ITM(SLS) Baroda University - Faculty of Engineering

Department of Computer Science & Engineering

SYLLABUS FOR 3 Semester BTech PROGRAMME

Computer Architecture (C2310C2)

Type of Course: BTech

Prerequisite:

Rationale: -

Teaching and Examination Scheme:

Teaching Scheme			Credit	Examination Scheme					Total
				External		Internal			
Lecture Hrs/ Week	Tutorial Hrs/ Week	Practical Hrs/ Week		T	P	T	CE	P	
3	-	2	4	100	-	60	-	50	210

SEE - Semester End Examination, **CIA** - Continuous Internal Assessment (It consists of Assignments/Seminars/Presentations/MCQ Tests, etc.)

Contents:

Sr.	Topic	Weightage	Teaching Hrs.
1	**Data storage and register transfer operations**: Register Transfer and Micro-operations: Register Transfer language, Register Transfer, Bus and Memory Transfers, Arithmetic Microoperations, Logic Micro-Operations, Shift Micro-Operations, Arithmetic logical shift unit	%	5
2	**Basic Computer Organization and Design**: Instruction codes, Computer registers, computer instructions, Timing and Control, Instruction cycle, Memory-Reference Instructions, Input-output and interrupt, Design of Basic computer, Design of Accumulator Unit.	%	6
3	**Assembly Language Programming**: Introduction, Machine Language, Assembly Language Programming: Arithmetic and logic operations, looping constructs, Subroutines, I-O Programming	%	7
4	**Microprogrammed Control Organization**: Control Memory, Address sequencing, Micro program example, Design of Control Unit	%	3
5	**Central Processing Unit**: Introduction, General Register Organization, Stack Organization, Instruction format, Addressing Modes, Data transfer and manipulation, Program control, Reduced Instruction Set Computer (RISC) & Complex Instruction Set Computer (CISC)	%	5
6	**Pipeline And Vector Processing**: Flynn's taxonomy, Parallel Processing, Pipelining, Arithmetic Pipeline, Instruction Pipeline, RISC Pipeline, Vector Processing, Array Processors	%	5
7	**Computer Arithmetic**: Introduction, Addition and subtraction, Multiplication Algorithms (Booth Multiplication Algorithm), Division Algorithms, Floating Point Arithmetic operations	%	4

8	**Input-Output Organization**: Input-Output Interface, Asynchronous Data Transfer, Modes of Transfer, Priority Interrupt, DMA, Input-Output Processor (IOP), CPU IOP Communication, Serial communication.	%	5
9	**Memory Organization**: Memory Hierarchy, Main Memory, Auxiliary Memory, Associative Memory, Cache Memory, Virtual Memory, Introduction to GPU.	%	5

***Continuous Evaluation:**

It consists of Assignments/Seminars/Presentations/Quizzes/Surprise Tests (Summative/MCQ) etc.

Reference Books:

1. Computer System Architecture (TextBook)
   By M. Morris Mano | Pearson Education

List of Practical:

1. Construct the all logic gates using logisim
2. Construct the logical half and Full adder using logisim
3. Construct the logical diagram for tristate buffer circuit using logisim
4. Design the shift registers using logisim
5. Design the computational circuit for 4- bit arithmetic circuit
6. Design computational circuit using logisim