



Hope Foundation's  
**International Institute of Information Technology**

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

**Department of Electronics and Telecommunication**

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**Course Outcomes (COs)**

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

Course Code	Name of Subject/ Course	Course Outcomes (Cos)
207005	Engineering Mathematics - III	<ul style="list-style-type: none"><li><input type="checkbox"/> Solve higher order linear differential equation using appropriate techniques for modelling, analyzing of electrical circuits and control systems.</li><li><input type="checkbox"/> Apply concept of Fourier transform &amp; Z-transform and its applications to continuous &amp; discrete systems, signal &amp; image processing and communication systems.</li><li><input type="checkbox"/> Obtain Interpolating polynomials, numerically differentiate and integrate functions, numerical solutions of differential equations using single step and multi-step iterative methods used in modern scientific computing.</li><li><input type="checkbox"/> Perform vector differentiation &amp; integration, analyze the vector fields and apply to electro-magnetic fields &amp; wave theory.</li><li><input type="checkbox"/> Analyze Complex functions, Conformal mappings, Contour integration applicable to electrostatics, digital filters, signal and image processing.</li></ul>
204181	Electronic Circuits	<ul style="list-style-type: none"><li><input type="checkbox"/> Assimilate the physics, characteristics and parameters of MOSFET towards its application as amplifier.</li><li><input type="checkbox"/> Design MOSFET amplifiers, with and without feedback, &amp; MOSFET oscillators, for given specifications.</li><li><input type="checkbox"/> Analyze and assess the performance of linear and switching regulators, with their variants, towards applications in regulated power supplies.</li><li><input type="checkbox"/> Explain internal schematic of Op-Amp and define its performance parameters.</li><li><input type="checkbox"/> Design, Build and test Op-amp based analog signal processing and conditioning circuits towards various real time applications.</li><li><input type="checkbox"/> Understand and compare the principles of various data conversion techniques and PLL with their applications.</li></ul>

204182	Digital Circuits	<ul style="list-style-type: none"> <li><input type="checkbox"/> Identify and prevent various hazards and timing problems in a digital design.</li> <li><input type="checkbox"/> Use the basic logic gates and various reduction techniques of digital logic circuit.</li> <li><input type="checkbox"/> Analyze, design and implement combinational logic circuits.</li> <li><input type="checkbox"/> Analyze, design and implement sequential circuits.</li> <li><input type="checkbox"/> Differentiate between Mealy and Moore machines.</li> <li><input type="checkbox"/> Analyze digital system design using PLD.</li> </ul>
204183	Electrical Circuits	<ul style="list-style-type: none"> <li><input type="checkbox"/> Analyze the simple DC and AC circuit with circuit simplification techniques.</li> <li><input type="checkbox"/> Formulate and analyze driven and source free RL and RC circuits.</li> <li><input type="checkbox"/> Formulate &amp; determine network parameters for given network and analyze the given network using Laplace Transform to find the network transfer function.</li> <li><input type="checkbox"/> Explain construction, working and applications of DC Machines / Single Phase &amp; Three Phase AC Motors.</li> <li><input type="checkbox"/> Explain construction, working and applications of special purpose motors &amp; understand motors used in electrical vehicles.</li> <li><input type="checkbox"/> Analyze and select a suitable motor for different applications.</li> </ul>
204184	Data Structures	<ul style="list-style-type: none"> <li><input type="checkbox"/> Solve mathematical problems using C programming language.</li> <li><input type="checkbox"/> Implement sorting and searching algorithms and calculate their complexity.</li> <li><input type="checkbox"/> Develop applications of stack and queue using array.</li> <li><input type="checkbox"/> Demonstrate applicability of Linked List.</li> <li><input type="checkbox"/> Demonstrate applicability of nonlinear data structures - Binary Tree with respect to its time complexity.</li> <li><input type="checkbox"/> Apply the knowledge of graph for solving the problems of spanning tree and shortest path algorithm.</li> </ul>
204191	Signals & Systems	<ul style="list-style-type: none"> <li><input type="checkbox"/> Identify, classify basic signals and perform operations on signals.</li> <li><input type="checkbox"/> Identify, Classify the systems based on their properties in terms of input output relation and in terms of impulse response and will be able to determine the convolution between to signals.</li> <li><input type="checkbox"/> Analyze and resolve the signals in frequency domain using Fourier series and Fourier Transform.</li> <li><input type="checkbox"/> Resolve the signals in complex frequency domain using Laplace Transform, and will be able to apply and analyze the LTI systems using Laplace Transforms.</li> <li><input type="checkbox"/> Define and describe the probability, random variables and random signals. Compute the probability of a given event, model, compute the CDF and PDF.</li> <li><input type="checkbox"/> Compute the mean, mean square, variance and</li> </ul>

