PROGRAM AND COURSE OUTCOMES

DEPARTMENT OF ELECTRONICS

WMO Arts & Science College, Muttil

Kalpetta, Wayanad, Kerala 673122

Phone:04936-203382

E-mail: info@wmocollege.ac.in

www.wmocollege.ac.in

BSc ELECTRONICS

Program Outcomes

PO1   Be able to communicate effectively in term of oral and written communication skills

PO2   Be passionate to attain professional excellence through lifelong learning

PO3   Apply the knowledge of Electronics, Computer application and mathematics to   analyze, design and develop solutions for real time electronics problems

PO4   Be able to function as a member of a multidisciplinary team with sense of ethics, integrity and social responsibility.

PO5   Be able to use techniques, skills and modern technological/scientific/engineering software/tools for professional practices

PO6   Be competent to pursue higher learning and research

Course Outcomes

Semester	Course	Course Outcome
1	Basic Electronics	• Demonstrate the operation of passive components in filters, integrator and differentiator • Describe the basic semiconductor principles , working of p-n junction diode and transistors • Demonstrate the operation of diodes in clamper and clipper • Apply standard device models to explain/calculate critical internal parameters of semiconductor devices • Explain the behavior and characteristics of power devices such as SCR/UJT etc
	Electronic devices LAB	• Choose the appropriate equipment for measuring electrical quantities and verify the same for different circuits • Examine the characteristics of basic semiconductor devices. • Perform experiments for studying the behavior of semiconductor devices for circuit design applications. • Calculate various device parameters' values from their IV characteristics.

		• Interpret the experimental data for better understanding the device behavior. • Prepare the technical report on the experiments carried.
2.	Electronic Circuits	• Study circuits in a systematic manner suitable for analysis and design • Illustrate about rectifiers, transistor and FET amplifiers and its biasing. Also compare the performances of its low frequency models. • Explain the concepts of feedback and construct feedback amplifiers and oscillators. • Summarizes the performance parameters of amplifiers with and without feedback • Illustrate about various wave shaping circuits using passive components.
	Electronic Circuits lab	• Understand and analyze electronic circuits • Choose the appropriate equipment for measuring electrical quantities and verify the same for different circuits. • Ability to understand and apply circuit theorems and concepts in electronics applications • Design and troubleshoot basic electronics circuits • Prepare the technical report on the experiments carried.
3.	Basic Numerical Skills	• Understand the common numerical methods and how they are used to obtain approximate solutions to mathematical problems. • Understand set operations, matrix and Mathematics of finance, Statistical tools and their applications
	General Informatics	• Updates and expands basic informatics skills and attitudes relevant to the emerging knowledge of society • Equip the students to effectively utilize the digital knowledge resources in learning
	Analog & Digital Integrated Circuits	• Infer the DC and AC characteristics of operational amplifiers and its effect on output and their compensation techniques • Elucidate and design the linear and nonlinear applications of an op-amp and special application ICs • Explain and compare the working of multi vibrators using special application IC 555 and general purpose op-amp. • Understand and represent numbers in powers of base and converting one from the other, carry out

			arithmetic operations
			• Understand basic logic gates, concepts of Boolean algebra and techniques to reduce/simplify Boolean expressions
			• Analyze and design combinatorial as well as sequential circuits
		Digital electronics LAB	• Construct basic combinational circuits and verify their functionalities
			• Apply the design procedures to design basic sequential circuits
			• Learn about counters
			• Understand the basic digital circuits and to verify their operation
4		Entrepreneurship Development	• Appreciate the importance of embarking on self-employment and has developed the confidence and personal skills for the same.
			• Identify business opportunities in chosen sector / sub-sector and plan and market and sell products / services
			• Start a small business enterprise by liaising with different stake holders Effectively manage small business enterprise
		Basics of Audio & Video Media	• To study audio recording systems such CD/DVD recording, Audio Standards, and Acoustics principles
		Microprocessors	• Understand the basic blocks of microcomputers i.e CPU, Memory, I/O and architecture of microprocessor's
			• Apply knowledge and demonstrate proficiency of designing hardware interfaces for memory and I/O as well as write assembly language programs for target microprocessor
			• Derive specifications of a system based on the requirements of the application and select the appropriate Microprocessor
		Microprocessor 8085 LAB	• Interface various I/O devices and design and evaluate systems that will provide solutions to real-world problem
			• Prepare the technical report on the experiments carried
5		Electromagnetic Theory	• Understand the fundamentals of Electrostatics and Magnetostatics hence get the insight of the characteristics of materials and their interactions with electric and magnetic fields
			• Understand the application of Vector Differential and Integral operators in Electromagnetic Theory.
			• Interpret Maxwell's equations in differential and integral forms, both in time and frequency domains.

