



**UNITED INTERNATIONAL UNIVERSITY**  
 Department of Computer Science and Engineering (CSE)  
**Course Syllabus**

1	Course Title	COMPUTER ARCHITECTURE																			
2	Course Code	CSE 3313																			
3	Trimester and Year	Spring 2023																			
4	Pre-requisites	CSE 225 & CSE 226																			
5	Credit Hours	3.00																			
6	Section	A,B																			
7	Class Hours																				
8	Class Room																				
9	Instructor's Name	Shoib Ahmed Shourav																			
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11	Office	Room 0536(B), United International University, Satarkul, Dhaka.																			
12	Counselling Hours	See glass door of Room 536																			
13	Text Book	Computer Organization and Design: The Hardware/Software Interface, Fifth Edition, Patterson and Hennessy, Morgan Kaufmann/ Elsevier, 2014.																			
14	Reference	Introduction to Computing Systems: From Bits and Gates to C and Beyond, Second Edition, Patt and Patel, McGraw-Hill. Computer Organization, Hamacher, Vranesic, and Zaky, McGraw-Hill. Computer Architecture and Implementation, Harvey Cragon, Cambridge University Press. Structured Computer Organization, Andrew Tanenbaum, Prentice Hall.																			
15	Course Contents (approved by UGC)	Information representation and transfer, Instruction and data access methods, the control unit: hardwired and microprogrammed, memory organization, I/O systems, channels, interrupts, DMA, Von Neumann SISD organization, RISC and CISC machines.  Pipelined machines, Interleaved memory system, Caches, Hardware and architectural issues of parallel machines, Array processors, associative processors, multiprocessors, systolic processors, data flow computers and interconnection networks, High level language concept of computer architecture.																			
		Course Outcomes (COs)																			
16		<table><tr><td>CO</td><td>Statement</td><td>Bloom's Domain</td><td>Program Outcome</td><td>Knowledge Profile</td><td>Complex Problem</td><td>Engineering</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>						CO	Statement	Bloom's Domain	Program Outcome	Knowledge Profile	Complex Problem	Engineering							
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2	Components of Computer, Performance of Processor	CO1	1.2, 1.3, 1.4	
3	Power Wall, Multiprocessor, Pitfalls, Amdahl's Law	CO1	1.5, 1.6, 1.8	
4	Introduction to ISA, Operations of Computer, Operands of Computer	CO1	2.1, 2.2, 2.3	Class Test 1
5	Signed & Unsigned number, Representing Instructions	CO1	2.4, 2.5	
6	Logical Operations, Branching Instructions	CO1	2.6, 2.7	Assignment 1
7	Procedures	CO1	2.8	
8	Translating a Program, Fallacies and pitfalls	CO1	2.12, 2.18	
9	Arithmetic of Computer, Addition & Subtraction	CO2	3.1, 3.2	Class Test 2
10	Multiplication Algorithm, Optimized Multiplication Algorithm	CO2	3.3	
11	Division Algorithm & Modified Division Algorithm	CO2	3.4	
12	Review of Mid Term Syllabus	-		
	<b>MIDTERM EXAM</b>			
13	Floating Point, Floating Point Addition	CO2	3.5	Assignment 2
14	Logic Design Convention, Building a Datapath	CO3	4.1, 4.2, 4.3	
15	Simple Non-Pipelined Implementation of MIPS Datapath	CO3	4.4	
16	Pipelining Overview	CO3	4.5	Class Test 3
17	Pipeline Hazards	CO3	4.5	
18	Pipelined Datapath & Control	CO3	4.6	
19	Forwarding vs Stalling, Branch Prediction	CO3	4.7, 4.8	Class Test 4
20	Introduction to Memory Hierarchy, Basics of Cache	CO4	5.1, 5.2	
21	Cache Miss, Cache performance	CO4	5.2, 5.3	
22	Virtual Memory	CO4	5.4	Class Test 5
23	Page Faults, Address Translation	CO4	5.4	
24	Review of Final Syllabus	-		

### **Appendix 1: Assessment Methods**

Assessment Types	Marks
Attendance	5%
Assignments	10%
Class Tests	20%
Mid Term	25%
Final Exam	40%

## **Appendix 2: Grading Policy**

Letter Grade	Marks %	Grade Point	Letter Grade	Marks%	Grade Point
A (Plain)	90-100	4.00	C+ (Plus)	70-73	2.33
A- (Minus)	86-89	3.67	C (Plain)	66-69	2.00
B+ (Plus)	82-85	3.33	C- (Minus)	62-65	1.67
B (Plain)	78-81	3.00	D+ (Plus)	58-61	1.33
B- (Minus)	74-77	2.67	D (Plain)	55-57	1.00
			F (Fail)	<55	0.00

## **Appendix-3: Program outcomes**

POs	Program Outcomes
PO a	Engineering knowledge
PO b	Problem analysis
PO c	Design/ development of solutions
PO d	Investigation: Engagement with selected knowledge in the research literature of the discipline
PO e	Modern Tool Usage: Level of understanding of the appropriateness of the tool
PO f	The Engineer and Society engineering practice, ethics and the professional responsibility, public safety; economic, social, cultural, environmental and sustainability
PO g	Environment and Sustainability: Type of solutions.
PO h	Ethics: Understanding and level of practice
PO i	Individual and Team work: Role in and diversity of team
PO j	Communication: Level of communication according to type of activities performed
PO k	Project Management and Finance: Level of management required for differing types of activity
PO l	Lifelong learning: Preparation for and depth of continuing learning.