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| **Course – 38 Title: Microprocessors and Assembly Language** |  |
| **Course No.: CIT 311 Credit : 3 Contact Hours: 3** | **Total Marks: 100** |

**11.1 Rationale:**

A computer engineer needs to know design activities, interrelationship among different peripherals and microcontroller based embedded system

**11.2 Objectives:**

* 1. To gain knowledge about microprocessors and microcomputers and internal architecture
  2. To learn about internal relationship of different functional units of CPU and software interaction with hardware
  3. To know about the assembly language programming technique
  4. To learn the activities of I/O devices with respect to CPU
  5. To acquire knowledge about microcontroller based system design

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| **11.3**  **Learning Outcomes** | **11.4**  **Course Content** | **11.5**  **Teaching Learning Strategy** | **11.6 Assessment Strategy** |
| 1. Identify different types of microprocessor 2. Identify different component and peripherals | Introduction to different types of microprocessors, |  |  |
| 1. Explain Computer languages and its implementation 2. Apply assembly language program for solving problem | Machine and assembly language programming, Assembly language program writing, Opcode, Debugging and execution. Programming in Microcomputers, Subroutine and reentrant programs. | Lecture  Exercise  Assignment  Lab report | Short answer  quiz  Group exercise |
| 1. Summarize of hardware, software and interfacing system | Hardware and Software Interfacing in Microcomputer System Design, I/O Design and Total System Design, | Lecture  Exercise  Assignment | Short answer  Analytical answer  quiz |
| 1. Design microprocessor based system, 2. Outline of debugging and testing 3. Explain memory interfacing | Microprocessor based system design: Hardware design, Building, Debugging, Testing and Linking program modules, Programming EPROM. | Lecture  Exercise  Assignment | Short answer  Analytical answer  quiz  Group exercise |
| 1. Describe evolution of processor (i/o processor, numeric data processor, coprocessor, multiprocessor, bit slice processor) 2. Outline of microprogramming | Multiprocessor configurations: coprocessor configurations, Numeric data processor, I/O processors, Advanced Microprogramming: Bit-Slice Microprocessor. | Lecture | Short answer  Analytical answer  quiz |
| 1. Describe microcontroller 2. Describe Microcontroller based system design, Programming(Assembly & high level language), 3. Describe Interfacing with differ input output devices | Microcontroller : Intel 8031/8051 Architecture, Special Function Registers (SFR), I/O pins, ports and circuits, Instruction set, Addressing Modes, Assembly Language Programming, Timer and Counter Programming, Serial Communication, Connection to RS 232, Interrupts Programming, External Memory interfacing, Introduction to 16 bit Microcontroller. | Lecture  Exercise  Assignment  Lab report | Short answer  Analytical answer  quiz  Group exercise  viva |

**RECOMMENDED BOOKS AND PERIODICALS**