Amended Course as passed by the Subject Committee Meeting held on Feb. 29, 2004.

CMP 472.Computer Architecture (3-1-2)

	Theory	Practical	Total
Sessional	30	20	50
Final	50	-	50
Total	80	20	100

Course objectives:
To study basic and Architecture Concepts of Computers.

Course Contents:

1. **Introduction** **(3 hrs)**
   SSI and MSI circuits, VLSI Technology, mile stone in computer organization, examples of computer families, future trends in computer.

2. **Central Processing unit: Case Study** **(8 hrs)**
   Arithmetic and Logic unit, Instruction sets, Addressing modes and formats, Stack, Processor organization, Register organization, Instruction cycle, Pentium processor, Power PC processor.

3. **Control Unit Design** **(8 hrs)**
   Micro – operations, Control of CPU, Hardwired implementation, Micro-instruction sequencing, Micro – instruction execution, Application of micro-programming.

4. **Input/ Output Organization** **(6 hrs)**
   External devices, I/O modules, Programmed I/O, interrupt Driven I/O Direct memory access, I/O channels and processors, External interfaces.

5. **Memory organization** **(6 hrs)**
   Main memory, auxiliary memory, associative memory, virtual memory, Cache memory, Cache memory driving forces, Cache design issues, Placement, Fetch, Replacement & Update policies.

6. **RISC** **(4 hrs)**
   RISC and CISC systems, RISC instructions, Processor to memory movement, Pipelining, RISC pipelining, Pipeling Hazards.

7. **Pipelining Techniques** **(7 hrs)**
   Parallel processing, introduction to pipelining, arithmetic pipelining, instruction pipeling, RISC pipeling Hazards.

8. Multiprocessors (3 hrs)

Characteristics of multiprocessors, Flynn's Enslow's classification, interconnection structures, cache coherence.

Laboratory:

The student should develop a project on computer Architecture. The topic could be either initiated by the student or selected from a list provided by the instructor. An oral presentation with a demonstration should be part of the laboratory project report.

Reference Books:

1. W. Staling, Computer Organization and Architecture 17 edition. Prentice- Hall India Limited. New Delhi.

2. A.J. Vande Goor, Computer Architecture and Design, Addison Wesley: Workingham. UK. 1989.
3. A.S.Tanenbaum, Structured Computer Organization, prentice Hall Indial Limited new Delhi.