

KRUPAJAL ENGINEERING COLLEGE, BHUBANESWAR
DEPARTMENT OF ELECTRONICS & TELECOMMUNICATION
ENGINEERING

THEORY SUBJECTS

COURSE OUTCOMES (COs)

BASIC ELECTRONICS (RBL1B002) (First Semester)

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|-----|--|
| CO1 | To learn the fundamentals of semiconductors, devices, and their uses in various fields. |
| CO2 | To investigate various biasing methods for BJT circuits, operational amplifiers, FETs, MOSFETs, and transistors. |
| CO3 | Examine the output from various semiconductor devices in various operational modes. |
| CO4 | Compare fundamental electronics components' design challenges, benefits, drawbacks, and restrictions. |

BASIC ELECTRONICS (RBL2B002) (Second Semester)

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|-----|--|
| CO1 | To learn the fundamentals of semiconductors, devices, and their uses in various fields. |
| CO2 | To investigate various biasing methods for BJT circuits, operational amplifiers, FETs, MOSFETs, and transistors. |
| CO3 | Examine the output from various semiconductor devices in various operational modes. |
| CO4 | Compare fundamental electronics components' design challenges, benefits, drawbacks, and restrictions. |

ANALOG ELECTRONIC CIRCUIT (REC3C001) (Third Semester)

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|-----|--|
| CO1 | To learn the fundamentals of semiconductors, devices, and their uses in various fields. |
| CO2 | To investigate various biasing methods for BJT circuits, operational amplifiers, FETs, MOSFETs, and transistors. |
| CO3 | Examine the output from various semiconductor devices in various operational modes. |
| CO4 | Compare fundamental electronics components' design challenges, benefits, drawbacks, and restrictions. |

SIGNALS AND SYSTEMS (REC3C002) (Third Semester)

| | |
|-----|--|
| CO1 | Understand mathematical description and representation of continuous and discrete time signals & systems. |
| CO2 | Develop input output relationship for linear shift invariant system and to understand the convolution operator for continuous and discrete time system |
| CO3 | Understand the limitations of Fourier transform and need for Laplace transform and develop the ability to analyze the system in s- domain. |
| CO4 | Understand the basic concept of probability, random variables & random signals and develop the ability to find correlation, CDF, PDF and probability of a given event. |

DIGITAL SYSTEM DESIGN (REC4C 002) (Fourth Semester)

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|-----|---|
| CO1 | To learn about the digital signal, positive and negative logic, Boolean algebra, logic gates, logical variables, the truth table, number systems, codes, and how they are converted to other systems |
| CO2 | To explore knowledge on how to minimize the hardware requirements for digital circuits, put them into practice, create real-time digital systems, and so forth. |
| CO3 | Recognize how various combinational and sequential circuit's function and the rules for their design, as well as their function in the development of digital systems. |
| CO4 | Acquired knowledge of a variety of component types, including ADC and DAC, memory components, timing circuits for producing various waveforms, and numerous logic families utilized in digital systems. |

ELECTRO MAGNETIC THEORY (REC4C 001) (Fourth Semester)

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|-----|---|
| CO1 | Apply vector analysis and coordinate systems to solve static electric and magnetic field problems. |
| CO2 | Apply Gauss Law, Coulomb's law and Poisson's equation to determine electrostatic field parameters |
| CO3 | Determine magnetic fields from current distributions by applying Biot-Savart's law and Amperes Circuital law. |
| CO4 | Apply Maxwell Equations for the solution of time varying fields and analyze electromagnetic wave propagation in different media. Mapping of course outcomes with program outcomes |

SENSOR AND TRANSDUCER (REC4D 003) (Fourth Semester)

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| CO1 | Understand basic characteristics of sensors and their frequency response |
| CO2 | Student will be able to differentiate the types of sensors and their operation |
| CO3 | Ability to gain knowledge about different signal conditioning elements and their applications |
| CO4 | Ability to analyze about thermoelectric and electromagnetic sensing elements |

