

**LAGUARDIA COMMUNITY COLLEGE  
CITY UNIVERSITY OF NEW YORK  
MATHEMATICS, ENGINEERING, AND COMPUTER SCIENCE DEPARTMENT**

**MAC265 – Computer Hardware Interfacing and Programming**

**3 credits; 4 hours (3 lecture, 1 lab)**

**Prerequisites: MAC101, MAC108, or MAC241**

**Catalog Description:**

This course will introduce the students to techniques in controlling a computer system and will include interfacing techniques such as memory mapped and isolated I/O, hardware/software interrupts, polling, and assembly language. Programming will include such topics as: addressing modes, arithmetic and logic instructions, conditional ranching, stacks, and subroutines.

**Instructional Objectives:**

1. Familiarize students with the architecture of a microprocessor in the computer system
2. Enable students to explain data movement and related instructions
3. Introduce students to arithmetic and logic instructions for data processing
4. Introduce students to assembly programming language
5. Enable students to program the microprocessor with assembly language
6. Introduce students to 8086/8088 hardware architecture
7. Enable students to interpret the direct memory access and I/O control
8. Familiarize students with modern microprocessors and their architecture

**Performance Objectives:**

1. Describe the architecture of a microprocessor in the computer system
2. Explain data movement and related instructions
3. Explain arithmetic and logic instructions for data processing
4. Write statements with assembly programming language
5. Program the microprocessor with assembly language
6. Describe 8086/8088 hardware architecture
7. Interpret the direct memory access and I/O control
8. Describe modern microprocessors and their architecture

**Textbook:**

Barry B. Brey, 8086/8088, 80286, 80386, and 80486 Assembly Language Programming, 8th edition, Prentice Hall, ISBN: 0-02-314247-2.

**Evaluation:**

Lab projects (4 total at 10% each)	40%
Midterm exam	30%
Final exam	30%
Total	100%

**Academic Integrity:**

This class will be conducted in compliance with LaGuardia Community College's academic integrity policy.

**Attendance:**

The maximum number of unexcused absences allowed is 15% of the total class meetings. Unexcused absences beyond this maximum will result in a grade of WU or F.

**Comments:**

The grading standards listed above and the contents listed in the course outline are both subject to modification by the instructor.

**COURSE OUTLINE**

Week	Topic
1	Introduction to the microprocessor and computer
2	The microprocessor and its architecture, addressing modes
3	Data movement instructions
4	Arithmetic and logic instructions
5	Program control instructions, using assembly language with C/C++
6	Programming the microprocessor
7	Review on the microprocessor and assembly programming, Midterm Exam
8	8086/8088 hardware specifications, memory interface
9	Basic I/O interface, interrupts
10	Direct memory access and DMA-controlled I/O
11	The arithmetic coprocessor, MMX, and SIMD technologies
12	Bus interface, modern microprocessors and their architecture Review on microprocessor architecture and programming the microprocessor
13	Final Exam