STELLA MARIS COLLEGE (AUTONOMOUS), CHENNAI

COURSE PLAN (June - November 2026)

Department : **Computer Science**

Name/s of the Faculty : **Ms. J. Birunda Antoinette Mary (Sec-A), Ms. Charulatha R. (Sec - B)**

Course Title : **Procedure Oriented Programming using C**

Course Code : **25CS/MC/PO15**

Shift : **II**

COURSE OUTCOMES (COs)

COs	Description	CL
CO1	define and explain the computing concepts, C syntax and compilation process, control flow statements, arrays, and functions in C programming	K1, K2
CO2	utilise the C programming concepts and solve simple problems	K3
CO3	examine the program, debug and execute using utility tools	K4
CO4	compare the different programming approaches and choose a best approach to solve the given problem	K5
CO5	develop an appropriate flow of logic to solve a given problem and choose proper debugging strategies for fixing errors	K6

Week	Unit No.	Content	Cognitive Level	Teaching Hours	COs	Teaching Learning Methodology	Assessment Methods
Jun 22, 2026 (Day Order 6)	1	**Introduction to Computing** **1.1 Basics of Computing** History and Evolution of Programming Languages - Compilers vs Interpreters - Introduction to Problem Solving - Algorithm	K1 - K6	1	1-5	Lecture with Illustration of an Example Problem - Finding the largest number from a given list of numbers. Apply problem-solving techniques – To search for a given number in a list using Role Play	Write simple algorithms
Jun 23 – July 1, 2026 (Day Order 1- 6)	1 & 2	**1.2 Basics of C Programming** Overview of C Language - Basic structure of a C Program - Writing and Executing a Program - Compiling with gcc - Handling Compilation Errors and Warnings - Comments Basic elements in C Programming 2.1 Identifiers, Data types and Constants	K1 - K6	5	1-5	Lecture with Demo Group Activity Lecture with Demo Write simple c programs. Compile and execute it. Write programs that accept input from user. Use proper names for variables.	Practical exercises

		Tokens- Identifiers - Data types - Unsigned and Signed data types, Overflow, underflow, sizeof operator - Input and Output functions					
July 2 – July 8, 2026 (Day Order 1- 6)	2	Constants - const Keyword, Symbolic Constants - Keywords - prefix and postfix expressions - Escape Characters **2.2 Operators** Assignment – Arithmetic - Relational - Operator Precedence	K1 - K6	5	1-5	Lecture Write C programs with arithmetic expressions and various C operators.	Practical exercises
July 9 – 16, 2026 (Day Order 1- 6)	2	Operators – Logical – Bitwise - Type Casting **2.3 Control Flow Statements** Conditional Statements- Different forms of if, switch- case, ternary operator - Looping Statements - for	K1 - K6	5	1-5	Lecture. Write programs using if, switch and for loops. Write programs using a while loop. Differentiate between break and continue. Trace and Review code	Practical exercises
July 17 – 24, 2026 (Day Order 1- 6)	2	Looping - while, break, continue - do-while - goto	K1 - K6	5	1-5	Lecture & Illustration.	Practical exercises.

						Draw flowcharts.	**Component I - MCQ, Trace Code and find output (25 marks) - Units 1, 2**
July 25 – 28, 2026 (Day Order 1- 3)	2	Flowchart – Symbols - Start, Stop, Process, Decision Making, Input, Output, Connector	K1 - K6	2	1-5	Lecture & Illustration. Draw flowcharts.	Practical exercises
July 29 – Aug 3, 2026	**C.A. Test - I**						
Aug 4 - 6, 2026 (Day Order 4 - 6)	3	**3.1 Compilation Stages** Preprocessing - Compilation - Assembly - Linking - Execution - Static vs. Dynamic Linking	K1 - K6	3	1-5	Lecture and demo. Write programs using do while	Practical exercises
Aug 7 – 14, 2026 (Day Order 1- 6)	3	**3.2 Debugging** Types of errors - Syntax Errors, Runtime Errors, Logical Errors - Debugging Strategies 3.3 Debugging using GDB Compiling with Debugging Symbols - Starting and	K1 - K6	5	1-5	Identify different types of errors. Use the GDB tool to debug errors. Test program with test cases	Practical exercises

