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)**

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

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| Course  Code | Name of  Subject/Course | Course Outcomes (Cos) |
| 304181 | Digital Communication | * Apply the statistical theory for describing various signals in a communication system. * Explain and compare various digital modulation techniques used in digital communication systems and analyze their performance in presence of AWGN noise. * Explain and compare various digital modulation techniques used in digital communication systems and analyze their performance in presence of AWGN noise. * Describe and analyze the digital communication system with spread spectrum modulation. * Analyze a communication system using information theoretic approach. * Use error control coding techniques to improve performance of a digital communication system. . |
| 304182 | Electromagnetic Field Theory | * Apply the basic electromagnetic principles and determine the fields (E & H) due to the given source. * Apply boundary conditions to the boundaries between various media to interpret behavior of the fields on either side. * State, Identify and Apply Maxwell's equations (integral and differential forms) in both the forms (Static, time-varying or Time-harmonic field) for various sources, Calculate the time average power density using Poynting Theorem, Retarded magnetic vector potential. * Formulate, Interpret and solve simple uniform plane wave (Helmholtz Equations) equations, and analyze the incident/reflected/transmitted waves at normal incidence. * Interpret and apply the transmission line equation to transmission line problems with load impedance to determine input and output voltage/current at any point on the Transmission line, find input/load impedance, input/load admittance, reflection coefficient, SWR, Vmax/Vmin, length of transmission line using Smith Chart.   Carry out a detailed study, interpret the relevance and applications of Electromagnetics. |

