

ITEM	DETAILS	
1. Title of subject	COMPUTER ARCHITECTURE	
2. Subject code	STC111	
3. Status of subject	Core	
4. Stage	Year 2	
5. Credit Hour	3	
6. Pre-Requisite	STC104 Computer Organisation	
7. Assessment	40% Coursework 10% Test 1 10% Test 2 10% Assignment 1 10% Assignment 2 60% Examination	
8. Semester	Semester 2	
9. Objective of subject	To enable students to: <ul style="list-style-type: none"> • Understand the functions of various components of motherboard • Design the logic circuit • Know the importance of semiconductor memory • Know the importance of I/O modules 	
10. Synopsis of subject	Basic computer organization: Function of each component; Memory, CPU, I/O. CPU: ALU; Instruction Formats, Control Logic Unit (CLU), CPU configuration. I/O Processing: I/O accessing: Programmed I/O, Interrupt I/O, DMA, data transfer; Memory: Stack memory. Modular memory, Associative memory, cache memory, auxiliary memory and virtual memory; Current trends: Parallel processing, multiprocessor, RISC and CISC organization, computer communication networks.	
11. Details of subject	Contents	Hours
Week 1 and 2	Topic: Introduction to Logic circuits, combinational and sequential circuit, Half Adder and Full adder	6

Week 3	<p>Learning Outcomes: At the end of the lessons, students will be able to:</p> <ul style="list-style-type: none"> • Design a logic circuit • Understand the function of full adder • Understand the function of half adder 	3
	<p>Topic: Function of each components : (CPU, Memory, I/O, ALU, Microprocessors registers)</p>	
	<p>Learning Outcomes: At the end of the lessons students will be able to:</p> <ul style="list-style-type: none"> • Understand the function of CPU • Understand the concept of memory • Undersand the various functions of ALU 	
Week 4	<p>Topic: CPU organisation</p> <ul style="list-style-type: none"> • Instruction cycle • Bus configuration - single bus, multi bus Organisation 	3
	<p>Learning Outcomes: At the end of the lessons students will be able to:</p> <ul style="list-style-type: none"> • Understand the Instruction cycle • Understand data processing • Understand different types of bus in the motherboard 	
Week 5 and 6	<p>Topic: Control unit operation Micro operation Hardwired implementation Microprogrammed control</p>	6
	<p>Learning Outcomes: At the end of the lessons students will be able to:</p> <ul style="list-style-type: none"> • Understand the functions of control unit • Data processing 	
Week 7	<p>Topic: I/O organization I/O system I/O accessing Programmed I/O Interrupt – Driven I/O Polling Vectored Interrupt DMA</p>	3
	<p>Learning Outcomes: At the end of the lessons students will be able to:</p> <ul style="list-style-type: none"> • Undertand different types of I/O module • Understand the functions of I/M module • Importance of DMA 	

Week 8 and 9	Topic: Memory Computer memory overview Memory hierarchy Stack memory Modular memory Associate memory		6
	Learning Outcomes: At the end of the lessons students will be able to: <ul style="list-style-type: none"> • Understand different types of memory • Functions of memory 		
Week 10 and 11	Topic: Cache memory Mapping function Direct mapping Associate mapping Set associate mapping Replacement algorithm LRU, LFU, FIFO		6
	Learning Outcomes: At the end of the lessons students will be able to: <ul style="list-style-type: none"> • Understand the concept of cache memory • Understand the techniques of memory mapping 		
Week 12	Topic: Virtual memory <ul style="list-style-type: none"> • Principle • Implementation 		3
	Learning Outcomes: At the end of the lessons students will be able to: <ul style="list-style-type: none"> • Understand the concept of virtual memory • Understand how virtual memory works 		
Week 13 and 14	Topic: Current trends <ul style="list-style-type: none"> • CICS VS RISC • Parallel processing • Shared memory, multi-computers • Computer communications 		6
	Learning Outcomes: At the end of the lessons students will be able to: <ul style="list-style-type: none"> • Understand the concept of CICS • Understand the concept of RISC 		
	Total		42
12. Text	Compulsory	Hamacher, V. C. (1996). <i>Computer Organization</i> . (4 th ed.) McGraw Hill.	

	Reference	<ol style="list-style-type: none">1. Stalling, W. (2000). <i>Computer Organization and Architecture Designing for Performance</i>. (5th ed.). Prentice Hall.2. Stalling, W. (1993). <i>Computer Organization and Architecture : Principles of Structure and Function</i>. (4th ed.). Prentice Hall.3. Langholz, F. K. (1989). <i>Element of Computer Organization</i>. Prentice Hall.
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