		Ending Sessions - Setting Breakpoints - run - next - continue - Inspecting Variables **3.5 Testing Strategies** Functional Testing - Manual test cases writing, Boundary Value Analysis					
Aug 17 - 24, 2026 (Day Order 1- 6)	4	**Arrays** **4.1 One-dimensional and Two-dimensional arrays** One-Dimensional Arrays- Array declaration, initialization, Accessing and modifying array elements- Two-Dimensional Arrays	K1 - K6	5	1-5	Write programs using arrays. Code Review	Practical exercises
Aug 25 – Sep 2, 2026 (Day Order 1- 6)	5	Functions and Storage classes **5.1 User defined Functions** Function declaration and definition - Function call - Passing Arguments - Returning Values - Passing Arrays	K1 - K6	5	1-5	Write programs using functions	Practical exercises
Sep 3 – 11, 2026 (Day Order 1- 6)	5	- Call Stack - GDB commands - Backtrace -	K1 - K6	5	1-5	Lecture and demo	**Component II - Practical**

		Frame - Step - Difference between Next and Step – Finish - Recursion				Trace a function to understand its working	**Test Units 3, 4 (25 marks)**
Sep 15-17, 2026 (Day Order 1 - 3)	3	**3.4 Makefiles** Writing a Makefile - Automating the Compilation and Linking Process - Compiling Multiple Files	K1 - K6	2	1-5	Lecture and Demo. Create make files to develop applications with multiple source files.	Practical exercises
Sep 18 –23, 2026	**C.A. Test - II**						
Sep 24 - 28, 2026 (Day 4 – 6)	5	**5.2 Storage classes** auto, register, static, extern	K1 - K6	3	1-5	Lecture and demo	Practical exercises
Sep 29 – Oct 7, 2026 (Day Order 1 - 6)	5	**5.3 Enums** Syntax – Assigning values to enum	K1 - K6	5	1-5	Lecture and demo	Practical exercises
Oct 8 - 14, 2026 (Day Order 1 - 6)	4 & 5	Practical	K1 - K6	5	1-5	Practical	
Oct 15 - 21, 2026 (Day Order 1- 4)	**REVISION**						

STELLA MARIS COLLEGE (AUTONOMOUS), CHENNAI

COURSE PLAN (June - November 2026)

Department : **Computer Science**

Name/s of the Faculty : **Ms. Nancy Arokia Rani S, Ms. Nandhini S.**

Course Title : **Digital Logic Fundamentals**

Course Code : **25CS/MC/DL15**

Shift : **II**

COURSE OUTCOMES (COs)

COs	Description	CL
CO1	define the fundamental concepts of number systems, logic gates, Boolean algebra, combinational and sequential circuits, memory, CPU components, instructions	K1
CO2	explain number systems, logic gates, Boolean algebra, simplification techniques, combinational and sequential circuits, memory, and programmable logic systems	K2
CO3	apply Boolean expressions and logic gate principles to design combinational and sequential circuits along with registers and counters	K3
CO4	analyze the behavior of combinational and sequential circuits, registers, counters in clocked systems	K4
CO5	evaluate circuits, registers, memory, and logic gates using truth tables, Boolean algebra, K-maps, and state table	K5

Week	Unit No.	Content	Cognitive Level	Teaching Hours	COs	Teaching Learning Methodology	Assessment Methods

Jun 22, 2026 (Day Order 6)	1	**Binary Systems and Data Representation** **1.1 Fundamentals of Binary System** Digital Computer and Digital System - Representation of Data: Bits, Bytes, and Words - Binary Numbers	K1 - K2	1	1-2	Presentation / Lecture	Solving Problems
Jun 23 – July 1, 2026 (Day Order 1- 6)	1	**Cont 1.1 Fundamentals of Binary System** Number Base Conversions - Octal and Hexadecimal Numbers - Sign-Magnitude - Complements of Numbers **1.2 Binary Codes and Error Handling** Binary Codes - Binary Coded Decimal Code - Other Decimal Codes - Gray Code - ASCII Character code - Error Detecting Code – Error Detection and Correction - Binary Logic.	K1 - K2	6	1-2	Lecture	Discussion and Quiz

