

**Faculty of Computers & Information Technology**  
**Computer Organization & Assembly Language**

**Information :**

**Course Code :** CSC 223                      **Level :** Undergraduate                      **Course Hours :** 3.00- Hours  
**Department :** Department of Information Systems

**Area Of Study :**

The characteristics of a microprocessor, and its applications.  
The relationship between hardware and software and how they work together to accomplish a task.  
Identify the major component of a PC-based system, describe the steps involving in assembling, linking, and executing a program.  
Write programs in assembly language to perform given tasks and run them

**Description :**

Computer basic units organization and design: memory, control, arithmetic and logic unit, input/output. Computer instructions and addressing modes, timing and control, execution cycle of instructions. Input, output and interrupt. Arithmetic processor algorithms. Hardwired versus microprogramming control organization. Assembly instructions and addressing: data transfer instructions, arithmetic instructions, logical instructions, conditional and unconditional branch instructions, loop instructions, procedures and procedure calls, macro instructions

**Course outcomes :**

**a. Knowledge and Understanding: :**

1 -	• Discuss issues about the microprocessor performance
2 -	• List the main syntax of assembly language
3 -	• Outline fundamentals in computing, including hardware and operating systems
4 -	• Discuss issues of reliability
5 -	• Discuss some aspects of the subject, such as hardware systems design
6 -	• Identify and demonstrate usage of tools, practices and methodologies used in the specification, design, implementation and critical evaluation of computer software systems
7 -	Outline current and underlying technologies that support computer processing and inter-computer communication

**b. Intellectual Skills: :**

1 -	• Identify attributes and components
2 -	• Identify a range of solutions and critically evaluate and justify proposed design solutions
3 -	Generate an innovative design to solve a problem containing a range of commercial and industrial constraints
4 -	• Create and/or justify designs to satisfy given requirements (synthesis, evaluation, application).

**c. Professional and Practical Skills: :**

1 -	Write programs using the assembly language
2 -	Program a microprocessor to perform given tasks
3 -	Use the assembly language to control the different computer units
4 -	Use the assembly language to write drivers for different computer accessories
5 -	Specify, design, and implement computer-based systems
6 -	Identify any risks or safety aspects that may be involved in the operation of computing equipment within a given context
7 -	Specify, investigate, analyze, design and develop computer-based systems using appropriate tools and techniques
8 -	Operate computing equipment efficiently, taking into account its logical and physical properties

**d. General and Transferable Skills: :**

1 -	Work in stressful environment and within constraints
2 -	Demonstrate efficient IT capabilities
3 -	Manage tasks and resources
4 -	Acquire entrepreneurial skills
5 -	Communicate effectively
6 -	Manage one's own learning and development, including time management and organizational skills

**Course Topic And Contents :**

Topic	No. of hours	Lecture	Tutorial / Practical
Basic Concepts	3	2	2
IA-32 Processor Architecture (Part 1)	3	2	2
IA-32 Processor Architecture (Part 2)	3	2	2
Assembly Language Fundamentals	3	2	2
Data Transfers, Addressing, and Arithmetic (Part 1)	3	2	2
Mid Term Exam 1	2	1	2
Data Transfers, Addressing, and Arithmetic (Part 2)	3	2	2
Procedures	3	2	2
Conditional Processing	3	2	2
Integer Arithmetic (Part 1)	3	2	2
Integer Arithmetic (Part 2)	3	2	2
Mid Term Exam 2	2	1	2
High-Level Language Interface (Part 1)	3	2	2
High-Level Language Interface (Part 2)	3	2	2

**Teaching And Learning Methodologies :**

Lectures
Practical training

Exercises  
Open Discussion  
E. Learning  
Self Studies  
Projects  
Presentation  
Web-Site searches

**Course Assessment :**

Methods of assessment	Relative weight %	Week No	Assess What
Final Exam	40.00	15	knowledge, understanding, intellectual and professional skills
Mid-Term Exam 1	20.00	6	following up and understanding the first part of the studied topics
Mid-Term Exam 2	20.00	12	following up and understanding the second part of the studied topics
Practical Exam	10.00	14	the participation of the student during the tutorial, professional and general skills.
Projects	10.00	13	professional and general skills