



## Course Syllabus

<b>Course Code</b>	<b>Course Title</b>	<b>ECTS Credits</b>
ECE-320	Microprocessor Interfacing	6
<b>Prerequisites</b>	<b>Department</b>	<b>Semester</b>
ECE-220, ECE-221	Engineering	Fall or Spring
<b>Type of Course</b>	<b>Field</b>	<b>Language of Instruction</b>
Elective	Engineering	English
<b>Level of Course</b>	<b>Lecturer(s)</b>	<b>Year of Study</b>
1 <sup>st</sup> Cycle	Dr Stelios Neophytou	3 <sup>rd</sup>
<b>Mode of Delivery</b>	<b>Work Placement</b>	<b>Corequisites</b>
Face-to-face	N/A	None

### Course Objectives:

This course intends to give satisfactory knowledge of microprocessors interfacing in modern computer systems. It introduces standard interfacing techniques and mechanisms and explains the interface modules and I/O systems of the microprocessor. Moreover, the course describes the interfacing with standard computer system peripherals such as the memory, the monitor and the keyboard, as well as non-standard and even customized components.

### Learning Outcomes:

After completion of the course students are expected to be able to:

- Discuss the basic concept of the inter-processor communication.
- Define the memory interfacing structure for the different memory schemes and technology.
- Identify the basic interfacing devices of modern processors as well as the basic peripherals.
- Explain the interrupt mechanisms and the techniques used to identify and accommodate the interrupts.
- Define how standard I/O devices are connected and controlled to the central processor.
- Explain the operation of the DMA and the Bus interfaces.
- Explain how non-standard devices are connected using the Bus mechanism.

### Course Content:

- Overview of the basic CISC microprocessors' hardware specifications. Pin orientation and interface capabilities.
- The memory interface, address decoding. Static and dynamic RAM overview. DRAM controllers.

- The basic I/O interface. Interface with programmable parallel and serial interfaces. Usage of I/O interface and compatible devices.
- Programmable keyboard and display interface. Programmable interval timer and usage of timing in interfacing. Interface adapters: connectivity and usage.
- The basic interrupt processing and the programmable peripheral interfaces. The interrupt-processes I/O technique. Expansion of the interrupt structure.
- Direct memory access (DMA) and control signals. Usage of DMA and performance evaluation.
- Overview of magnetic and optical disk standards. Processor - disk interfacing.
- Overview of video interface standards. Video displays and connectivity.
- The processor's bus and its importance in devices interconnections. Bus signal description and different Bus schemes (ISA, AGP, PCI, USB etc).
- Custom interfacing using the standard processor's BUS interface.

**Learning Activities and Teaching Methods:**

Lectures, Lab Presentations and Tutorials, Lab and Homework Assignments.

**Assessment Methods:**

Homework, Lab Reports, Mid-Term, Project, Final Exam.

**Required Textbooks / Readings:**

Title	Author(s)	Publisher	Year	ISBN
Barry B. Brey	The Intel Microprocessors, Architecture, Programming and Interfacing	Prentice-Hall	2008	0-13-714094-0

**Recommended Textbooks / Readings:**

Title	Author(s)	Publisher	Year	ISBN
W. A. Triebel, A. Singh	The 8088 and 8086 Microprocessors: Programming, Interfacing, Software, Hardware, and Applications, 4th Edition.	Prentice Hall	2002	0130930814
A. K. Ray	Advanced Microprocessors and Peripherals, 2e: Architecture, Programming and Interfacing	McGraw-Hill	2009	0070151261