July 2 – July 8, 2026 (Day Order 1- 6)	2	**Boolean Logic and Gate-Level Optimization** **2.1 Boolean Algebra and Logic Gates** Boolean Algebra and Logic Gates - Definitions, Axiomatic Definition of Boolean Algebra - Basic Theorems and Properties of Boolean Algebra - Boolean Functions - Canonical and Standards Forms - Digital Logic Gates	K1-K3	6	1-3	Lecture / Presentation	Component 1: (25 marks) Numerical problem based assessment on Binary System and Logic Gates.
July 9 – 16, 2026 (Day Order 1- 6)	2	**2.2 Gate Level Minimization** The map method - Two and Three Variable maps - four variable K map - Don't Care Conditions - NAND-NOR Implementation	K1-K3	6	1-3	Lecture	Solving problems
July 17 – 24, 2026 (Day Order 1- 6)	3	**3.1 Combinational Logic** Combinational circuits	K1-K5	6	1-5	Lecture	Discussion
July 25 – 28, 2026 (Day Order 1- 3)	3	**Cont 3.1 Combinational Logic**	K1-K5	3	1-5	Lecture	Discussion

		Combinational circuits - Half Adder and Full Adder					
July 29 – Aug 3, 2026	**C.A. Test - I**						
Aug 4 - 6, 2026 (Day Order 4 - 6)	3	**Cont 3.1 Combinational Logic** Binary Adder - Subtractor - Decoders - Encoders - Multiplexers - Demultiplexers	K1-K5	3	1-5	Lecture / Presentation	Quiz and Discussion
Aug 7 – 14, 2026 (Day Order 1- 6)	3 4	**3.2 Designing Circuits Using a Tool** **Sequential Circuits and Storage Elements** **4.1 Synchronous sequential logic**	K1-K5	6	1-5	Lecture	Practical Exercise
Aug 17 - 24, 2026 (Day Order 1- 6)	4	**Cont 4.1** Sequential circuits - Storage Elements - Latches, Flip Flops - SR, RS, Master Slave JK flip flop - Analysis of Clocked sequential circuits	K1-K5	6	1-5	Lecture / Presentation	Open book test
Aug 25 – Sep 2, 2026 (Day Order 1- 6)	4	**4.2 Demonstration of Flip-Flops using Tool**	K1-K5	5	1-5	Learning By Doing / Demo	Practical Exercise

		4.3 Registers and Counters Registers - Shift Register					
Sep 3 – 11, 2026 (Day Order 1- 6)	4	**Cont 4.2** Ripple Counters - Synchronous Counters - Binary Storage and Registers	K1-K5	5	1-5	Lecture / Presentation	Component 2: (25 marks) Conceptual based quiz on Flip Flops and Registers
Sep 15-17, 2026 (Day Order 1 - 3)	5	**Memory Systems and Computer Architecture** **5.1 Memory and Programmable Logic**	K1-K5	2	1-5	Lecture	Quiz
Sep 18 –23, 2026	**C.A. Test - II**						
Sep 24 - 28, 2026 (Day 4 – 6)	5	**Cont 5.1 Memory and Programmable Logic** ROM, RAM, Flash Memory, Cache, Main memory, Secondary Storage – Programmable Logic Array - Programmable Array Logic	K1-K5	4	1-5	Lecture / Presentation	Questionnaire
Sep 29 – Oct 7, 2026 (Day Order 1 - 6)	5	**5.2 Basic Computer Architecture**	K1-K5	6	1-5	Lecture / Presentation	Discussion

		Von Neuman Architecture 5.3 Basic CPU Structure Component of CPU - ALU, Control Unit, Registers,					
Oct 8 - 14, 2026 (Day Order 1 - 6)	5	**Cont 5.3** Data Path - Instruction Format and Structure - Opcode and Operands, Addressing modes, Instruction Length and encoding - Instruction Life Cycle - Fetch, Decode, Execute.	K1-K5	6	1-5	Lecture	Open book test
Oct 15 - 21, 2026 (Day Order 1- 4)	**REVISION**						

STELLA MARIS COLLEGE (AUTONOMOUS), CHENNAI

COURSE PLAN (June - November 2026)

Department : **Computer Science**

Name/s of the Faculty : **Ms. A R Charulatha, Dr. Harshini Manoharan**

Course Title : **FUNDAMENTALS OF COMPUTING**

Course Code : **25CS/SE/FC12**

Shift : **II**

COURSE OUTCOMES (COs)