		• Describe the complex ε, μ, and σ, plane waves, Snell's laws from phase matching, and calculate the reflection and transmission coefficients at the interface of simple media • Calculate input impedance and reflection coefficient of an arbitrarily terminated transmission-line and can use Smith chart to convert these quantities.
	Microcontroller 8051	• Understand the basic blocks of microcomputers i.e CPU, Memory, I/O and architecture of microcontroller • Apply knowledge and demonstrate proficiency of designing hardware interfaces for memory and I/O as well as write assembly language programs for target microcontroller • Derive specifications of a system based on the requirements of the application and select the appropriate microcontroller
	Network Theory	• Understands how to formulate circuit analysis problems in a mathematically tractable way with an emphasis on solving linear systems of equations • Analyze the electric circuit using network theorems • Determine Sinusoidal steady state response.
	Analog Integrated Circuits LAB	• Interpret op-amp data sheets. • Analyze and prepare the technical report on the experiments carried out. • Design application oriented circuits using Op-amp and 555 timer ICs • Create and demonstrate live project using ICs.
	Microcontroller 8051 LAB	• Interface various I/O devices and design and evaluate systems that will provide solutions to real-world problem • Prepare the technical report on the experiments carried
	Digital Fundamentals (Open Course)	• Understand and represent numbers in powers of base and converting one from the other, carry out arithmetic operations • Understand basic logic gates, concepts of Boolean algebra and techniques to reduce/simplify Boolean expressions • Analyze and design combinatorial as well as sequential circuits
	Project	• Survey and study of published literature on the assigned topic

		• Working out a preliminary Approach to the Problem relating to the assigned topic • Conducting preliminary Analysis/ Modelling/ Simulation/ Experiment/ Design/ Feasibility
6	Communication System	• Design basic digital communication systems to solve a given communications problem and they become conversant with the requirements and the protocols employed in the fundamental components in a communication network. • Understand simple block forward error correction codes and basic dispersion compensation concepts and also the concepts of up/down conversion and modulation • Determine the suitability of a particular communication system to a given problem • Describe the concept of "noise" in analog and digital communication systems. Also, get insight on the trade-offs (in terms of bandwidth, power, and complexity requirements) in basic digital communication systems.
	Principles of DSP	• Represent various types of continuous-time and discrete-time signals • Understand the basic concepts related to discrete time signals, systems, Z transform and Fourier transform • Apply knowledge and demonstrate proficiency of analyzing signals in time as well as frequency domain using Fourier and Z transform • Design and analyze IIR/FIR filters with given specifications • Apply transform methods for representing signals and systems in time and frequency domain
	Control Systems	• Understand the concepts of closed loop control systems • Analyse the stability of closed loop systems. • Apply the control techniques to any electrical systems • Compute and assess system stability
	Microwave and radar engineering (Elective)	• Identify the use of microwave components and devices in microwave applications. • Understand the working principles of all the microwave tubes • Understand the working principles of all the solid state devices

		• Choose a suitable microwave tube and solid state device for a particular application
	Communication System LAB	• Understand basic elements of a communication system • Analyze the baseband signals in time domain and in frequency domain • Build understanding of various analog and digital modulation and demodulation techniques • Prepare the technical report on the experiments carried.
	DSP LAB	• Learn the practical implementation issues stemming from the lecture material • Simulate, synthesize and process signals using software tools • Learn to work in groups and to develop MATLAB/ Scilab simulations of various signals and systems. • Prepare the technical report on the experiments carried
	Project	• Implement the working model • Preparing a Written Report on the Study conducted