CSC-250: Computer Architecture and Assembly Language

General Information

Course Number	CSC-250
Credit Hours	3(2+1) (Theory Credit Hour = 3, Lab Credit Hours = 1)
Prerequisite	Digital Logic Design
Course Coordinator	Not Specified

Course Objectives

The course begins toward more recent architectural concepts. An introduction to the architecture of digital computer systems. Topics include the organization of computer system processor, memory and I/O modules, plus the interconnections among these major components; the subcomponents of the central processing unit: This course discusses the basic 16-bit and 32-bit microcontroller architectures and their instruction sets, instruction format. Understand the functions of Registers in different dimension of computer organization in continuation with organization and architecture, Students should learn assembly language programming structure & techniques using variables, statements, mnemonics, control structures using jumps and branches, arrays and data structures, together with the basic structured programming techniques of sequence, choice and iteration and how they can be realized in assembly language. Students should examine the logic bits operations.

Catalog Description

CSC 250

Course Content

Session No.	Date / Week	Topics	Assignments/ Quizzes / Digital Library work	Suggested Readings
01-06	Week 01- Week 02	**1. Introduction** 1.1 Organization and Architecture 1.2 Structure & Function 1.3 Why study computer organization and architecture		ch.1 William Stallings Book (9th edition)
07-12	Week 02- Week 03	**2. Computer Evolution and Performance** 2.1 A Brief history of computers 2.2 Designing for performance 2.3 Pentium and power PC evolution 2.4 x86 Processor family 2.5 RISC and CISC 2.6 ARM Processor	Assignment	Ch.1 (10th edition) ch.2 William Stallings Book(9th edition)
13-18	Week 04- Week 05	**3. A Top-Level View of Computer Function and Interconnection** 3.1 Computer components 3.2 Computer Function 3.3 Interconnection structures 3.4 Bus Interconnection		ch.3 William Stallings Book (9th and 10th edition)

		3.5 PCI		
19-24	Week 06-Week 07	**9. Computer Arithmetic** 6.1 The Arithmetic and Logic Unit 6.2 Integer Representation 6.3 Integer Arithmetic 6.4 Floating point representation 6.5 Floating point arithmetic	Assignment	Ch.10 (10th edition) ch.9 William Stallings Book (9th edition)
25-27	Week 08	**12. Processor Structure and Function** 7.1 Processor Organization 7.2 Register Organization 7.3 Instruction Cycle 7.4 Instruction Pipelining	Quiz	Ch.14 (10th edition) ch.12 William Stallings Book 9th edition
28-30	Week 09-Week 10	Basic Structure of Assembly Language Programming ☐ Program data ☐ Define Variables ☐ Basic Instructions(Mov, Xchg, Add, Sub, Inc, Dec, Neg) ☐ Conversion of Code from high to low level languages ☐ Program Structure(Memory Models, Data Segments, Stack Segment, Code Segment) ☐ I/O instructions ☐ Interrupt(21h, 10h, 16h) ☐ First program (creating & running) output		Ch. 4 Assembly language programming
31-36	Week 11-Week 12	Flow Control Instruction ☐ An example of JUMP ☐ Conditional & Unconditional JUMP ☐ The JMP instruction ☐ Branching and Looping structure	Quiz	ch.6 Assembly Language programming
37-39	Week 13	The Logic, Shift and Rotate instructions ☐ AND, OR & XOR instructions ☐ NOT instruction ☐ TEST instruction ☐ Shift Instruction(Left & Right) ☐ Rotate Instructions		ch.7 Assembly Language programming
40-42	Week 14	Introduction to STACK application ☐ The Application of STACK ☐ Push & Pop operations ☐ Understand the Procedure ☐ CALL & RET statements ☐ Examples of Stack & Procedures		ch.8 Assembly Language programming

43-45	Week 15	Introduction to Array and String ☐ Application of array ☐ Two-dimensional array - Direction Flag ☐ Sting functions ☐ Moving String ☐ Storing String ☐ Load String ☐ Scan String ☐ Compare String		ch.11 Assembly Language programming

Text Book

1. Computer Organization and Architecture By: William Stallings Prentice Hall
2. Ytha YU and Charles Marut, "Assembly Language Programming and Organization of the IBM PC"

Reference Material

1. Kip R Irvine, "Assembly Language for Intel-based Computers"
2. Essentials of Computer Architecture By: Douglas E. Comer

Course Learning Outcomes

	Course Learning Outcomes (CLO)
1	Understanding the nature and characteristics of modern computer systems architecture with employed Low level programming tools and techniques.
2	To Apply low-level programming logic employed for problem solving with respect to organization of computer system.
3	To Analyze the problem and mapping in the different nature of instruction set models.

CLO-SO Map

CLO ID	SO IDs											
	GA1	GA2	GA3	GA4	GA5	GA6	GA7	GA8	GA9	GA10	GA11	GA12
CLO 1	1	0	1	0	0	0	0	0	0	0	0	0
CLO 2	0	0	0	0	0	0	0	0	0	0	0	0
CLO 3	0	1	0	0	0	0	0	0	0	0	0	0

Approvals

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Approved By	Not Specified
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