Friedman

Assesment Rubrics

Evaluation Type			**Marks**	**Evaluation Type**			**Marks**	**Total**
Lecture			**75**	**Practical**			**25**	**100**
a)	**ESE**		**50**	a)	**ESE**		**15**	
					Program code and execution		**8**	
					Output		**3**	
					Viva		**2**	
					Modification		**2**	
b)	**CCA**		**25**	b)	**CCA**		**10**	
	i	Test Paper	5		i	Punctuality	3	
		Model exam	10					
	ii	Assignment/ Book-Article review /field report	5		ii	Model exam	4	
	iii	Seminar/ Viva-Voce	5		iii	Record	3	

KU1DSCCSC103: FUNDAMENTALS OF COMPUTERS AND PROGRAMMING

Semester	Course Type	Course Level	Course Code	Credits	Total Hours
1	DSC	100-199	**KU1DSCCSC103**	4	75

Learning Approach (Hours/ Week)			Marks Distribution			Duration of ESE (Hours)
Lecture	Practical/ Internship	Tutorial	CE	ESE	Total	

3	2		35	65	100	1.5hrs.

Course Description:

This is a lecture and laboratory course offered to introduce computer science and programming. Topics include information and data representation, hardware, programming methodology, algorithm design, abstract data types, programming languages, operating systems and basic program control structures.

Course Prerequisite: NIL

Course Outcomes:

CO No.	Expected Outcome	Learning Domains
1	Identify various components of Computer system and understand their functions	U
2	Demonstrate data representation in Computer system and various number codes.	U
3	Compare the performance of different types of software.	An
4	Design effective and error free programs in C using program using control structures	C

****Remember (R), Understand (U), Apply (A), Analyse (An), Evaluate (E), Create (C)***

Mapping of Course Outcomes to PSOs

	PSO 1	**PSO 2**	**PSO 3**	**PSO 4**	**PSO 5**	**PSO 6**	**PSO 7**
CO1	3		2			3	2
CO2	3						
CO3	2	3					
CO4	3	3				3	3

COURSE CONTENTS

Contents for Classroom Transaction:

MODULE	**UNIT**	**DESCRIPTION**	**HOURS**

1	**MODULE TITLE: Introduction to Computers**		
	1	Definition and Characteristics of Computers, Brief History and Evolution of Computers. Computer System Overview, Basic Components of a Computer System - Input, Output, Processing, and Storage.	15
	2	**Central Processing Unit (CPU):** Basic Concepts of CPU, Function and Components, Architecture of a CPU - ALU, Registers, and Control Unit,	
	3	System Memory and Storage: Memory Hierarchy - An Overview, Primary Memory - RAM (Random Access Memory) and ROM (Read-Only Memory) - Types and Functions, Secondary Memory - Hard Drives, SSDs, USB Drives (Overview and Basic Working Principle), Introduction to Cache Memory - Purpose and Basic Functioning	
	4	Motherboard and Internal Components: Components Inside a Computer Cabinet - Motherboard, BIOS, CMOS Chip, Ports and Interfaces - USB, HDMI, Ethernet. Expansion Slots and Cards - GPU,	
		Sound Card, Network Card, Storage Devices - HDD, SSD, Optical Drives (Basic Concepts only)	

2	**MODULE TITLE : Introduction to Data Representation**		
	1	Decimal, Binary, Hexa-Decimal and Octal Number Systems, Conversion Between Number Systems.	15
	2	Binary Arithmetic and Complements: Binary addition, subtraction, multiplication and division, Complements of Binary Numbers (1's Complement and 2's Complement)	
	3	Special Codes and Unicode: Binary Coded Decimal (8421 BCD Code, Applications, BCD Addition), Gray Code, ASCII Code, Unicode	

3	**MODULE TITLE: Introduction to Software**		
	1	Types of Software - Application software, System Software, Operating Systems - Basics Function, examples,	15
	2	Software Licensing and Acquisition: Retail, OEM, Demo, Shareware, Freeware, Open-Source Software	

	3	Programming Languages: Types, Basic Concepts of Compiler, Assembler, Interpreter, Linker and Loader, Source code and Object code, Program Development Life Cycle.	
	4	Algorithmic Thinking: Algorithm, Flowcharts, Examples	

4	**MODULE TITLE: Introduction to Programming** using C		
	1	Definition and core concepts of programming, Characteristics of a good program, Representing Algorithms with Pseudocode - examples	15
	2	Variables and Data Types: Understanding variables and assignment statements, Overview of common data types: Integers, Floats, Strings, Basics of Input and Output Operations in programming.	
	3	Program Control Structures: Sequential execution, Conditional execution using If statements, Fundamentals of iterative execution with loops	

5	**Teacher Specific Module**	**15**
	Do the lab experience for the following and keep an assignment based on this as record 1. Identify various parts of computer A) Processor B) motherboard C) input devices D) Output devices E) RAM and RAM slot 2. Identify various secondary storage devices A) Hard Disk B) CD, DVD C) Pendrive 3. Identify various types of ports A) USB (Universal Serial Bus) Port B) Ethernet Port (RJ45) and RJ45 socket C) HDMI (High-Definition Multimedia Interface) D) serial port (rs-232) E) parallel port F) PS/2 Ports 4. Steps for installing any software(application packages like.) 5. Algorithm and flow chart to implement various program control structures. A) Write an algorithm and flow chart to find sum and average three numbers B) Write an algorithm and flow chart to find largest among three numbers. C) Write an algorithm and flow chart to check whether the given number is odd or even D) write an algorithm and flow chart to find sum of 10 numbers using looping statement	

Essential Readings:

1. Floyd, Thomas L (2011). Digital fundamentals, 10/e. Pearson Education India.
2. Petzold, C. (2022). Code: The Hidden Language of Computer Hardware and Software. Pearson Education.
3. Goel, Anita (2010). Computer fundamentals. Pearson Education India.
4. Joyce, F.. Programming Logic and Design, Comprehensive
5. MOOC Course CS50's Introduction to Programming with Scratch. https://cs50.harvard.edu/scratch/2024/
6. Kernighan, Brian W (2011). *D is for Digital: What a well-informed person should know about computers and communications*. CreateSpace Independent Publishing Platform.

Assessment Rubrics:

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