**17EC3206- MICROPROCESSORS AND INTERFACING**

(Common to ECE and EEE)

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| **Course Category:** | Professional core | **Credits:** | 3 |
| **Course Type:** | Theory | **Lecture -Tutorial-Practical:** | 3-0-0 |
| **Pre-requisite:** | Logic circuit design, A/D & D/A converters, fundamental programming skills | **Sessional Evaluation:**  **External Evaluation:**  **Total Marks:** | 40  60  100 |

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| **Course**  **Objectives:** | Students undergoing this course are expected to: | |
| 1. Learn the internal architecture details, pin configuration and their timing diagrams of 8085. 2. Learn programming and memory interfacing details of 8085 microprocessor. 3. Learn the internal architecture details, pin configuration, interrupts and their timing diagrams of 8086. 4. Learn techniques of interfacing between the processors and peripheral devices. 5. Learn to develop programs to control different hardware’s using 8086. 6. Learn about advanced microprocessor 80286. | |
| **Course Outcomes:** | Upon successful completion of the course , the students will be able to: | |
| **CO1** | Understand the evolution of different types of microprocessors and internal architecture details of 8085. |
| **CO2** | Write efficient programs in assembly level language of the 8085 family of µp’s with the help of instruction set easily. |
| **CO3** | Gain the knowledge on internal architecture of 8086µp (execution unit, bus interfacing unit, queue, and 8086 memory address), programming structure and able to write programs in assembly language of the 8086 family of microprocessors. |
| **CO4** | Know the techniques of interfacing between the processors and peripheral devices so that they themselves can design and develop a complete microprocessor based systems real time projects. |
| **CO5** | Understand the inter connections of different co-processors, hardware knowledge of programmable devices like 8257/8253/8259/8251/8255 with 8086µp and developing hardware applications involving microprocessors. |
| **CO6** | Gain the knowledge on Intel’s advanced microprocessor 80286. |
| **Course**  **Content:** | **UNIT-I Introduction to microprocessors**: Evolution of 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 microprocessor**: 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:** Instruction set, addressing modes, interrupt system, minimum mode and maximum mode operations of 8086 and its timing diagrams, assembler directives, assembly language programs (8086), stages of software development.  **UNIT- IV**  **IO interfacing to 8086:** Programmable interrupt controller (8259) and its interfacing, programmable DMA controller (8257) and its interfacing, programmable interval timer (8253) and its interfacing, programmable communication interface (8251 USART) and its interfacing.  **UNIT-V**  **Memory interfacing to 8086:** Interfacing various types of RAM and ROM chips, PPI (8255) and its interfacing, ADC and DAC interfacing, waveform generation, traffic light controller, stepper motor control, temperature measurement and control.  **UNIT-VI**  **80286 microprocessor:** Introduction, features of 80286, architecture, pin descriptions of 80286, register organizations, addressing modes, instruction set of 80286. | |
| **Text books**  **&**  **Reference books** | **Text books:**  1. “Fundamentals of Microprocessors and Micro controllers”, by Ram. B,  DhanpatRai publications.  2. “Microprocessors and interfacing: Programming and hardware”, by Douglas  V. Hall, TMH, 2ndEdition.  **Reference books:**  1.“Advanced Microprocessors and Peripherals”, by A.K. Ray and K.M.  Bhurchandi, 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. | |
| **e-Resources** | 1.http://www.nptel.ac.in  2. http:/www.ebookee.com/linearintegratedcircuits. | |