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

Department : Computer Science
Name/s of the Faculty : Ms. J. Birunda Antoinette Mary (Sec-A), Ms. U. Jeyapriya (Sec-B)
Course Title : Fundamentals of Computing
Course Code : 23CS/MC/FC13
Shift : II

COURSE OUTCOMES (COs)

COs	Description	CL
CO1	Recall and reproduce the structure of a program	K1
CO2	Explain the fundamental concepts, branching, looping, arrays, and functions in C programming	K2
CO3	Utilize Linux commands and C programming concepts learnt to solve simple problems	K3
CO4	Analyze the different types of functions and scope of variables	K4
CO5	Develop an appropriate flow of logic to solve a given problem and choose proper debugging strategies for fixing errors	K5,K6

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Week	Unit No.	Content	Cognitive Level	Teaching Hours	COs	Teaching Learning Methodology	Assessment Methods
Jun 24 – 26, 2024 (Day Order 4 - 6)	1	**1.1 Strategies for Problem Solving** What is Problem Solving? - General Problem-Solving Techniques 1.2 Files and directories, Editing text Login - Files and Directories - File Paths - Directory Navigation -cd, pwd, ls, ls -l commands	K1-K3	2	CO1-3	Lecture with Illustration of an Example Problem - Finding the largest number from a given list of numbers. Apply problem-solving techniques and identify a solution given hints– To search for a given number in a list using **Role Play** Demo	Practical

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Jun 27 – July 4, 2024 (Day Order 1 - 6)	1	Creating and Manipulating Files and Directories using a Terminal - mkdir, cp, mv, rm, rm -R commands - Binary and Data Files - cat command - GUI based File Explorer – Command Based Text Editor - Creating/ Opening/Closing a file - Making Changes and Saving - Copy/Cut and Paste operation - Using a GUI Application - GUI based Text Editor	K1 - K3	5	CO1-3	Lecture with Demo Group Activity	Practical
July 5 – 12, 2024 (Day Order 1 - 6)	2	**2.1 Basic elements of C Programming** Basic Structure of a C program - #include, main function, blocks, statements –Compilation- Machine Language & High Level Language, Compiler, Executable. variables - Integer Data Types - int	K1- K3	5	CO1-3	Lecture with Demo Write simple c programs. Compile and execute it. Read compilation errors and Rectify them. Coding challenges using **HackerRank**	Practical

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July 15 – 23, 2024 (Day Order 1 - 6)	2	short, long - Unsigned Counterparts. Supported Range - sizeof operator - printf - Special Characters - new line, horizontal tab - scanf - Arithmetic Expression - Arithmetic Operators - Operator Precedence - Overflow and Underflow - Floating Point Data Types -float, double - Precision – Compound Assignment Operators - Increment and Decrement operators - Boolean Expression - Relational Operators - Logical Operators - C Tokens - Variable Naming Rules - Single and Multi-line Comments	K1- K6	5	CO1-5	Lecture with Demo Selecting a suitable datatype for a specific computation. Identify variable types, variable names that are invalid. Find result of arithmetic expressions.	Practical

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July 24 – 31, 2024 (Day Order 1 - 6)	4	**4.1 Branching and Looping, Arrays, Flowcharting** Statements and Blocks - If – Else - Else If - Switch -case, break, default – Loops – For, Infinite Loop	K1 - K6	5	CO1-5	Lecture with Demo. Find Boolean result of expressions. Rewrite code in different ways to do the same computation. Coding challenges using **HackerRank**	Comp1- Code Analysis, Debugging, MCQ-(20 marks), Units 1,2,4.1
Aug 1 – 5, 2024 (Day Order 1 - 3)	4	While – Break and Continue	K1-K6	3	CO1-5	Write programs using a while loop. Identify when to use break and continue for given problems. Computing the terms of a series. Coding challenges using **HackerRank**	Practical

