COURSE STRUCTURE OF B. TECH IN COMPUTER SCIENCE & ENGINEERING, HIT

Course Name : Microprocessors & Microcontrollers					
Course Code: AEIE3105					
Contact hrs per week:	**L**	**T**	**P**	**Total**	**Credit points**
	3	**1**	**0**	**4**	**4**

Module I - [8L]

Introduction to microcomputer system, History and evolution of microprocessor and microcontrollers and their advantages and disadvantages;
Introduction to 8 bit microprocessor: 8085 microprocessor internal architecture, buses, 8085 pin description; Software instruction set, timing diagram of the instructions, addressing modes and assembly language programming; Interrupts of 8085 processor: classification of interrupts, Programming using interrupts.

Module II - [10L]

Introduction to 8086/8088 Architecture: Architecture, memory segmentation, signal descriptions, clock generator, resetting the microprocessor, wait state inserting, bus buffering, interrupts, instruction set, addressing modes and assembly language programming of 8086/8088.

Module III - [10L]

Introduction to microcontrollers: Intel MCS-51 family features, 8051 architecture, pin configuration, I/O ports and memory organization; Instruction set and basic assembly language programming, interrupts and returns; Interrupts, timer/counter and serial communication;MCS-51 applications: Square wave generation, LED, A/D converter and D/A converter interfacing with 8051;
Brief introduction to PIC microcontroller (16F877): Architecture, pin details, memory layout etc.

Module IV - [12L]

Memory and ADC / DAC interfacing with 8085/ 8086;
Support IC chips: 8255, 8237, 8259 and 8251- Block diagram, pin details, modes of operation, control word(s) format and interfacing with 8085/8086/8051.

References:

1. Ramesh S. Gaonkar, *Microprocessor architecture, programming and applications with 8085/8085A*; Wiley eastern Ltd.
2. B. Ram, *Fundamental of Microprocessor and Microcontrollers*; Dhanpat Rai Publications.
3. N. Senthil Kumar, M. Saravanan, S. Jeevanathan, *Microprocessors and Microcontrollers*; Oxford Publications.
4. A. Nagoor Kani, *8085 Microprocessor and its Applications*; Third Edition, TMH Education Pvt. Ltd.
5. Douglas V. Hall, *Microprocessors & Interfacing*, Tata McGraw-Hill.
6. Ray & Bhurchandi, *Advanced Microprocessors & Peripherals*, Tata McGraw-Hill.
7. Barry B. Brey, *The Intel Microprocessors*, PHI/Pearson Ed. Asia.
8. Muhammed Ali Mazidi and Janice Gillispie Mazidi, *The 8051 Microcontroller and Embedded Systems*, Pearson Education Inc.
9. Ajay V Deshmukh, *Microcontrollers Theory and Applications*, Tata McGraw-Hill.
10. Raj Kamal, *Embedded systems- Architecture, Programming and Design*, McGraw Hill Education (India) Pvt. Ltd.

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Course outcome:

After the completion of the course the students will be able to:

1. Learn the architecture and function of each pin of 8 bit microprocessor 8085, 16 bit microprocessor 8086/8088, 8051 and PIC microcontroller.
2. Develop the skill in program writing for 8085 microprocessor, 8086 microprocessor, 8051 and PIC microcontroller.
3. Perform memory and I/O interfacing with 8085 microprocessor, 8086 microprocessor.
4. Describe the architecture of different types of programmable peripheral devices and their interfacing with microprocessor, 8086 microprocessor and 8051 microcontroller.