SYMBIOSIS INTERNATIONAL (DEEMED UNIVERSITY)
(Established under section 3 of the UGC Act, 1956)
Re-accredited by NAAC with 'A++' Grade | Awarded Category – I by UGC
Founder: Prof. Dr. S. B. Mujumdar, M. Sc., Ph. D. (Awarded Padma Bhushan and Padma Shri by President of India)

Course Name: Computer Organization
Course Code: T7996
Faculty: Engineering
Course Credit: 3
Course Level: 2
Sub-Committee (Specialization): Computer Science
Learning Objectives:

The students are able to:

Understand computer evolution, components, interconnection structures, bus interconnection and apply various binary arithmetic algorithms on signed as well as unsigned numbers.

Summarize machine instructions, organization of 8086 microprocessor and register and pipelining techniques.

Outline the hardwired control unit design methods and micro programmed control unit operations.

Distinguish between different types of memories; understand the concepts and mapping techniques of virtual memory as well as cache memory.

Interpret the Input / Output transfer techniques and discuss about the working mechanisms of various I/O peripherals.

Books Recommended:

Book	Author	Publisher
Computer Organization and Architecture: Designing for performance, 9th Edition, March 11, 2012	William Stallings	Prentice Hall of India, ISBN-13: 978-0132936330
Computer Organization and Embedded Systems, 6th Edition, January 27, 2011	C. Hamacher, V. Zvonko, S. Zaky	Tata Mc Graw Hills, ISBN-13: 978-0073380650
Computer System Architecture, Third Edition	Morris Mano	PHI

Course Outline:

Sr. No.	Topic	Actual Teaching Hours	Contact Hours Equivalence
1	**Computer Evolution & Arithmetic** A brief history of computers designing for performance Von Neumann architecture computer components system bus bus parameters interconnection structures fixed and floating point numbers signed and unsigned numbers binary arithmetic booths algorithm restoring algorithm for division IEEE standards for floating point representations floating point arithmetic	**13**	**13**

2	**The Central Processing Unit** Machine instruction characteristics types of operands types of instructions addressing modes instruction formats register organization 8086 microprocessor architecture and pin diagram instruction cycles instruction pipelining	**10**	**10**
3	**The Control Unit** Control Unit architecture CU design methods - Hardwired Control Unit design: State Table Delay element Sequence Counter Microprogrammed Control Unit microinstructions microinstruction sequencing micro operations	**5**	**5**
4	**Memory Organization** Memory Hierarchy Characteristics of memory systems Performance characteristics types of memories: ROM: PROM, EPROM, EEPROM RAM: SRAM, DRAM, SDRAM, RDRAM. virtual memory: main memory allocation segmentation paging page replacement virtual address translation of 8086, TLB, RAID secondary storage: magnetic disk optical memory CDROM DVD Cache Memory Cache Coherence Cache Mapping	**12**	**12**
5	**I/O Organization** Input/output systems I/O Transfer Techniques: Program-controlled Interrupt-Driven DMA-controlled synchronous asynchronous working mechanisms of peripherals: keyboard video displays touch screen panel printers	**5**	**5**
	Total	**45**	**45**

Pre Requisites:

None

Evaluation:

Quiz

Examination

Pedagogy:

Classroom Teaching

Worksheets

NPTEL Handouts & Videos

Expert:

Dr. Parag Kulkarni,Professor, Founder, Chief Scientist and CEO,iknowlation Research Labs Pvt Ltd