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Aug 6 – 10, 2024	**C.A. Test - I**						
Aug 12 – 14, 2024 (Day Order 4-6)	1	File/Directory Permissions –chmod command - Difference between CLI and GUI - Text Editor - Find and Replace operation - Undo and Redo operation - File Navigation - Type Conversions - Bitwise Operators - Character Data Type - char – literals -getchar – putchar	K1 - K3	2	CO1-3	Lecture with Demo.	Practical
Aug 16 – 23, 2024 (Day Order 1-6)	4	Do-while - Conditional Expressions - Goto and Labels - Array – Single and Two Dimensional Arrays -	K1-K6	5	CO1-5	Lecture with Demo. Code Review. Visual Demo for Sorting.	Practical
Aug 27 – Sep 3, 2024 (Day Order 1-6)	4 3	Flow Charts – Symbols - Start/Stop - Process - Decision Making - Input/Output – Connector) **3.1 Debugging** What is gdb? - Adding Debugging Symbols to the Executable - Breakpoints – Starting Debugging Session - next command - Viewing Source	K1 – K6 K1 - K5	2 3	CO1-5	Lecture with Demo & Illustration. Draw flowcharts. Use GDB to Debug logical errors.	Practical

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Sep 4 – 11, 2024 (Day Order 1-6)	3	GDB -Inspecting Variables and its Type - continue command - Ending session - gdb command abbreviations	K1-K5	5	CO1-5	Lecture with Demo Debug logical errors	Practical
Sep 12 - 20, 2024 (Day Order 1-6)	5	**5.1 Functions** Function Prototype - Function Definition - Function call - Passing Arguments -Returning Values - Passing Arrays	K1 - K6	5	CO1-5	Lecture with Demo Analysing functions and answering questions. Writing the function prototype for functions. Code Reviews Coding Challenges using **HackerRank**	Practical Group Project topics discussion
Sep 23 - 26, 2024 (Day Order 1-4)	5	Call Stack - Gdb commands - Backtrace - Frame - Step - Difference between Next and Step – Finish	K1-K6	3	CO1-5	Debug programs that has functions	Practical
Sep 27 – Oct 3, 2024	**C.A. Test - II**						

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Oct 4 – 5, 2024 (Day 5 & 6)	5	Variable scope - Automatic Variables, External Variables, Static Variables	K1-K6	2	CO1-5	Lecture with Demo Identifying the scope of variables and use it appropriately Group Discussion	Practical
Oct 7 - 15, 2024 (Day Order 1 to 6)	5	Constants – Const Keyword, Symbolic Constants - Enums	K1-K6	5	CO1-5	Lecture with demo Write programs that use constants and enums	Comp2- Pair Project submission + Viva Voce (30 marks)
Oct 16 - 22, 2024 (Day Order 1 to 6)	5	Built-in Functions math.h: sqrt, pow, stdlib.h: rand, exit, abs	K1-K6	5	CO1-5	Lecture with demo	Practical
Oct 23 - 24, 2024 (Day Order 1 to 2)	**REVISION**						

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Department : Computer Science
Name/s of the Faculty : Sr. Arockia Amutha, Ms. Nancy Arokia Rani. S
Course Title : DIGITAL LOGIC FUNDAMENTALS
Course Code : 23CS/MC/DL13
Shift : II

COURSE OUTCOMES (COs)

COs	Description	CL
CO1	Recall & Relate number systems and Logic gates	K1
CO2	Explain the number system, logic gates, combinational, sequential circuits and memory with other computer components.	K2
CO3	Apply the combinational and sequential circuits for a specified problem	K3
CO4	Simplify Boolean functions and draw circuits using logic gates	K4
CO5	Evaluate the combinational, sequential circuits, registers, counters	K5

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Shift : II

Week	Unit No.	Content	Cognitive Level	Teaching Hours	COs	Teaching Learning Methodology	Assessment Methods
Jun 24 – 26, 2024 (Day Order 4 - 6)	1	1.1 Digital System and Binary Numbers: Digital Computer and Digital System – Number Systems -Decimal Numbers, Binary Numbers: Counting in Binary	K1,K2	4 hrs	1,2	Problem Solving Method	Problem Solving with Assignments
Jun 27 – July 4, 2024 (Day Order 1 - 6)	1	The Weighted Structure of Binary Numbers, Octal Numbers, Hexadecimal Numbers and their Mutual Conversions	K1,K2	4 hrs	1,2	Problem Solving Method	Problem Solving with Assignments
July 5 – 12, 2024 (Day Order 1 - 6)	1	Complements - 1‘s and 2‘s Complement, Signed Numbers, Arithmetic Operations: Addition, Subtraction with Signed Numbers, 9‘s and 10‘s Complement, BCD Numbers, BCD Addition, BCD Subtraction	K1,K2	4 hrs	1,2	Participatory Learning	Problem Solving