ANALOG & DIGITAL COMMUNICATION (REC5C002) (Fifth Semester)

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| CO1 | To gain knowledge of analog communication theory in practice. |
| CO2 | To become more knowledgeable about simulation software. |
| CO3 | Giving the students practical experience will enable them to put their academic knowledge into practice. |
| CO4 | Determine the modulation index and evaluate an analog and digital modulated waveform in the time/frequency domain. |

MICROPROCESSOR AND MICROCONTROLLER (REC5C203) (Fifth Semester)

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| CO1 | Would be able to program for 16 bit arithmetic operations using 8086. |
| CO2 | Would be able to program for sorting and searching using 8086. |
| CO3 | Would be able to understand the string formation and its manipulation using 8086 microprocessor. |
| CO4 | Would be able to write program for digital clock and digital stop watch along with ADC and DAC using 8086 microprocessor. |

FIBER OPTICS AND OPTOELECTRONICS DEVICES (REC5D001) (Fifth Semester)

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| CO1 | Impart knowledge of the structure, propagation, and transmission characteristics of an optical fibre and its communication link. |
| CO2 | To estimate the losses and examine the optical signal's propagation traits in multiple types of fibres. |
| CO3 | To define the fundamentals of optical sources and power launching-coupling techniques. |
| CO4 | Evaluate the features of fiber optic receivers. |

DIGITAL SIGNAL PROCESSING (REC5C001) (Fifth Semester)

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| CO1 | Analyzing digital signals and systems with DFT. |
| CO2 | Able to design FIR filter circuits and to construct IIR filters. |
| CO3 | To describe the impact of finite word length on filters. |
| CO4 | To have a thorough knowledge of the fundamentals of digital signal processing that can be used in communication systems. |

MICROWAVE ENGINEERING (RES6C001) (Sixth Semester)

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| CO1 | To analyze the propagation of waves in the TE, TM, or TEM modes in objects such as rectangular waveguides. |
| CO2 | Create different microwave parts including power dividers, hybrid junctions, microwave solid ferrite devices, microwave amplifiers, and state dips |
| CO3 | Exhibit different basic passive and active microwave device operating concepts |
| CO4 | Use mathematics to analyze how various tubes operate and function. |

WIRELESS COMMUNICATION (RES6C002) (Sixth Semester)

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|-----|--|
| CO1 | To understand how wireless communication systems work and how various wireless communication standards and systems have evolved. |
| CO2 | Understand various wireless communication methods. |
| CO3 | Describe the design, operation, rules, features, and applications of various wireless communication networks. |
| CO4 | Show that you can explain different wireless communication strategies. |

BIOMEDICAL INSTRUMENTS (REI5D002) (Sixth Semester)

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| CO1 | Understand the anatomy and physiology of biomedical system |
| CO2 | The discussion of this physiological systems will cover the levels of cell, tissue and organ. |
| CO3 | Able to measure biomedical and physiological instruments. |
| CO4 | Analyze the application of electronics in diagnostics and therapeutic area. |

ADVANCE DIGITAL SIGNAL PROCESSING (REC7D003) (Seventh Semester)

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|-----|---|
| CO1 | Understand mathematical description and representation of continuous and discrete time signals and systems. |
| CO2 | Able to understand the input output relationship for linear shift invariant system and understand the convolution operator for continuous and discrete time system. |
| CO3 | Understand the basic concept of probability, random variables & random signals |
| CO4 | Able to analyze the correlation, CDF, PDF and probability of a given event. |

RADAR & TELEVISION ENGINEERING (REC7D006) (Seventh Semester)

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| CO1 | Understand and Compare statistical parameters of different types of radars |
| CO2 | Able to understand principles and parameters of television. |
| CO3 | Able to analyze different Techniques relies with television engineering. |
| CO4 | Understand the principle, operation and characteristics of digital TV and display technology. |