COs	Description	CL
CO1	demonstrate the working of low-level programming	K3
CO2	analyze the structure of assembly language programs	K4
CO3	develop, debug and execute assembly language programs in a Linux command line environment	K6

Week	Unit No.	Content	Cognitive Level	Teaching Hours	COs	Teaching Learning Methodology	Assessment Methods
Jun 22, 2026 (Day Order 6)	1	**Introduction to Linux environment** Operating system - Linux kernel - Proprietary vs open-source operating systems – Shell	K3	1	1	Lecture / Presentation	Discussion

Jun 23 – July 1, 2026 (Day Order 1- 6)	1	Bash shell - Terminal - CLI and GUI - User types - root, normal File - Hierarchical File System	K3	2	1	Lecture / Presentation	Discussion
July 2 – July 8, 2026 (Day Order 1- 6)	1	File paths - Home directory - Current working directory: pwd command Using man pages - man page sections 1 and 3	K3	2	1	Learning by doing	Quiz/ Lab Exercise
July 9 – 16, 2026 (Day Order 1- 6)	1	Directory navigation: cd, ls, ls -l commands - Creating and manipulating files and directories: cat, mkdir, cp, mv, rm, rmdir commands	K3	2	1	Learning by doing	Discussion
July 17 – 24, 2026 (Day Order 1- 6)	1	File/Directory permissions: chmod command - Binary and text files - Simple search and pattern matching:	K3	2	1	Learning by doing	**Component I (10 marks)** Work with Linux using command line interface [Unit I]
July 25 – 28, 2026 (Day Order 1- 3)	1	find, grep – grep -i Measuring the execution	K3	1	1	Lecture / Demos	Quiz

		time: time command - Output/error redirection – termination status of a program using echo $?					
July 29 – Aug 3, 2026	**C.A. Test – I**						
Aug 4 - 6, 2026 (Day Order 4 - 6)	2	**Computer Architecture and Assembly Language** 2.1 Computer system fundamentals Von Neumann computer system block diagram- Intel x86-64 CPU	K4-K6	1	2-3	Lecture / Presentation	Quiz
Aug 7 – 14, 2026 (Day Order 1- 6)	2	Registers - General-Purpose Registers in x86-64 **2.2 Introduction to Assembly Language** Structure of an assembly language program	K4-K6	2	2-3	Lecture /Demo	Discussion
Aug 17 - 24, 2026 (Day Order 1- 6)	2	Labels, section, instructions, comments - Structure of instructions - mov - add - Assembling using nasm and linking using ld -	K4-K6	2	2-3	Lecture / Presentation	Lab Exercise

Aug 25 – Sep 2, 2026 (Day Order 1- 6)	2	Exiting program using syscall - Structure of assembler error messages - Variables - Data section	K4-K6	2	2-3	Lecture / Presentation	Quiz
Sep 3 – 11, 2026 (Day Order 1- 6)	2	Instruction operand types: register, memory, immediate - Moving contents of a variable into a register - sub - Examining size of sections: Linux size command	K4-K6	2	2-3	Lecture / Presentation	Lab Exercise
Sep 15-17, 2026 (Day Order 1 - 3)	2	**2.3 Branching and Looping** cmp – CPU status flags - Conditional jump: jc – Unconditional jump: jmp	K4-K6	1	2-3	Lecture / Presentation	Presentation
Sep 18 –23, 2026	**C.A. Test – II**						
Sep 24 - 28, 2026 (Day 4 – 6)	3	**Functions in Assembly Language** 3.1 Debugging using GDB Including debugging symbols – starting debugging session - setting breakpoints – run	K4-K6	1	2-3	Video Lecture	Discussion

Sep 29 – Oct 7, 2026 (Day Order 1 - 6)	3	inspecting register contents using “info registers” – executing an instruction using next – printing the contents of a register – eflags - continue – quit	K4,K6	2	2-3	Demonstration	**Component II (40 marks)** Develop and debug assembly code [Unit II & III]
Oct 8 - 14, 2026 (Day Order 1 - 6)	3	**3.2 Functions** call – ret – objdump - using stack: push and pop instructions – prologue and epilogue - stack integrity	K4 -K6	2	2-3	Role play	Presentation
Oct 15 - 21, 2026 (Day Order 1- 4)	**REVISION**						