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| Course Number and Title: | EE- 211 Micro Processor Systems | | |
| Credit Hours: | 3+1 | | |
| Pre Requisite | Digital Logic Design | | |
| Instructor (s): | Dr. Syed Azhar Ali Zaidi | | |
| Lab Engineer: | Engr. Zunaira Huma | | |
| Compulsory/Elective: | Compulsory | | |
| If Elective: Depth Core/ Breadth Core: | | | |
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| Course Schedule: | Lecture: | 3 hours/week | |
| | Lab: | 3 hours/week | |
| | Office hours: | 4 hours/week | |
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| Course Assessment: | Assignments: | 2 | |
| | Quizzes: | 2 | |
| | Course project: | 1 | |
| | Lab work: | 14 experiments | |
| | Exams: | Mid-semester and Final | |
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| Grading Policy: | Quizzes: | 10% | |
| | Assignments: | 10% | |
| | Lab work: | 20% | |
| | Mid-Semester: | 20% | |
| | End-Semester: | 40% | |
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| Text Book: | Douglas V. Hall, "Microprocessor and Interfacing", Tata McGraw-Hill. | | |
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| Reference Book(s): | <ol style="list-style-type: none"> 1. The Intel Microprocessors By Barry B.Brey, Latest Edition 2. Charles Gilmore, "Microprocessors: Principles and Application", McGraw-Hill. 3. Mazidi, "Programming, Interfacing and Design using 8086". | | |
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| Course Objective: | To acquaint the students with the organization, programming and applications of microprocessor-based systems | | |
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| Course Learning Outcome | CLO Statement | PLO | Bloom |
| CLO-1: | Introduction to microprocessor and microcontrollers, Architecture, basic concepts, control unit, internal registers, ALU, timing and sequencing, memory and I/O Interfacing, Programming of Microprocessor | PLO-1 | C1 C2 |
| CLO-2: | Microprocessor system design based on the knowledge of Architecture, programming and interfacing of microprocessor | PLO-3 | C4 |
| CLO-3: | Reinforce the concepts of the microprocessor system using microprocessor emulator and microcontroller programming and designing tools | PLO-5 | C3 |
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| Topics covered in the course and level of coverage: | ❖ Introduction to Microprocessor and Microcontroller and its architecture, introduction to microprocessor based system | 6 hours | |
| | ❖ Control unit, ALU and addressing modes, Machine Code Construction | 6 hours | |
| | ❖ Instruction set of 8086 microprocessor, Systematic method of writing programs, Program Control Instructions | 12 hours | |
| | ❖ 8086/8088 hardware specifications, Maximum and minimum | 3 hours | |

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| | mode | | | | | | | | | | | |
| | ❖ Types of Memories and their interface | | | | | | | | | | | 6 hours |
| | ❖ Basic I/O interface | | | | | | | | | | | 6 hours |
| | ❖ Mechanism and Types of Interrupt | | | | | | | | | | | 6 hours |
| | ❖ Microprocessor based system design | | | | | | | | | | | 3 hours |
| Program learning outcomes and how they are covered by specific course outcomes: | Detailed Contents | | | | | | | | | | CLO | PLO |
| | ❖ Introduction to Microprocessors and microcontrollers, Memory and I/O system, Internal microprocessor architecture | | | | | | | | | | CLO-1 | PLO-1 |
| | ❖ Control unit, Arithmetic and logic unit, Data Addressing modes, register addressing, direct addressing, indirect addressing, immediate addressing, Stack addressing, Machine Code Construction for 8086 | | | | | | | | | | CLO-1 | PLO-1 |
| | ❖ Data movement instructions, PUSH/POP instructions, string data instructions, Load effective address, Miscellaneous data transfer instructions, Program control instructions, Jump instructions, procedures, Machine control and miscellaneous instructions | | | | | | | | | | CLO-1 | PLO-1 |
| | ❖ 8086/8088 hardware specifications, Pin functions, clock generator, bus buffering and latching, bus timing, ready and wait states, minimum and maximum mode | | | | | | | | | | CLO-2 | PLO-3 |
| | ❖ Memory interfacing, memory devices, address decoding, 8086/8088 memory interfacing | | | | | | | | | | CLO-2 | PLO-3 |
| | ❖ Basic I/O interface, isolated and memory mapped I/O, I/O port addressing modes, Programmable peripheral interface(8255), Interfacing 8086 to different I/O devices. | | | | | | | | | | CLO-2 | PLO-3 |
| | ❖ Interrupts, Basic interrupt processing, hardware interrupts, 8254 programmable interval timer, programmable interrupt controller(8259),cascading multiple 8259, programming of 8259 | | | | | | | | | | CLO-2 | PLO-3 |
| | ❖ Microprocessor based system design using microprocessor emulator and microcontroller programming and designing tools | | | | | | | | | | CLO-2 CLO-3 | PLO-3 PLO-5 |
| Mapping of CLOs with PLOs and Bloom's Taxonomy Cognitive Levels: | | | | | | | | | | | | |
| PLO | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| CLO-1 | C1 C2 | | | | | | | | | | | |
| CLO-2 | | C4 | | | | | | | | | | |
| CLO-3 | | | C3 | | | | | | | | | |
| Mapping of CLOs with Assessment Methods: | | | | | | | | | | | | |
| CLOs/Assessment | CLO-1 | | | CLO-2 | | | CLO-3 | | | | | |
| Quizzes: | √ | | | √ | | | | | | | | |
| Lab work: | √ | | | √ | | | | | | √ | | |
| Mid-Semester: | √ | | | √ | | | | | | | | |
| End-Semester: | √ | | | √ | | | | | | | | |