

# Hemchandracharya North Gujarat University, Patan

## B.E. SEMESTER – III (CE)

### CE305: COMPUTER ORGANIZATION AND ARCHITECTURE

#### Teaching Scheme

Theory	03 Hrs/Week
Tutorial	-
Practical	-
Total	03 Hrs/Week

#### Examination Scheme

Theory	100 Marks
Practical	-
Term work	-
Total	100 Marks

1. **OVERVIEW OF REGISTER TRANSFER AND MICROOPERATIONS :**  
Register Transfer Language, Register transfer, Bus and Memory transfer, Arithmetic Micro-operations, Logic Micro-operations, Shift Microoperations, and Arithmetic Logic Shift Unit.
2. **BASIC COMPUTER ORGANIZATION AND DESIGN:**  
Instruction codes, Computer registers, computer instructions, Timing and Control, Instruction cycle, Memory-Reference Instructions, Input-output and interrupt, Complete computer description, Design of Basic computer, design of Accumulator Unit.
3. **PROGRAMMING THE BASIC COMPUTER:**  
Introduction, Machine Language, Assembly Language, the Assembler, Program loops, Programming Arithmetic and logic operations, subroutines, I-O Programming.
4. **MICROPROGRAMMED CONTROL:**  
Control Memory, Address sequencing, Microprogram Example, design of control Unit
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)
6. **PIPELINE AND VECTOR PROCESSING :**  
Parallel Processing, Pipelining, Arithmetic Pipeline, Instruction, Pipeline, RISC Pipeline, Vector Processing, Array Processors
7. **COMPUTER ARITHMETIC:**  
Introduction, Addition and subtraction, Multiplication and Division Algorithms, Floating Point Arithmetic, Decimal Arithmetic Unit and Operations

#### **Reference Books:**

1. Computer System Architecture: By M. Morris Mano
2. Structured Computer Organization: By Tanenbaum
3. Computer Organization: By Stallings
4. Computer Architecture and Organization: By Hayes