JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY: KAKINADA

KAKINADA – 533 003, Andhra Pradesh, India

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

II Year-II Semester		L	T	P	C
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COMPUTER ARCHITECTURE and ORGANIZATION

Course objectives:
- To understand the architecture of amodern computer with its variousprocessingunits. Also the Performance measurement of thecomputersystem.
- To understand the memory management systemofcomputer.
- To Understand the various instructions, addressingmodes
- To Understand the concept of I/Oorganization

UNIT -I:
Basic Structure Of Computers: Functional unit, Basic Operational concepts, Bus structures, System Software, Performance, The history of computer development.
Machine Instruction and Programs:
Instruction and Instruction Sequencing: Register Transfer Notation, Assembly Language Notation, Basic Instruction Types,

UNIT -II:
Addressing Modes, Basic Input/output Operations, The role of Stacks and Queues in computer programming equation. Component of Instructions: Logic Instructions, shift and Rotate Instructions
Type of Instructions: Arithmetic and Logic Instructions, Branch Instructions, Addressing Modes, Input/output Operations

UNIT -III:
INPUT/OUTPUT ORGANIZATION: Accessing I/O Devices, Interrupts: Interrupt Hardware, Enabling and Disabling Interrupts, Handling Multiple Devices, Direct Memory Access,
Buses: Synchronous Bus, Asynchronous Bus, Interface Circuits, Standard I/O Interface: Peripheral Component Interconnect (PCI) Bus, Universal Serial Bus (USB)

UNIT -IV:
The MEMORY SYSTEMS: Basic memory circuits, Memory System Consideration, Read-Only Memory: ROM, PROM, EPROM, EEPROM, Flash Memory,
Cache Memories: Mapping Functions, INTERLEAVING
Secondary Storage: Magnetic Hard Disks, Optical Disks,

UNIT -V:
Processing Unit: Fundamental Concepts: Register Transfers, Performing an Arithmetic Or

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Logic Operation, Fetching A Word From Memory,Execution of Complete Instruction, Hardwired Control,

Micro programmed Control: Microinstructions, Micro program Sequencing, Wide Branch Addressing Microinstructions with next –Address Field

TEXTBOOKS:
1. Computer Organization, Carl Hamacher, ZvonksVranesic, SafeaZaky, 5thEdition, McGrawHill,2011.
2. Computer Architecture and Organization, John P. Hayes ,3rdEdition, McGrawHill,2002.

REFERENCE BOOKS:
1. Computer Organization and Architecture – William Stallings SixthEdition,Pearson/PHI
2. Structured Computer Organization – Andrew S. Tanenbaum, 4th EditionPHI/Pearson, 2012.
3. Fundamentals or Computer Organization and Design, - SivaraamaDandamudiSpringer Int.Edition,2003.
4. "Computer Organization and Design: The Hardware/Software Interface" by DavidA. Patterson and John L.Hennessy, 1998.
5. J .P. Hayes, "Computer Architecture and Organization",McGraw-Hill,1998.

Course Outcomes:
- Students can understand the architecture ofmoderncomputer.
- They can analyze the Performance of a computer usingperformanceequation
- Understanding of differentinstructiontypes.
- Students can calculate the effective address of an operand byaddressingmodes
- They can understand how computer stores positive andnegativenumbers.
- Understand the concepts of I/O Organization and Memorysystems.