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July 15 – 23, 2024 (Day Order 1 - 6)	1	Gray Code: Binary to Gray Code Conversion, Gray to Binary Conversion, Weighted Code : 8421 Code and Non Weighted Codes : ASCII and EBCDIC – Binary Storage and Registers – Binary Logic	K1,K2	4 hrs	1,2	Lecture/PPT/ Demo	Problem Solving
July 24 – 31, 2024 (Day Order 1 - 6)	2	2.1 Binary Logic and Logic Gates Boolean Algebra - Basic definitions – Axiomatic Definition of Boolean Algebra	K1-K5	4 hrs	1-5	Participatory Learning	**Component I – Topic:** Problems in number systems, weighted and non-weighted codes. **Total marks:** 25 **Assessment Type:** Written Test
Aug 1 – 5, 2024 (Day Order 1 - 3)	2	Basic Theorem and Properties of Boolean Algebra - Boolean Functions – Canonical and Standard Forms– Digital Logic Gates 2.2 Gate-Level Minimization The Map Method – Four-variable K-Map – Product - of-Sums simplification	K1-K5	2 hrs	1-5	Lecture/PPT/ Demo	Problem Solving and Assignments

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Aug 6 – 10, 2024	**C.A. Test – I**						
Aug 12 – 14, 2024 (Day Order 4-6)	2	2.2 Gate-Level Minimization The Map Method	K1-K5	1 hr	1-5	Lecture/PPT/ Demo	Problem Solving and Assignments
Aug 16 – 23, 2024 (Day Order 1-6)	2	Four-variable K-Map – Product - of- Sums simplification Don't–Care Conditions – NAND and NOR Implementation – Exclusive-OR Function	K1-K5	4 hrs	1-5	Lecture/PPT/ Demo	Problem Solving and Assignments
Aug 27 – Sep 3, 2024 (Day Order 1-6)	3	3.1 Combinational Logic Introduction – Combinational Circuits – Binary Adder-Subtractor – Decimal Adder – Binary Multiplier	K1-K5	4 hrs	1-5	Experiential Learning	Learning by Doing
Sep 4 – 11, 2024 (Day Order 1-6)	4	Decoders – Encoders – Multiplexers 4.1 Synchronous Sequential Logic Introduction – Sequential circuits	K1-K5	4 hrs	1-5	Participatory Learning	Discussions

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Sep 12 - 20, 2024 (Day Order 1-6)	4	Storage Elements: Latches, Flip-flops - RS, JK, D Flip flops - Master slave JK flip-flop	K1-K5	4 hrs	1-5	Lecture/PPT/ Demo	**Component II – Topic:** Combinational Circuits **Total marks:** 25 **Assessment Type:** Quiz
Sep 23 - 26, 2024 (Day Order 1-4)	4	4.2 Registers and Counters Registers – Shift Registers – Ripple counters, Synchronous Counters – Other Counters	K1-K5	4 hrs	1-5	Participatory Learning	Discussions
Sep 27 – Oct 3, 2024	**C.A. Test – II**						
Oct 4 – 5, 2024 (Day 5 & 6)	5	Unit 5 5.1 Memory and Programmable Logic RAM and ROM – Memory Decoding – Error Detection and Correction – Programmable Logic Array – Programmable Array Logic – Sequential Programmable Devices	K1,K2	2 hrs	1,2	Participatory Learning	Quiz

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Oct 7 - 15, 2024 (Day Order 1 to 6)	5	5.2 Inside the Computer The Von Neumann Architecture – CPU Subunits and Data Path – CPU and Main Memory – Stored Program Computer	K1,K2	4 hrs	1,2	Participatory Learning	Quiz
Oct 16 - 22, 2024 (Day Order 1 to 6)	5	Role of Input/output Devices – Machine vs Assembly Languages	K1,K2	1 hr	1,2	Participatory Learning	Quiz
Oct 23 - 24, 2024 (Day Order 1 to 2)	**REVISION**						