Hope Foundation’s

International Institute of Information Technology

P-14, Rajiv Gandhi Info Park, Phase 1, Hinjawadi, Pune 411057

Department of Electronics and Telecommunication

**Course Outcomes (COs)**

**BE (Electronics and Telecommunication) – 2019 Pattern**

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| Course  Code | Name of  Subject/Course | Course Outcomes (Cos) |
| 404181 | Radiation & Microwave Theory | * Apply the fundamentals of electromagnetic to derive free space propagation equation and distinguish various performance parameters of antenna. * Identify various modes in the waveguide. Compare: coaxial line, rectangular waveguides & striplines and identify applications of the same. * Explore construction and working of principles passive microwave devices/components. * Explore construction and working of principles active microwave devices/components * Analyze the structure, characteristics, operation, equivalent circuits and applications of various microwave solid state active devices. * Know the various microwave systems, device set ups of microwave measurement devices and identify the effect of radiations on environmental sustainability. |
| 404182 | VLSI Design & Technology | * Write effective HDL coding for digital design * Apply knowledge of real time issues in digital design * Model digital circuit with HDL, simulate, synthesis and prototype in PLDs * Design CMOS circuits for specified applications * Analyze various issues and constraints in design of an ASIC * Apply knowledge of testability in design and build self-test circuit |

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| 404183 | Cloud Computing | * Explain basic concepts of cloud computing * Describe the underlying principles of different cloud service models * Classify the type of virtualization * Examine the cloud architecture and understand the importance of cloud security * Develop applications on cloud platforms * Evaluate distributed computing and Internet of Things |
| 404184 C | Elective III JAVA Script | * Use basic features of Java script. * Choose relevant data types for developing application in Java script. * Make use of the function and objects as self-contained, with data passing in and out through well-defined interfaces in development of small systems. * Apply the regular expression for Text matching and manipulation. * "Explore use of the various aspects of JavaScript object models that are fundamental to the proper use of the language." * Develop the application using windows controlling and form handling. |
| 404184 E | Elective III Modernized IoT | * Comprehend and analyze concepts of sensors, actuators, IoT and IoE. * Interpret IoT Architecture Design Aspects. * Comprehend the operation of IoT protocols. * Describe various IoT boards, interfacing, and programming for IoT. * Illustrate the technologies, Catalysts, and precursors of MIoT using suitable use cases. * Provide suitable solution for domain specific applications of IoT. |
| 404185 A | Elective IV Data Mining | * Understand the process of data mining and performance issues in data mining * Apply data preprocessing techniques to the historical data collected in data warehouse * "Analyze various types of Frequent pattern analysis methods and advanced Pattern mining * techniques" * Evaluate various data mining algorithms for developing effective data mining models * Analyze different clustering and outlier detection methods * Design data mining models in different mining application areas |

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| 404186 | Lab Practice I (RMT + CC) | * Analyze various antenna performance characteristics and radiating elements. * Analyze tube based and solid-state active devices and passive microwave component along with their applications. * Measure various performance parameters of microwave components using microwave test bench. * "a. Install and use a generic cloud environment like Google App Engine   b. Deploy a web application in Google App Engine"   * "a. Simulate a cloud scenario using CloudSim and run a scheduling algorithm   b. Transfer the files from one virtual machine to another virtual machine"   * "a. Launch virtual machine using try stack   b. Design and deploy a PaaS environment" |
| 404187 | Lab Practice II (VLSI + Elective III) | * Write effective HDL coding for digital design and apply knowledge of combinational and sequential circuits in digital design * Write effective HDL coding for digital design and apply knowledge of real time issues in digital design with input and output peripherals * Design CMOS circuits for specified applications analyze various issues and constraints in logic design * A. To use sensors, actuators and wireless technologies for design of IoT   B. Use basic features and relevant data types for developing application in java script.   * A. To apply different protocols for IoT design B. Apply the function and objects as self-contained, with data passing in and out through well-defined interfaces in development of small systems and regular expression for Text matching and manipulation. * A. To use data handling and analytics tools in IoT   B. Develop the application using windows controlling and form handling that are fundamental to the proper use of the language. |
| 404188 | Project Stage - I | * Identify and formulate the engineering problem that will benefit to society/community/environment after Literature Survey * Demonstrate compliance to the prescribed standards/ safety norms through implementation of the identified engineering problem. * Perform & apply resource requirement analysis to arrive at design solution(s) as accepted by professional ethics. * Engage in effective oral and written communication through presentation of the project work, demonstration of the project and preparation of the video about the project. * Perform in the team, contribute to the team and mentor/lead the team. * Prepare the Gantt Chart for scheduling the project work and designate responsibility of every member of the team. |
| 304189 C | Elective-I Lab- FJP Lab | * Demonstrate the basic principles of Java programming language * Apply the concepts of classes and objects to write programs in Java * Demonstrate the concepts of methods & Inheritance * Implement JAVA program using the concepts of interfaces & packages * Develop robust programs using multithreading and Exception handling in Java * Demonstrate Graphics class, AWT packages and manage input and output files in Java |

