INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

NAME OF DEPT./CENTRE: **Electronics and Computer Engineering**

1. Subject Code: **EC - 252** Course Title: **Computer Architecture and Microprocessors**

2. Contact Hours: **L: 3** **T: 1** **P: 0**

3. Examination Duration (Hrs.): **Theory** 0 3 **Practical** 0 0

4. Relative Weight: **CWS** 25 **PRS** 00 **MTE** 25 **ETE** 50 **PRE** 00

5. Credits: 0 4 6. Semester [ ] **Autumn** [√] **Spring** [ ] **Both**

7. Pre-requisite: **EC - 203**

8. Subject Area: **DCC**

9. Objective: To familiarize students with the architecture of a processor and machine level programming.

10. Details of the Course:

Sl. No.	Contents	Contact Hours
1.	CPU structure and functions, processor organization, ALU, data paths, internal registers, status flags; System bus structure: Data, address and control buses.	5
2.	Processor control, micro-operations, instruction fetch, hardwired control, microprogrammed control, microinstruction sequencing and execution.	6
3.	Instruction set principles, machine instructions, types of operations and operands, encoding an instruction set, assembly language programming, addressing modes and formats.	8
4.	Memory system, internal and external memory, memory hierarchy, cache memory and its working, virtual memory concept.	5
5.	I/O organization; I/O techniques: interrupts, polling, DMA; Synchronous vs. asynchronous I/O.	4
6.	8085 microprocessor architecture; Instruction set, instruction types and formats; Instruction execution, instruction cycles, different types of machine cycles and timing diagram.	8
7.	16-bit microprocessors, 8086 architecture, registers, memory segmentation and addressing, 32-bit/64-bit microprocessor families.	6
	Total	**42**

11. Suggested Books:

Sl. No.	Name of Books/Authors	Year of Publication
1.	Mano, M.M., "Computer System Architecture" 3rd Ed., Prentice-Hall of India.	2004
2.	Rajaraman, V. and Radhakrishnan, T., "Computer Organization and Architecture", Prentice-Hall of India.	2007
3.	Govindrajalu, B., "Computer Architecture and Organization", Tata McGraw-Hill.	2004
4.	Stallings, W., "Computer Organization and Architecture", 5th Ed., Pearson Education.	2001
5.	Hall, D.V., "Microprocessors and Interfacing", 2nd Ed., Tata McGraw-Hill.	2006
6.	Brey, B.B., "The Intel Microprocessors", 6th Ed., Pearson Education.	2003