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| **East West University**  **Department of EEE**  **EEE 302: Microprocessors and Interfacing**  **Semester: Summer 2022**  **Course Outline**  **Section-1** | |  | | --- | |  | |

**Course Code:** EEE302

**Course Title:** Microprocessors and interfacing

**Credits:** 3+1 (4)

**Pre-requisite:** EEE205

**Course Instructor:** Mr**.** Fakir Mashuque Alamgir,

Assistant Professor, Department of EEE, East West University

Office: Floor 5, Room No- 540

(Email: [fma@ewubd.edu](mailto:fma@ewubd.edu)) Phone: 09666 77 55 77 ext. 169

**Class Hour:** ST 01:30-3:00 **Room:** 221

**Lab Hour:** R 8:00-10:00 **Room:** 634/546

**Course outcomes:**

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| **CO** | **PO** | **TAXONOMY DOMAIN/LEVEL** | **Assessment tools** |
| Explain the architecture, instruction set, memory and input/output interface for 8086/8088 microprocessor. | PO1 | Cognitive/Understand | Midterm exams, Final exam |
| Relate microprocessor working principle, instruction set execution and external peripheral connection for specific application. | PO1 | Cognitive/Apply | Midterm exams, Final exam |
| Program in assembly language for executing microprocessor instruction set. | PO5 | Psychomotor/Precision | Lab performance, Lab test, |
| Investigate microprocessor based systems by designing and conducting experiments. | PO4 | Cognitive/Evaluate | Lab performance, Lab report and/or viva. |
| Design a microprocessor based system that meets specified requirements. | PO3 | Cognitive/Create | Project and/or assignment. |

**Course Rationale:**

To make the students understand Microprocessors in order to equip them with the necessary tools for the analysis of Electronic equipment in the field of Microprocessors & Embedded systems to be used in industries, research fields, and commercial field applications.

**Course Objectives**

The course presents real-time interfacing of microcontrollers, microprocessors, and microcomputers to the external world, including the interfacing of I/O devices data acquisition with microprocessors, data communications, transmission, and logging with embedded computers.

**Course Contents:**

Topics to be covered throughout the semester:

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| **Topics** | **Contents** | **Lectures** | **Topic reference** |
|  | Evolution of microprocessors, Review of computer number systems, codes | 1 | Chapter 1 of Textbook |
|  | Introduction to microprocessor-based systems. Intel 8086 basics (architecture, components) | 3 | Chapter 2 of textbook, Chapter 1 Ref. Book -1(1.3.1-1.3.4.f) |
|  | Instruction set and machine codes of Intel 8086 | 2 | Chapter 3, 4 of textbook |
|  | Addressing modes of Intel 8086 | 2 | Chapter 3 (3.3) of Rafiquzzaman and Chapter 2, 3,4 of textbook |
| **Midterm I on July 3, 2022**  ***(Answer Scripts will be returned by July 15, 2022* *so that a student can decide if she or he wants to drop with a minimum financial penalty)*** | | | |
|  | Microcomputer System Software and Detailed Programming concepts | 1 | Chapter 4, 5 and 6 of textbook |
|  | Intel 8086 Bus timing and memory concepts | 1 | Chapter 7 of textbook |
|  | Intel 8086 System design concepts | 2 | Chapter 7 of textbook |
|  | Introduction to Intel 8086 interrupts | 1 | Chapter 8 of textbook |
| **Midterm II on August 7, 2022**  ***(Answer Scripts will be returned by August 17, 2022* *so that a student can decide if she or he wants to withdraw)*** | | | |
|  | Intel 8086 interrupts and its applications | 1 | Chapter 8 of textbook |
|  | Programmable Interrupt Controller: Intel 8259 | 2 | Chapter 8 of textbook |
|  | Minimum Mode and Maximum Mode | 2 | Chapter 8 of textbook |
|  | Digital Interfacing using Intel 8255 | 1 | Chapter 9 of textbook |
| **Final on September 11, 2022.** | | | |

**Text Book:**

* [The Intel Microprocessors 8086/8088, 80186/80188, 80286, 80386, 80486, Pentium, and Pentium Pro Processor Architecture, Programming, and Inter- facing](https://www.amazon.com/Microprocessors-Pentium-Processor-Architecture-Programming/dp/0130607142/ref=sr_1_1?dchild=1&qid=1635061233&qsid=139-8532893-9939253&refinements=p_27%3ABarry+B.+Brey&s=books&sr=1-1&sres=0130607142%2C0130885460%2C0675204437%2C0132606704%2C0131195069%2C0030264235%2C067520884X%2C0130908045) *by Barry B. Brey (8th Edition).*

**Reference Book:**

* Microprocessors and Interfacing *by A.P.Godse, D.A. Godse.* *(1st Edition)*

**Total Marks Distribution:**

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| **Class Tests** | **:** | **10%** |
| **Lab Performance** | **:** | **10%** |
| **Lab Exam** | **:** | **10%** |
| **Open-ended lab** | **:** | **5%** |
| **Midterm-I** | **:** | **15%** |
| **Midterm-II** | **:** | **20%** |
| **Final** | **:** | **20%** |
| **Project + Presentation** | **:** | **10%** |

**Special Instructions:**

* No make-up exams of the class tests, midterm exams will be allowed. Midterm makeup will be allowed in case of any medical/unavoidable reason of self and/or family.
* Lab reports are to be submitted within the announced deadline. No late submission will be granted**.**
* **Academic Honesty:** Plagiarism will not be tolerated. The penalty for any act of academic dishonesty (cheating on an exam, turning in something not entirely your own) is a lower final grade for the course, up to and possibly including an F.
* **Projects:** A project is required from students using the programming language to submit a microcontroller-based project during the last week of the semester. The project must have a social impact in our country.
* **Presentations**: Students are required to make presentations for their projects one week before the end of the semester with the submission of the report.
* **Regarding missing term exams**: If you miss a term exam due to sickness or any other family issues, inform me by email as early as possible on the day of the exam.