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| 304189 D | Elective-I Lab-CN Lab | * Design LAN using appropriate networking architecture, topologies, transmission media, and networking devices. * Understand the working of controlling techniques for flawless data communication using data link layer protocols. * Learn the functions of network layer, various switching techniques and internet protocol addressing. * Explore various interior and exterior, unicasting and multicasting protocols. * Analyze data flow using TCP/UDP Protocols, congestion control techniques for QoS. * Illustrate the use of protocols at application layer |
| **SEMESTER II** | | |
| 404190 | Fiber Optic Communication | * Explain the working of components and measurement equipment in optical fiber networks. * "Calculate the important parameters associated with optical components used in fiber optic telecommunication systems." * Compare and contrast the performance of major components in optical links. * "Evaluate the performance viability of optical links using the power and rise time budget analysis." * "Design digital optical link by proper selection of components and check its viability using simulation tools." * "Compile technical information related to state of art components, standards, simulation tools and current technological trends by accessing the online resources to update their domain knowledge." |
| 404191 E | Elective - 5 Mobile Computing | * Understand concepts of Mobile Communication. * Analyze next generation Mobile Communication System. * Understand network layers of Mobile Communication. * Understand IP and Transport layers of Mobile Communication * "Study of different mathematical models” * Understand different mobile applications |
| 404192 C | Elective - 6 Remote Sensing | * Describe the concepts of remote sensing and electromagnetic radiation interaction. * Explain the sensors characteristics and analyze its resolution. * Classify different types of satellite data products and design various color composites. * Describe the fundamentals of microwave remote sensing. * Analyze GNSS signal structure and augmentation systems. * Demonstrate and describe real life applications of remote sensing. |
| 404193 | Innovation and Entrepreneurship | * Understand Innovation, Entrepreneurship and characteristics of an entrepreneur. * "Develop a strong understanding of the Design Process and its application in variety of business settings." * Generate sustainable ideas. * Explore various processes required to be an entrepreneur. * Understand patents and its process of filing. * Choose and use appropriate social media for marketing. |
| 404194 | Digital Business Management | * Identify drivers of digital business. * Illustrate various approaches and techniques for E-business and management. * Prepare E-business plan. |
| 404195 | Fiber Optic Lab | * "Explain the working of components and measurement equipment in optical fiber networks." * "Calculate the important parameters associated with optical components used in fiber optic telecommunication systems." * Compare and contrast the performance of major components in optical links. * "Evaluate the performance viability of optical links using the power and rise time budget analysis." * "Design digital optical link by proper selection of components and check its viability using simulation tools." * "Compile technical information related to state of art components, standards, simulation tools and current technological trends by accessing the online resources to update their domain knowledge." |
| 404196 | Lab Practice - 3 (Elective - 5) | * To be able to implement the transmission channels with multiple techniques * To be able to analyze the GSM architecture for mobile communications networks * "Study of GPRS services and classify different types of mobile telecommunication systems" * Demonstrate the Adhoc networks concepts and its routing protocols * To understand network and transport layers of Mobile Communication. * To understand IP and TCP layers of Mobile Communication. |
| 404197 | Project Stage - II | * Analyze and interpret the results of experiments conducted on the designed solution(s) to arrive at valid conclusions. * Demonstrate compliance with the prescribed standards/ safety norms through the implementation of the identified engineering problem. * Comply with professional ethical practices during the design, implementation and testing phase. * Engage in effective oral and written communication through the presentation of the project work, demonstration of the project and preparation of the video about the project. * Perform in the team, contribute to the team and mentor/lead the team. * Implement engineering management principles and use project management tools during the project implementation life cycle. |