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| 304183 | Database Management | * Design E-R Model for given requirements and convert the same into database tables * Design and implement a database schema for a given problem-domain using data model. * Formulate, using SQL/DML/DDL commands, solutions to a wide range of query and update problems. * Implement transactions, concurrency control, and be able to do Database recovery. * Explain Parallel Database Architectures and its applications. * Explain Distributed Databases and its applications |
| 304184 | Microcontroller | * Understand architecture and features of 8051 and PIC18FXX Microcontroller. * Learn interfacing of real-world peripheral devices with microcontroller. * Explore different features of PIC 18F Microcontroller with Architecture. * Use concepts of timers and interrupts of PIC 18 in programming. * Design and develop microcontroller based embedded application. * Demonstrate real life applications using PIC 18. |
| 304185 C | Fundamentals of JAVA Programming | * 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. |
| 304185 D | Computer Networks | * Design LAN using appropriate networking architecture, topologies, transmission media, and networking devices. * Understand the working of controlling techniques for flawless data communication using datalink 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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| 304186 | Digital Communication Lab | * Generate and observe various signals in a communication system. * Explain and compare various digital modulation techniques used in digital communication systems and analyze their performance in presence of AWGN noise. * Explain and compare various digital modulation techniques used in digital communication systems and analyze their performance in presence of AWGN noise. * Describe and analyze the digital communication system with spread spectrum modulation. * Analyze a communication system using information theoretic approach. * Use error control coding techniques to improve performance of a digital communication system. |
| 304187 | Database Management Lab | * Populate and query a database using SQL DDL / DML / DCL commands. * Implement PL/SQL code for given requirement using stored procedure and stored functions * Implement PL/SQL code using Cursors to update/retrieve row by row data. * Use Triggers to write PL/SQL code for automatic update in database on event occurrence. * Implement MySQL database connectivity with Python/Java using JDBC/ODBC. * Implement SQL DDL/ DML/ DCL query on database using simulator made available in Database Virtual Lab. |
| 304188 | Microcontrollers Lab | * To understand the programming microcontroller using C language * To understand architecture and features of typical 8051 Microcontroller and understand need of microcontrollers in real life applications * To learn interfacing of real-world peripheral devices and to study various hardware and software tools for developing applications with 8051 microcontrollers * To understand architecture and features of typical PIC18f4550 Microcontroller and understand need of microcontrollers in real life applications * To learn interfacing of real-world peripheral devices and to study various hardware and software tools for developing applications with PIC18f4550 microcontroller * To learn interfacing of advanced peripheral devices and to study various hardware and software tools for developing applications for RTC, communication-based applications |
| 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 | | |
| 304192 | Cellular Networks | * Calculate path loss and channel estimation coefficient for given condition. * Discuss and study OFDM and MIMO concepts. * Summarize fundamentals of mobile communication. * Prepare link budget analysis and tele-traffic system modeling. * Explain modern and futuristic wireless networks architecture. * Explain performance analysis issues in wireless networks |
| 304193 | Project Management | * Apply the fundamental knowledge of project management for effectively handling the projects. * Identify and select the appropriate project based on feasibility study and undertake its effective planning. * "Assimilate effectively within the organizational structure of project and handle project management * related issues in an efficient manner." * Apply the project scheduling techniques to create a Project Schedule Plan and accordingly utilize the resources to meet the project deadline. * Identify and assess the project risks and manage finances in line with Project Financial Management Process. * Develop new products assessing their commercial viability and develop skillsets for becoming successful entrepreneurs while being fully aware of the legal issues related to Product development and Entrepreneurship. |
| 304194 | Power Devices & Circuits | * Explain working of power devices with gate drive circuits. * To evaluate and analyze performance parameters of AC to DC controlled power converters and its topologies. * To evaluate and analyze performance parameters of DC to AC controlled power converters and its topologies. * To evaluate and analyze performance parameters of DC-to-DC controlled power converters and its topologies. * Explain protection of Power Circuits. * Explain working principle of electronic applications using power devices. |
| 304195 C | Elective -II Advanced JAVA Programming | * Design and develop GUI applications using Applets. * Apply relevant AWT/ swing components to handle the given event * Design and develop GUI applications using Abstract Windowing Toolkit (AWT), Swing and Event Handling. * Access database through Java programs, using Java Database Connectivity (JDBC) * Invoke the remote methods in an application using Remote Method Invocation (RMI) * Develop program for client /server communication using Java Networking classes. |
| 304195 E | Elective -II Network Security | * Analyze attacks on computers and computer security. * Demonstrate knowledge of cryptography techniques. * Illustrate various Symmetric and Asymmetric keys for Ciphers * Evaluate different Message Authentication Algorithms and Hash Functions * Get acquainted with various aspects of E-Mail Security * Assimilate various aspects of Web Security |
| 304196 | Cellular Networks Lab | * Compute the median loss by employing Hata model. * Estimate fading channel coefficient, BER performance of Signe antenna, multi antenna AWGN and Rayleigh fading channel. * Compute the RMS delay spread and doppler shift of received signal. * Perform link budget analysis of given network. * Implement OFDM and evaluate frame error rate against SNR. * Simulate mobile environment to evaluate performance parameters. |
| 304197 | Power Devices & Circuits Lab | * To analyze performance of power devices * To evaluate and analyze performance parameters of DC to AC controlled power converter. * To evaluate and analyze performance parameters of AC to DC controlled power converter. * To evaluate and analyze performance parameters of SMPS/UPS and AC voltage controller. * To demonstrate speed torque characteristics of DC motor / single phase AC motor. * To explain performance parameters of battery |
| 304198 C | Elective -II Advanced JAVA Programming Lab | * Design and develop GUI applications using Applets. * Apply relevant AWT/ swing components to handle the given event * Design and develop GUI applications using Abstract Windowing Toolkit (AWT), Swing and Event Handling. * Access database through Java programs, using Java Database Connectivity (JDBC) * Invoke the remote methods in an application using Remote Method Invocation (RMI) * Develop program for client /server communication using Java Networking classes. |
| 304198 E | Elective -II Network Security Lab | * Analyze attacks on computers and computer security. * Demonstrate knowledge of cryptography techniques. * Illustrate various Symmetric and Asymmetric keys for Ciphers * Evaluate different Message Authentication Algorithms and Hash Functions * Get acquainted with various aspects of E-Mail Security * Assimilate various aspects of Web Security |
| 304199 | Internship | * To develop professional competence through internship. * To apply academic knowledge in a personal and professional environment. * To build the professional network and expose students to future employees. * Apply professional and societal ethics in their day-to-day life. * To become a responsible professional having social, economic and administrative considerations. * To make own career goals and personal aspirations. |
| 3041200 | Mini Project | * To understand the Product Development Process‟ including budgeting through Mini Project. * To plan for various activities of the project and distribute the work amongst team members. * To inculcate electronic hardware implementation skills by Learning PCB artwork design using an appropriate EDA tool, imbibing good soldering and effective trouble-shooting practices, following correct grounding and shielding practices. * To develop student ‘s abilities to transmit technical information clearly and test the same by delivery of Seminar based on the Mini Project. * To understand the importance of document design by compiling Technical Report on the Mini Project work carried out. |