

**CSIT-21402:**

*Computer  
Architecture and  
Assembly Language*

**Credit Hours:**

3(3-0)

**Pre-Requisites:**

None

## CSIT-21402: Computer Architecture & Assembly Language

**Course Objectives:** This course covers the basics of computer organization with emphasis on the lower level abstraction of a computer system including digital logic, instruction set and assembly language programming. Major topics covered in the course are Fundamentals of computer design; quantifying cost and performance; instruction set architecture; program behaviour and measurement of instruction set use; processor datapaths and control; pipelining, handling pipeline hazards; memory hierarchies and performance; I/O devices, controllers and drivers; I/O and system performance.

**Pre-Requisites:** None

**Text Book:**

1. Assembly Language for x86 Processors by Kip R. Irvine, Prentice Hall; 6th Edition (March 7, 2010). ISBN-10: 013602212X

**Reference Books:**

1. Computer Organization and Architecture by Dr. Jatindra Kumar deka (free download)
2. Principles of Computer Organization and Assembly Language by Patrick Juola, Prentice Hall; 1st Edition (January 11, 2011). ASIN: B009TGB11Q

**Course Outline:** Mid Term

Week	Course Contents
Week 1	Digital Logic and Design review Basic structure of computer hardware and software
Week 2	CPU Registers Computer instruction sets
Week 3	Instruction sets, Simple RISC CISC: MC68000
Week 4	Addressing modes RISC: SPARC
Week 5	Pipelining Pipeline Hazards
Week 6	MID TERM

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*None*

**Course Outline: Final Term**

<b>Week</b>	<b>Course Contents</b>
Week 7	Microprogramming Floating Point Arithmetic
Week 8	Memory system, RAM Memory boards and modules
Week 9	Memory hierarchy Virtual memory
Week 10	I/O system I/O Interrupts
Week 11	Direct memory access Disk drives, RAID
Week 12	Assembly language Basic Elements Data Transfers, Addressing, and Arithmetic; 1. MOV, Zero & Sign Extension, XCHG; 2. INC, DEC, ADD, SUB, NEG
Week 13	Flags Affected: Zero, Sign, Carry, Overflow; 1. Data-Related Operators/Directives 2. OFFSET, ALIGN, PTR, TYPE, LENGTHOF, SIZEOF, LABEL
Week 14	Indirect Addressing: 1. Indirect Operands, Indexed Operands, Pointers; 2. JMP and LOOP;
Week 15	Procedures String
Week 16	<b>FINAL TERM</b>

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