KU6DSCCSC 306 : COMPUTER ORGANISATION AND ARCHITECTURE

Semester	Course Type	Course Level	Course Code	Credits	Total Hours
6	DSC	300-399	KU6DSCCSC306	4	60

Learning Approach (Hours/ Week)			Marks Distribution			Duration of ESE (Hours)
Lecture	Practical/ Internship	Tutorial	CE	ESE	Total	
4	-	-	30	70	100	2hrs.

Course Description:

This course introduces the principles of computer organization and the basic architecture concepts. The course emphasizes performance and cost analysis, instruction set design, pipelining, memory technology, memory hierarchy, virtual memory management, and I/O systems.

Prerequisite: NIL

Course Outcomes:

CO No.	Expected Outcome	Learning Domains
1	Identify various components of computer and their interconnections	U
2	Identify basic components and design of the CPU: the ALU and control unit	U
3	Compare and select various Memorydevices as per requirement	U/A
4	Compare various types of IO mapping technique	A

**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
CO 1	3					2	2
CO 2	3					2	2
CO 3	3						2
CO 4	3						3
CO5	2				2		2

COURSE CONTENTS

Contents for Classroom Transaction:

MODULE	UNIT	DESCRIPTION	HOURS
1	**MODULE TITLE**: STRUCTURE OF COMPUTERS		**12**
	1	Computer types, Functional units, Basic operational concepts, VonNeumann Architecture.	
	2	Bus Structures, Software, Performance, Multiprocessors and Multicomputer	
	3	Data representation, Fixed and Floating point	
	3	Error detection and correction codes	
2	**MODULE TITLE:** BASIC COMPUTER ORGANIZATION AND DESIGN		**12**
	1	Instruction codes, Computer Registers, Computer Instructions and Instruction cycle.	
	2	Timing and Control, Memory-Reference Instructions, Input-Output and interrupt	
	3	Centralprocessing unit: Stack organization, Instruction Formats,	
		Service providers, challenges and risks in cloud adoption.	
	4	Addressing Modes, Data Transfer and Manipulation.	

	5	Complex Instruction Set Computer (CISC) Reduced Instruction Set Computer (RISC), CISC vs RISC	

3	**MODULE TITLE :** REGISTER TRANSFER AND MICROOPERATIONS:		**12**
	1	Register Transfer Language, Register Transfer, Bus and Memory Transfers, ,.	
	2	Arithmetic Micro-Operations, Logic Micro-Operations, Shift MicroOperations- Arithmetic logic shift unit	
	3	MICRO-PROGRAMMED CONTROL: Control Memory, Address Sequencing, Micro-Program example, Design of Control Unit.	

4	**MODULE TITLE :** MEMORY SYSTEM		12
	1	Memory Hierarchy, Semiconductor Memories, RAM(Random Access Memory), Read Only Memory (ROM), Types of ROM, Cache Memory, Performance considerations	
	2	Virtual memory, Paging, Secondary Storage, RAID.	
	3	Cloud Computing and Security – Risks in Cloud Computing, Types of Risks,	
	4	Multiprocessors: Characteristics of multiprocessors, Interconnection structures, Inter Processor Arbitration, Inter processor Communication and Synchronization, Cache Coherence.	

5	**Teacher Specific Module**		
	Conduct hands-on sessions to identify various hardware components Assignments and seminars on advanced technologies storage devices.		12

TEXT BOOKS:

1. M. Moris Mano (2006), Computer System Architecture, 3rd edition, Pearson/PHI, India.

REFERENCE BOOKS:

1. Carl Hamacher, Zvonks Vranesic, SafeaZaky (2002), Computer Organization, 5th edition, McGraw Hill, New Delhi, India.
2. William Stallings (2010), Computer Organization and Architecture- designing for performance, 8th edition, Prentice Hall, New Jersy.
3. Anrew S. Tanenbaum (2006), Structured Computer Organization, 5th edition, Pearson Education Inc,
4. John P. Hayes (1998), Computer Architecture and Organization, 3rd edition, Tata

McGrawHill.

Assessment Rubrics:

Evaluation Type		Marks
End Semester Evaluation		**70**
Continuous Evaluation		**30**
a)	Test Paper- 1	5
b)	Model Examination	10
c)	Assignment- 2 Numbers	10
d)	Seminar/viva	5
e)	Book/Article review	
f)	Field report	
Total		**100**

KU6DSCCSC307 SOFTWARE DESIGN AND IMPLEMENTATION

Student of B.Sc. Computer Science Programme shall have to work on a project of FOUR credits under the supervision of a faculty member as per the curriculum. The duration of the project is 6 month and submission of the dissertation at the end of sixth semester. Individual projects are recommended but, in an instance, where the number of supervising teachers is less, the project may be done as group. The maximum number of students in a group shall be limited to THREE.

PROJECT EVALUATION

Evaluation of the Project Work shall be done under Mark System at two stages: 1. Internal Assessment (supervising teachers will assess the project and award internal Marks) 2. External evaluation (external examiner appointed by the University) Marks secured for the project will be awarded to candidates, combining the internal and external Marks. Assessment of different components may be taken as below.

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