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

Department : Physics
Name/s of the Faculty : Dr. Daries Bella R.S
Course Title : Electronics
Course Code : 23PH/PC/EL14
Shift : II

COURSE OUTCOMES (COs)

COs	Description	CL
CO1	Acquire knowledge on fundamental theories and principles of semiconductor devices, microprocessor, peripheral interface and their basic operations.	K1
CO2	Develop a firm understanding on the concepts of H and Z parameters of transistors, trans-conductance of FET, operations of flip-flops, counters and registers, operations of op-amps and 555 timer, arithmetic operations and programming technique in microprocessors	K2
CO3	Apply the theoretical concepts of the working of different devices to modify them as an amplifier, voltage variable resistor, switch, rectifiers, counters, registers, voltage controlled oscillator, 8085 and 8255.	K3
CO4	Analyze the performance of different amplifier circuits, rectifier circuits, filters, counters, registers and assembly programming languages using instruction sets.	K4
CO5	Develop expertise in programming and designing of the circuits for day-to-day applications.	K5, K6

Week	Unit No.	Content	Cognitive Level	Teaching Hours	COs	Teaching Learning Methodology	Assessment Methods
Jun 24 – 26, 2024 (Day Order 4 - 6)	I	Types of Transistor Amplifiers (CE, CC, CB)- H parameter – Z parameter	K1-K4	4	CO1-CO4	Lecture, PPT	Discussion and questioning
Jun 27 – July 4, 2024 (Day Order 1 - 6)		Types of FET (JFET, D-MOSFET, E- MOSFET) –Structure and constructional features - working principle and characteristics, transconductance G_m-JFET as voltage variable resistor- MOSFET as a switch. SCR theory	K1-K4	5	CO1-CO4	Lecture, PPT	Problem solving
July 5 – 12, 2024 (Day Order 1 - 6)	I, II	Construction and characteristics – SCR as half wave and full wave rectifier. **Unit-II Digital Electronics** **DTL** type AND, OR, NAND and NOR	K1-K4 K1-K6	4 1	CO1-CO4 CO1-CO6	Lecture, PPT	Discussion and questioning
July 15 – 23, 2024 (Day Order 1 - 6)	II	**RTL** type NAND and NOR **TTL** type NAND **ECL** and **I²L** circuits - CMOS NOR and CMOS NAND.	K1-K6	5	CO1-CO5	Lecture and demonstration video	Third component(problem test)

July 24 – 31, 2024 (Day Order 1 - 6)	II	**Flip – Flops**: RS, RST, D JK and JK master-slave flip flops **Counters-Asynchronous Counters**: 4bit binary ripple counter	K1-K6	5	CO1-CO5	Lecture and demonstration video	Questioning
Aug 1 – 5, 2024 (Day Order 1 - 3)	II	Mod-5, mod-7, Mod counter –decade counter – up counter – down counter – up-down counter.	K1-K6	2	CO1-CO5	Lecture ,PPT	Questioning problem solving
Aug 6 – 10, 2024	**C.A. Test - I**						
Aug 12 – 14, 2024 (Day Order 4-6)	II	**Synchronous counters**: mod -8, mod-7 mod-6 and mod -5 parallel counters – raceproblem **Registers**: Serial shift register Ring counter – Johnson counter	K1-K6	3	CO1-CO5	Lecture ,PPT	Questioning problem solving

Aug 16 – 23, 2024 (Day Order 1-6)	III	**Op Amp, Filters, Timer and Its Applications** **Op-amp:** Instrumentation amplifier – Transducer bridge – applications- Temperature indicator, Flux meter and weighing machine Analog integrator, differentiator Design of analog circuits for the solution of differential equation and simultaneous equation using op amp	K1-K6	5	K1-K6	Lecture, demonstration video	Questioning, problem solving
Aug 27 – Sep 3, 2024 (Day Order 1-6)	III	Sample and hold system – analog multiplexer. **Active filters**: high, low and band pass filters – first order and second order filters. **Timer555**: Internal architecture and working – monostable and astable operation – voltage control oscillator (VCO) 566	K1-K6	5	CO1-CO5	Lecture ,PPT demonstration video	Questioning problem solving

Sep 4 – 11, 2024 (Day Order 1-6)	III, IV	PLL concept - Phase locked loop IC 565 **8085 Programming and Interfacing** Architecture of 8085 addressing modes- instruction sets – programming technique - assembly language programs	K1-K6 K1-K6	1 4	CO1-CO5 CO1-CO5	Lecture ,PPT, demonstration video	Questioning, presentation
Sep 12 - 20, 2024 (Day Order 1-6)	IV	Multibyte arithmetic operations, array programme –code conversion (BCD to binary, binary to BCD)-block move- Timing diagram for memory READ and memory WRITEcycles	K1-K6	5	CO1-CO5	Lecture ,PPT, demonstration video	Third component (Program writing and execute the program)
Sep 23 - 26, 2024 (Day Order 1-4)	IV	Memory WRITEcycles Memory mapping – I/O schemes – memory mapped I/O	K1-K6	3	CO1-CO5	Lecture ,PPT	Program writing
Sep 27 – Oct 3, 2024	**C.A. Test – II**						
Oct 4 – 5, 2024 (Day 5 & 6)	IV V	I/O mapped I/O schemes – comparison between them. **Interfacing Peripheral and I/O Systems** Programmable peripheral interface 8255: Architecture of 8255	K1-K6 K1-K6	1 2	CO1-CO5 CO1-CO5	Lecture ,PPT , demonstration video Lecture ,PPT ,demonstration video	Questioning Discussion

Oct 7 - 15, 2024 (Day Order 1 to 6)	V	Control signals of 8255 operational modes Assembly language programs for interfacing of traffic light control	K1-K6	5	CO1-CO5	Lecture,PPT	Third component (Quiz)
Oct 16 - 22, 2024 (Day Order 1 to 6)	V	Interfacing multiplexed 7 segmentdisplay Interfacing of DAC and ADC – Stepper motor interface.	K1-K6	5	CO1-CO5	Lecture,PPT, demonstration video	Questioning, Discussion
Oct 23 - 24, 2024 (Day Order 1 to 2)	**REVISION**						