

# Maulana Abul Kalam Azad University of Technology, West Bengal

(Formerly West Bengal University of Technology)

## Syllabus for B. Tech in Electrical Engineering

(Applicable from the academic session 2018-2019)

<b>Name of the course</b>		<b>COMPUTER ORGANISATION</b>	
<b>Course Code: OE-EE-501C</b>		<b>Semester: 5<sup>th</sup></b>	
<b>Duration: 6 months</b>		<b>Maximum Marks: 100</b>	
<b>Teaching Scheme</b>		<b>Examination Scheme</b>	
Theory: 3 hrs./week		Mid Semester Exam: 15 Marks	
Tutorial: 0hr/week		Assignment & Quiz: 10 Marks	
Practical: hrs./week		Attendance: 05 Marks	
Credit Points: 3		End Semester Exam: 70 Marks	
<b>Objective:</b>			
1.	To understand the analysis and design of various digital electronic circuits.		
2.	To understand how Computer Systems work & its basic principles		
3.	To understand how I/O devices are being accessed and its principles etc.		
<b>Pre-Requisite</b>			
1.	Programing for problem solving (ES-CS 201)		
2.	Digital Electronics (PC-EE 402)		
<b>Unit</b>	<b>Content</b>	<b>Hrs</b>	<b>Marks</b>
1	Basic organization of the stored program computer and operation sequence for execution of a program. Role of operating systems and compiler/assembler. Fetch, decode and execute cycle, Concept of operator, operand, registers and storage, Instruction format. Instruction sets and addressing modes. Commonly used number systems. Fixed and floating point representation of numbers.	08	
2	Overflow and underflow. Design of adders - ripple carry and carry look ahead principles. Design of ALU. Fixed point multiplication - Booth's algorithm. Fixed point division - Restoring and non-restoring algorithms. Floating point - IEEE 754 standard.	08	
3	Memory unit design with special emphasis on implementation of CPU-memory interfacing. Memory organization, static and dynamic memory, memory hierarchy, associative memory. Cache memory, Virtual memory. Data path design for read/write access.	10	
4	Design of control unit - hardwired and microprogrammed control. Introduction to instruction pipelining. Introduction to RISC architectures. RISC vs CISC architectures. I/O operations - Concept of handshaking, Polled I/O, interrupt and DMA.	10	

### Text books:

1. Computer System Architecture, Mano, M.M. PHI.
2. Computer Architecture & Organisation, Hayes J. P, McGraw Hill,
3. Computer Organisation & Design, Chaudhuri P. Pal, PHI,
4. Computer Organization & Architecture, Rajaraman , PHI

### Reference books

1. Computer Architecture, Behrooz Parhami , Oxford University Press
2. Microprocessors and Microcontrollers, N. senthil Kumar, M. Saravanan, S. Jeevananthan , OUP

3. Computer Organization & Architecture , P N BasuVikas Pub
4. Computer Organization & Architecture, B.Ram, Newage Publications
5. Computer Organisation, Hamacher, McGraw Hill,

**Course Outcome:**

After completion of this course, the learners will be able to

1. explain basic structure of digital computer, stored program concept, different arithmetic and control unit operations, operating systems and compiler/assembler, memory and I/O operations.
2. differentiate between RISC vs CISC architectures, cache memory, virtual memory.
3. perform fixed point multiplication and division.
4. apply restoring and non-restoring algorithms, floating point - IEEE 754 standard.
5. design adder, memory unit and control unit, data path for read/write access.

**Special Remarks (if any)**

The above-mentioned outcomes are not limited. Institute may redefine outcomes based their program educational objective.