



**BANSAL INSTITUTE OF RESEARCH AND TECHNOLOGY,
BHOPAL**
Kokta Anand Nagar, Bhopal



**DEPARTMENT OF ELECTRONICS & COMMUNICATION
ENGINEERING**

COURSE OUTCOMES (COs)

Semester: IV

Course Name: Energy & Environmental Engineering		Course Code: ES-401
Students will be able to:		
CO1:	Select energy conversion methods for deriving power from renewable energy sources.	
CO2:	Understanding the concept and importance of Ecology & ecosystem.	
CO3:	Explain the methods of conservation of the bio diversity.	
CO4:	Identify the Types of pollutants in addition, air, water, soil pollution.	
CO5:	Identify social issues and understand development of environmental act.	

Course Name: Signals & Systems		Course Code: EC-402
Students will be able to:		
CO1:	Understand various types of signals and systems, apply various operations on them.	
CO2:	Explain systems based on their properties and determine the response of LTI system using convolution and implement using MATLAB.	
CO3:	Apply Z Transforms in Continuous and Discrete time systems.	



**DEPARTMENT OF ELECTRONICS & COMMUNICATION
ENGINEERING**

CO4:	Analyze Discrete Time systems in the Frequency domain using Fourier analysis tools like DTFS and DTFT
CO5:	Analyze the state-space representation for various systems and will develop mathematical skills to solve problems in sampling.

Course Name: Analog Communication		Course Code: EC-403
Students will be able to:		
CO1:	Explain the frequency domain analysis of various signals.	
CO2:	Apply and analyze the concept of amplitude modulation (AM).	
CO3:	Describe the functionality of frequency modulation (FM) system.	
CO4:	Apply and analyze the various AM receivers and its challenges	
CO5:	Analyze the various noises associated with communication systems.	

Course Name: Control Systems		Course Code: EC-404
Students will be able to:		
CO1:	To provide the fundamental knowledge of control system engineering and the concept of mathematical modeling of the physical system.	



**DEPARTMENT OF ELECTRONICS & COMMUNICATION
ENGINEERING**

CO2:	Explain the methods of representation of systems and getting their transfer function models and steady state error analysis.
CO3:	The subject gives various classical analysis tools for design and stability of system in the time and frequency domain.
CO4:	Estimate the various ways of designing compensation for a control system.
CO5:	Design the State space representation of systems and relationship between state equation and transfer function.

Course Name: Analog Circuits	Course Code: EC-405
Students will be able to:	
CO1:	Explain the negative feedback topology in amplifiers & concept of positive feedback in oscillators.
CO2:	Illustrate the construction & characteristics of Op-Amp
CO3:	Explain the different applications of op-amp
CO4:	Analyze the construction of 555 timer & amplifiers & various voltage regulator ICs.
CO5:	Select the applications of various Analog ICs



**BANSAL INSTITUTE OF RESEARCH AND TECHNOLOGY,
BHOPAL**
Kokta Anand Nagar, Bhopal



**DEPARTMENT OF ELECTRONICS & COMMUNICATION
ENGINEERING**

Course Name: Simulation Lab		Course Code: EC-406
Students will be able to:		
CO1:	Design, simulate and analyze basic Electronic circuits (rectifiers, clippers, clampers, diode, transistor characteristics etc .) using TINA PRO software	
CO2:	Design, simulate and analysis of basic digital circuits (adder, subtractor, multiplexer etc.) using TINA PRO software	
CO3:	Design and simulate the transient and steady state analysis of RL/ RC/ RLC circuits using TINA PRO software	
CO4:	Demonstrate the realization of network theorems using TINA PRO software	
CO5:	Demonstrate utility of built-in functions in the TINA PRO software	

HOD EC