		standard deviation for given random variables using PDF.
204192	Control Systems	<input type="checkbox"/> Determine and use models of physical systems in forms suitable for use in the analysis and design of control systems. <input type="checkbox"/> Determine the (absolute) stability of a closed-loop control system. <input type="checkbox"/> Perform time domain analysis of control systems required for stability analysis. <input type="checkbox"/> Perform frequency domain analysis of control systems required for stability analysis. <input type="checkbox"/> Apply root-locus, Frequency Plots technique to analyze control systems. <input type="checkbox"/> Express and solve system equations in state variable form. <input type="checkbox"/> Differentiate between various digital controllers and understand the role of the controllers in <input type="checkbox"/> Industrial automation.
204193	Principles of Communication Systems	<input type="checkbox"/> To compute & compare the bandwidth and transmission power requirements by analyzing time and frequency domain spectra of signal required for modulation schemes under study. <input type="checkbox"/> Describe and analyze the techniques of generation, transmission and reception of Amplitude Modulation Systems. <input type="checkbox"/> Explain generation and detection of FM systems and compare with AM systems. <input type="checkbox"/> Exhibit the importance of Sampling Theorem and correlate with Pulse Modulation technique (PAM, PWM, and PPM). <input type="checkbox"/> Characterize the quantization process and elaborate digital representation techniques (PCM, DPCM, DM and ADM). <input type="checkbox"/> Illustrate waveform coding, multiplexing and synchronization techniques and articulate their importance in baseband digital transmission.
204194	Object Oriented Programming	<input type="checkbox"/> Describe the principles of object oriented programming. <input type="checkbox"/> Apply the concepts of data encapsulation, inheritance in C++. <input type="checkbox"/> Understand Operator overloading and friend functions in C++. <input type="checkbox"/> Apply the concepts of classes, methods inheritance and polymorphism to write programs C++. <input type="checkbox"/> Apply Templates, Namespaces and Exception Handling concepts to write programs in C++. <input type="checkbox"/> Describe and use of File handling in C++.
204199	Employability Skills Development	<input type="checkbox"/> Define personal and career goals using introspective skills and SWOC assessment. Outline and evaluate

		<p>short-term and long-term goals.</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Develop effective communication skills (listening, reading, writing, and speaking), self- management attributes, problem solving abilities and team working &amp; building capabilities in order to fetch employment opportunities and further succeed in the workplace.</li> <li><input type="checkbox"/> Be a part of a multi-cultural professional environment and work effectively by enhancing inter-personal relationships, conflict management and leadership skills.</li> <li><input type="checkbox"/> Comprehend the importance of professional ethics, etiquettes &amp; morals and demonstrate sensitivity towards it throughout certified career.</li> <li><input type="checkbox"/> Develop practically deployable skill set involving critical thinking, effective presentations and leadership qualities to hone the opportunities of employability and excel in the professional environment.</li> </ul>
204200	Project Based Learning	<ul style="list-style-type: none"> <li><input type="checkbox"/> Identify the real-world problem (possibly of interdisciplinary nature) through a rigorous literature survey and formulate / set relevant aim and objectives.</li> <li><input type="checkbox"/> Contribute to society through proposed solution by strictly following professional ethics and safety measures.</li> <li><input type="checkbox"/> Propose a suitable solution based on the fundamentals of electronics and communication engineering by possibly the integration of previously acquired knowledge.</li> <li><input type="checkbox"/> Analyze the results and arrive at valid conclusion.</li> <li><input type="checkbox"/> Use of technology in proposed work and demonstrate learning in oral and written form.</li> <li><input type="checkbox"/> Develop ability to work as an individual and as a team member.</li> </ul>