**20EC3204-MICROPROCESSORS AND INTERFACING**

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| **Course Category:** | Professional core | **Credits:** | 3 |
| **Course Type:** | Theory | **Lecture - Tutorial - Practical:** | 3 - 0- 0 |
| **Pre-requisite:** | Computer architecture and Basic programming. | **Sessional Evaluation :**  **External Evaluation:**  **Total Marks:** | 40  60  100 |

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| **Course**  **Objectives** | Students undergoing this course are expected to learn: | |
| 1. The evaluation of different types of microprocessors and features of 8085 µp along with memory interfacing. 2. The microprocessor 8085 internal architecture and its operation within the area of manufacturing and performance. 3. The knowledge on internal architecture of 8086µp and its modes of operations along with timing diagrams. 4. The Microprocessor I/O ports in order to interface the processor to external devices. 5. The different peripherals are interfaced with 8086 using DAC & ADC. 6. The different peripherals are interfaced with 8086 µc and develop hardware projects. | |
| **Course Outcomes** | Upon successful completion of the course , the students will be able to: | |
| CO1 | Understand the evaluation of different types of microprocessors and features of 8085 µp along with memory interfacing. |
| CO2 | Assess and solve basic binary math operations using the microprocessor and explain the microprocessor 8085 internal architecture and its operation within the area of manufacturing and performance. |
| CO3 | Gain the knowledge on internal architecture of 8086µp and its modes of operations along with timing diagrams. |
| CO4 | Design electrical circuitry to the Microprocessor I/O ports in order to interface the processor to external devices. |
| CO5 | Illustrate how the different peripherals are interfaced with 8086 using DAC & ADC. |
| CO6 | Illustrate how the different peripherals are interfaced with 8086 µc and develop hardware projects. |
| **Course**  **Content** | **UNIT-I**  **INTRODUCTION TO MICROPROCESSORS:** Types of microprocessors, Features of 8085 microprocessor, Architecture of 8085 microprocessor, pin configuration, Register set, Instruction Cycle, Timing Diagrams, Stack and Subroutines.  **UNIT-II INSTRUCTION SET OF 8085 MICROPROCESSORS:** Addressing modes, Assembly Language Programs (8085) for addition, subtraction, multiplication, division etc., Interrupts of 8085, Memory interfacing of 8085 microprocessor.    **UNIT-III**  **ARCHITECTURE OF 8086 MICROPROCESSOR:** Architecture, pin description, Instruction set, Addressing modes, Interrupt system. Minimum mode and Maximum mode operations of 8086 and its timing diagrams, Assembler directives, Assembly language programs (8086).  **UNIT- IV**  **Programmable peripheral IC’s:** Programmable Communication Interface 8251,pin diagram, modes of operation and interfacing diagram with 8085/8086, Programmable Interrupt Controller (8259) , pin diagram, modes of operation and interfacing diagram with 8085/8086, Programmable DMA controller (8257) pin diagram, modes of operation and interfacing diagram with 8085/8086.  **UNIT-V**  **Programmable peripheral IC’s:** Programmable Interval Timer (8253), pin diagram, modes of operation and interfacing diagram with 8085/8086,PPI (8255), pin diagram, modes of operation and interfacing diagram with 8085/8086, ADC and DAC pin diagram,operation and its Interfacing.  **UNIT-VI**  **MEMORY INTERFACING TO 8086:** Interfacing various types of RAM and ROM chips, Waveform generation, Traffic light controller, Stepper motor control, temperature measurement and control. | |
| **Text Books**  **& Reference Books** | **TEXT BOOKS:**   1. Ram. B, “Fundamentals of Microprocessors and Micro controllers”, Dhanpat Rai publications. 2. Douglas V. Hall, “Microprocessors and interfacing: Programming and hard ware”, TMH, 2nd edition.   **REFERENCES BOOKS:**   1. A.K. Ray and K.M. Bhurchandi, “Advanced Microprocessors and Peripherals”, TMH. 2. “Microprocessor Architecture, Programming, and Applications with the 8085” by [Ramesh S. Gaonkar](http://www.goodreads.com/author/show/1283958.Ramesh_S_Gaonkar)”, Prentice Hall of India. 3. Intel Microprocessors 8086/8088, 80186/80188, 80286, 80386, 80486, Pentium, Prentium Proprocessor, Pentium II, III, IV by Barry B.Brey. | |
| **E-Resources** | 1.<http://w3.ualg.pt/~jmcardo/ensino/ihs2004/Benner93.pdf>  2.http://engreric.com/wpcontent/uploads/2014/06/Syllabus\_CECS346\_Fall15.pdf | |