**19EC42O1-COMPUTER ORGANIZATION**

**(ECE)**

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| **Course Category:** | Open Elective | **Credits:** | 3 |
| **Course Type:** | Theory | **Lecture - Tutorial - Practical:** | 2 - 2 – 0 |
| **Pre-requisite:** | Switching theory & logic design, Basics of digital design | **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 register transfer and micro operations  2. The instruction cycle and various interrupts.  3. Machine language, assembly language and micro programmed control.  4. General register, stack organization, program control, pipeline and vector  processing.  5. Detailed information of I/O devices and their interface, data transfer and its  modes, priority interrupt and D.M.A.  6. Types and organization of memory, multiprocessor characteristics and inter  processor communication. | |
| **Course Outcome:** | Upon successful completion of the course , the students will be able to: | |
| **CO1** | Understand the architecture of modern computer, register transfer and micro operations |
| **CO2** | Analyze types of instructions, timing & control |
| **CO3** | Compare different control mechanisms in programming. |
| **CO4** | Understand different blocks of central processing unit. |
| **CO5** | Understand various input-output devices |
| **CO6** | Understand how cache mapping occurs in a computer and solve various problems |
| **Course**  **Content:** | **UNIT-I**  **Register transfer and micro operations:** Register transfer, bus and memory transfers, arithmetic micro operations, logic micro operations, shift micro operations, arithmetic logic shift units.  **UNIT-II**  **Basic computer organization and design:** Instruction codes, computer registers and instructions, timing and control, instruction cycles, memory reference instructions, input-output and interrupt.  **UNIT-III**  **Programming the basic control:** Machine language, Assembly language, the assembler, programming arithmetic and logic operations, subroutines.  **Micro programmed control:** Control memory, address sequencing, micro program example, design of control unit.  **UNIT-IV**  **Central processing unit:** General register organization, stack organization, Instruction formats, addressing modes, program control, R.I.S.C., parallel processing, pipelining, arithmetic pipe-line, instruction pipe-line.  **UNIT-V**  **Input-output organization:** Peripheral devices, input-output interface, Asynchronous data transfer, modes of transfer, priority interrupt, D.M.A.,input -output processor, serial communication.  **UNIT-VI**  **Memory organization:** Memory hierarchy, main memory, auxiliary memory, associative memory, cache memory, virtual memory, characteristics of multi processors, inter processor arbitration, inter processor communication and synchronization and cache coherence. | |
| **Text books**  **&**  **Reference books:** | **Text books:**  1.”Computer system architechture”, by M. Moris Mano, 3/e PHI-I.  2.“Computer organization”, by V.C. Hemacher, Z.G. Vranesic and others Mc-  Graw-Hill.  **Reference books:**  1.“Computer architecture and organization” , by Hays& Briggs –P.H.I.  2.“Computer Organization”, by William stallings PHI. | |
| **e-Resources** | 1. <http://nptel.ac.in/courses/106105085/4>  2. <http://nptel.ac.in/courses/106108052/1> | |