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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| CourseCode | Name ofSubject/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.
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| 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
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| 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.
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| 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.
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| 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.
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| 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
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| **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."
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| 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
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| 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.
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| 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.
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| 404194 | Digital Business Management | * Identify drivers of digital business.
* Illustrate various approaches and techniques for E-business and management.
* Prepare E-business plan.
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| 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."
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| 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.
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| 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.
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