STELLA MARIS COLLEGE (AUTONOMOUS), CHENNAI
COURSE PLAN June - November 2024

Department : PHYSICS
Name/s of the Faculty : Sr. JOSEPHINE DIANA
Course Title : ELECTRONICS I
Course Code : 23PH/MC/EL33
Shift : I

COURSE OUTCOMES (COs)

COs	Description	CL
CO1	Recall the fundamental concepts of number systems, logic gates, Boolean algebra, K map and relate them with the digital circuits.	K1
CO2	Explain the working of arithmetic circuits, Multiplexer, demultiplexer, Flip Flops and operational amplifier.	K2
CO3	Construct and demonstrate the Combinational and sequential circuits, and operational amplifier circuits.	K3
CO4	Analyze the operation of various combinational and sequential circuits including Op-Amp circuits.	K4
CO5	identify basic requirements for a design application and their role in the digital system design.	K5

Week	Unit No.	Content	Cognitive Level	Teaching Hours	COs	Teaching Learning Methodology	Assessment Methods
Jun 19 – 26, 2024 (Day Order 1 - 6)	1	1 Number Systems, Boolean Algebra and K-map 1.1 Introduction – Analog and digital signals – Digital circuit – Decimal - Binary - Octal and Hexa number systems - Binary arithmetic – Principles of addition – Subtraction- 1s complement and 2s complement method - Multiplication and division.	K1-K5	4	1-5	Lecture, problem solving	Problem sheet
Jun 27 – July 4, 2024 (Day Order 1 - 6)	1	1.2 De Morgan's Theorem - Implementation of Boolean algebra into circuits - Basic logic gates, NAND, NOR, EXOR - Fundamental products – SOP and POS forms - Karnaugh Map - Simplification up to four variables (SOP Only) - Don't care conditions - Realization of logic circuits.	K1-K5	4	1-5	Lecture and power point presentation, Demonstration	Quiz

July 5 – 12, 2024 (Day Order 1 - 6)	2	Digital Circuits 2.1 Arithmetic Circuits: Half adder – Full adder – Half subtractor – Full subtractor - Parallel binary adder.	K1-K5	4	1-5	Lecture and power point presentation, Demonstration,	
July 15 – 23, 2024 (Day Order 1 - 6)	2	2.2 Combination Circuit: Introduction - Multiplexers (4:1) and demultiplexers (1:4), decoder (3-line-to-8-line), BCD to seven segment decoders, encoder (8-line-to-3- line).	K1-K5	4	1-5	Lecture and power point presentation, Demonstration,	COMPONENT TEST I – K2 , K3 level assessment
July 24 – 31, 2024 (Day Order 1 - 6)	2	2.3 Semiconductor memories: Introduction - ROM, PROM, RAM - Flip flop as a RAM cell.	K1-K5	4	1-5	Lecture and power point presentation, Demonstration,	Short theory test
Aug 1 – 5, 2024 (Day Order 1 - 3)	3	3. Flip - Flops, Registers and Counters 3.1 Flip-Flops: Introduction- SR - Clocked SR – D- JK Flip flop	K1-K5	2	1-5	Lecture and power point presentation, Demonstration,	
Aug 6 – 10, 2024	**C.A. Test – I**						
Aug 12 – 14, 2024 (Day Order 4-6)	3	3.1 JK Master Slave - T - Flip-Flops and their truth tables	K1-K5	2	1-5	Lecture and power point presentation, Demonstration,	Assignment – K6

Aug 16 – 23, 2024 (Day Order 1-6)	3	3.2 Registers and Counters: Shift registers – Shift right - Shift left registers - Ripple counter – Mod-2, Mod-8, Mod16 counters - Binary ripple counter (4 bit up counter - 4 bit down counter) - Decade counter.	K1-K5	4	1-5	Lecture and power point presentation, Demonstration,	
Aug 27 – Sep 3, 2024 (Day Order 1-6)	4	Operational Amplifier 4.1 Operational Amplifier - Differential Amplifier – CMRR – Virtual Ground – Non-inverting – Inverting modes of operation – Gain equation.	K1-K5	4	1-5	Lecture and power point presentation, Demonstration, Problem solving	Questioning on the classes taught
Sep 4 – 11, 2024 (Day Order 1-6)	4	4.2 Operational amplifier application – Adder, subtractor - Scale and sign changer – Differentiator – Integrator – Voltage follower – Comparator -	K1-K5	4	1-5	Lecture and power point presentation, Problem solving	PROBLEM TEST – K4 , K5
Sep 12 - 20, 2024 (Day Order 1-6)	4	4.2 Electronic analog computation – Solution of simultaneous equations – Differential equation.	K1-K5	4	1-5	Lecture, Group discussion, Problem solving	Solving equations
Sep 23 - 26, 2024 (Day Order 1-4)	4	Problems in operational amplifiers and solving equations.	K1-K5	2	1-5	Lecture, Problem solving	
Sep 27 – Oct 3, 2024	**C.A. Test – II**						

Date		Topic				Method	
Oct 4 – 5, 2024 (Day 5 & 6)	5	D/A and A/D converters 5.1 Introduction to converters	K1-K5	1	1-5	Lecture and power point presentation, Demonstration Video	
Oct 7 - 15, 2024 (Day Order 1 to 6)	5	5.1 Binary Weighted resistor D/A converter – R–2R resistive ladder D/A converter.	K1-K5	4	1-5	Lecture and power point presentation, Demonstration Video	Short class test
Oct 16 - 22, 2024 (Day Order 1 to 6)	5	5.2 Analogue to Digital: Counter type A/D converter - A/D conversion using voltage to frequency converter - Parallel comparator A/D converter.	K1-K5	4	1-5	Lecture and power point presentation, Demonstration Video	
Oct 23 - 24, 2024 (Day Order 1 to 2)	**REVISION**						