

STELLA MARIS COLLEGE (AUTONOMOUS), CHENNAI**COURSE PLAN (June - November 2026)**

Department : PHYSICS
Name/s of the Faculty : Ms. J. Josfel Flora
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-Amp and 555 timer, arithmetic K2 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 the circuits for day to-day applications.	K5, K6

CL – Cognitive Level

K1 – Remember | K2 – Understand | K3 – Apply | K4 – Analyse | K5 – Evaluate | K6 – Create

Week	Unit No.	Content	Cognitive Level	Teaching Hours	COs	Teaching Learning Methodology	Assessment Methods
Jun 22, 2026 (Day Order 6)	1	Transistor Amplifiers – Establishing the Q point – Types of Transistor Amplifiers (CE,CC,CB)- H parameter – Z parameter	K1-K4	5	1-4	Lecture: presentation Problem solving: board and chalk	Oral evaluation
Jun 23 – July 1, 2026 (Day Order 1- 6)	1	Types of FET (JFET, D-MOSFET, E- MOSFET) - Structure and constructional features - working principle and characteristics - transconductance Gm- JFET as voltage variable resistor- MOSFET as a switch.	K1-K4	5	1-4	Lecture and online flashcards Problem solving in groups	Quiz Problem solving: On board
July 2 – July 8, 2026 (Day Order 1- 6)	1	SCR theory, construction and characteristics – SCR as half wave and full wave rectifier.	K1-K4	5	1-4	Lecture: board and chalk Activity: poster making of the architecture of 8085	Peer Evaluation: written test Written test on programs

	4	Architecture of 8085 – addressing modes	K1-K6		1-5		for various Addressing modes
July 9 – 16, 2026 (Day Order 1- 6)	4	instruction sets – programming technique - assembly language programs – multibyte arithmetic operations, array programme -code conversion (BCD to binary, binary to BCD) block move	K1-K6	5	1-5	Lecture: presentation Demonstration of the concept using a microprocessor Program writing in groups	Self-Reflection: Home test encourages students to evaluate their own progress
July 17 – 24, 2026 (Day Order 1- 6)	4	Timing diagram for memory READ and memory WRITE cycles – Memory mapping – I/O schemes – memory mapped I/O and I/O mapped I/O schemes – comparison between them.	K1-K6	5	1-5	Lecture: board and chalk Group discussion on the timing diagram and schemes	Class test on the diagrams Component – test I: 15 marks (Seminar: K1-K6 level; Units-1 to 5)
July 25 – 28, 2026 (Day Order 1- 3)	2	Flip – Flops: RS, RST, D, JK and JK master slave flip flops	K1-K6	2	1-5	Lecture: presentation Demonstration in the Lab	Brain storming

July 29 – Aug 3, 2026	C.A. Test - I						
Aug 4 - 6, 2026 (Day Order 4 - 6)	2	Counters-Asynchronous Counters: 4bit binary ripple counter – mod-5, mod-7 and mod counter – decade counter – up counter – down counter – up-down counter	K1-K6	3	1-5	Lecture: presentation, charts with the counters Video: to demonstrate the working	Self- Reflection: Home test encourages students to evaluate their own progress
Aug 7 – 14, 2026 (Day Order 1- 6)	2	Synchronous counters: mod -8, mod-7, mod-6 and mod -5 parallel counters – race problem Registers: Serial shift register – Ring counter – Johnson counter	K1-K6	5	1-5	Lecture: Presentation Demonstration in the Lab	Peer Evaluation: written test
Aug 17 - 24, 2026 (Day Order 1- 6)	2	DTL type AND, OR, NAND and NOR – RTL type NAND and NOR – TTL type NAND-- ECL and I ² L circuits - CMOS NOR and CMOS NAND.	K1-K6	5	1-5	Lecture: Presentation Video: to demonstrate the working Group activity: puzzle	Rapid fire session
Aug 25 – Sep 2, 2026 (Day Order 1- 6)	3	Op Amp, Filters, Timer and Its Applications Op- amp: Instrumentation	K1-K6	5	1-5	Flipped Classroom: Having students consume lecture	Problem solving: On

		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 – Sample and hold system – analog multiplexer.				materials at home through multimedia, while dedicating class time to interactive discussions on the unit.	board
Sep 3 – 11, 2026 (Day Order 1- 6)	3	Active filters: high, low and band pass filters – first order and second order filters. 555 Timer: Internal architecture and working – monostable and astable operation – voltage control oscillator (VCO) 566 – PLL concept - Phase locked loop IC 565	K1-K6	5	1-5	Lecture: Presentation	Group relay: Written tests in groups Student generated quizzes: After a lesson, students work in groups to create quiz questions. They can then exchange and peer-review

							the questions, which helps reinforce their understanding of the material
Sep 15-17, 2026 (Day Order 1 - 3)	5	Programmable peripheral interface 8255: Architecture of 8255 – control signals of 8255 – operational modes	K1-K6	2	1-5	Lecture and videos	Concept mapping: Students create a visual diagram of the architecture and connect it with their ideas and concepts. Component – test II: 20 marks (Create your own working model using a concept learnt through this course: K1-

