEC352** | **Satellite Communication** | To dentify the satellite orbits |
| | | | | To Analyze the satellite subsystems |
| | | | | To Evaluate the satellite link power budget |
| | | | | To dentify access technology for satellite |
| | | | | To Designvarioussatelliteapplications |
| **29** | | **CEC345** | **Optical Communication & Networks** | To Define andexplain the basic concepts of optical communication. |
| | | | | To Describe the signal losses with the ircomputation and dispersion mechanism occurring inside the optical fiber cable. |
| | | | | To Differentiate the optical sources used in opticalcommunication with their comparative study. |
| | | | | To Identify different optical components on receiver side;assemble themto solve realworldproblemsrelated to optical communication systems. |
| | | | | To Evaluate the performance of an optical receiver to get idea about power budget and ultimately be an |
| | | **CEC365** | **Wireless Sensor Network Design** | To be able to design solutions for WSNs applications |
| | | | | To be able to develop efficient MAC and Routing Protocols |
| **30** | | | | To be able to design solutions for 6 LOW PAN applications |
| | | | | To be able to develop efficient layer edprotocols in 6 LOW PAN |
| | | | | To be able to useTiny OS and Contiki OS in WSNs and 6 LOW PAN 7 YDNM applications |
| **31** | | **MX3084** | **Disaster Risk Reduction and Management** | To impart knowledge on the concepts of Disaster |
| | | | | To enhance understanding on Hazards |
| | | | | To develop disaster response skills by adopting relevant tools and technology |
| | | | | To Enhance awareness of institutional processes for Disaster response in the country |
| | | | | To Develop rudimentary ability to respond to the surroundings with potential |
| **32** | | **ET3491** | **Embedded Systems and IOT Designs** | To Explain the architecture and features of 8051. |
| | | | | To Developa model of an embedded system. |
| | | | | To List the concepts of real time operating systems |
| | | | | To Learn the architecture and protocols of IoT. |
| | | | | To DesignanIoTbasedsystemfor anyapplication |
| **33** | | **CS3491** | **Artificial Intelligence and Machine Learning** | To Use appropriate search algorithms for problem solving |
| | | | | To Apply reasoning under uncertainty |
| | | | | To Build supervise dlearning models |
| | | | | To Build ensembling and unsupervised models |
| | | | | To Build deeplearning neural network models |
| **34** | | **OEE351** | **Renewable Energy System** | TO Attained knowledge about various renewable energy technologies |
| | | | | To Ability to understand and design a PV system. |
| | | | | To Understand the concept of various wind energy system. |
| | | | | To Gained knowledge about various possible hybrid energy systems |
| | | | | To Attained knowledge about various application of renewable energy technologies |
| **35** | | **CBM341** | **Body Area Networks** | To Comprehend and appreciate the significance and role of this course in the present contemporary world. |
| | | | | To Design a BAN for appropriate application in medicine. |
| | | | | To Assess the efficiency of communication and the security parameters. |
| | | | | To Understand the need for medical device regulation and regulations followed in various regions |
| | | | | To Extend the concepts of BAN formedical applications |
| **36** | | **CEC365** | **Wireless Sensor Network Design** | To be able to design solutions for WSN s applications |
| | | | | To be able to develop efficient MAC and Routing Protocols |
| | | | | To be able to design solutions for 6 LOW PAN applications |
| | | | | To be able to develop efficient layered protocols in 6 LOW PAN |
| | | | | To Study the applications of DSP Processors. |
| **37** | | **CEC348** | **Remotem Sensing** | To understand the principles of electromagnetic radiation. |
| | | | | To learn the atmospheric radiation interactions. |
| | | | | To study the laws of planetary motion. |
| | | | | To classify the different types of resolution |
| | | | | To know the concepts of digital |

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| **38** | | **MX3089** | **Industrial Safety** | To Understand the basic concept to safety. |
| | | | | To Obtain knowledge of Statutory Regulations and standards. |
| | | | | To Know about the safety Activities of the Working Place. |
| | | | | To Analyze on the impact of Occupational Exposures and their Remedies |
| | | | | To Obtain knowledge of Risk AssessmentTechniques. |
| **39** | **SEM VII** | **GE3791** | **Human Values and Ethics** | To Identify the importance of democratic, secular and scientific values in harmonious functioningofsociallife |
| | | | | To Practice democratic and scientific values in both their personal and professional life |
| | | | | To Find rational solutions to social problems. |
| | | | | To Behave in an ethical manner insociety |
| | | | | To Practice critical thinking and the pursuit of truth. |
| **40** | | **GE3751** | **Principles of Management** | To Upon completion of the course, students will be able to have clear understanding ofmanagerialfunctions likeplanning, organizing, staffing,leading&controlling. |
| | | | | To Have same basic knowledge on international aspect of management. |
| | | | | To Ability to understand management concept of organizing |
| | | | | To Ability to understand management concept of directing. |
| | | | | To Ability to understand management concept of controlling. |
| **41** | | **OCE354** | **Basics of Integrated Water Resources Management** | To Describe the context and principles of IWRM; Compare the conventional and integrated ways of water management. |
| | | | | To Discuss on the different water uses; how it is impacted and ways to tackle these impact |
| | | | | To Explain the economic aspects of water and choose the best economic option among the alternatives; illustrate the pros and cons of PPP through case studies. |
| | | | | To llustrate the recent trends in water management. |
| | | | | To Understand the implementation hitches and the institutional frame works |
| **42** | | **OFD353** | **Introduction To Food Processing** | To Beaware ofthedifferentmethodsapplied toprocessingfoods. |
| | | | | To Be able to understand the significance of food processing and the role of food and beverage industries in the supply of foods |
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