



**Gyanmanjari**  
Innovative University

Course Syllabus  
Gyanmanjari Diploma Engineering College  
Semester-4 (Diploma)

**Subject: Computer Organization & Architecture-DETCE14209**

**Type of course: Major (Core)**

**Prerequisite:** Basic knowledge of Digital Logic Design

**Rationale:**

This course is designed to provide details of the computer system as a whole and its functional components as part their characteristics, working principles, performance, and internal and external communication. Interactions including system bus, different types of memory and input/output organization with Processor. This course also covers hardware architectural issues and assembly language programming. On top of that, the students are also introduced to the increasingly important area of hardware evolution and working fundamentals of processor. This course provides domain specific fundamental knowledge of microprocessor as well as computer system architecture, working, characteristic and communication with peripherals which are essential for hardware related domain for all students of computer engineering and allied branches.

**Teaching and Examination Scheme:**

Teaching Scheme			Credits	Examination Marks					Total Marks
CI	T	P	C	Theory Marks		Practical Marks		CA	
				ESE	MSE	V	P	ALA	
3	0	0	3	60	30	10	0	50	150

*Legends: CI-Classroom Instructions; T – Tutorial; P - Practical; C – Credit; ESE - End Semester Examination; MSE- Mid Semester Examination; V – Viva; CA - Continuous Assessment; ALA- Active Learning Activities.*



## Course Content:

Sr. No	Course Content	Hrs.	% Weightage
1	<b>Basics of Computer Organization &amp; Architecture</b> Overview of computers and basic CPU structure, Basics of Digital Electronics-Flip Flops, Registers, Shift registers, Various Registers used in CPU & its applications, Types of Buses used in CPU.	04	12%
2	<b>8085 Microprocessor</b> Introduction to Microprocessors, 8085 Pin Diagram & Pin Functions, 8085 Microprocessor Architecture, 8085 General Purpose Registers, 8085 Flag Register, 8085 Instruction Execution	12	25%
3	<b>8085 Assembly Language Programming</b> Instruction format opcode & operands, Machine Language Instruction Format: 1-Byte, 2-Byte & 3-Byte, Data transfer Instructions, Arithmetical instructions, Logical Instructions, Branching & Looping Instructions, Stack Instructions, I/O and Machine Control Instructions, 8085 Addressing Modes, Classification of 8085 Interrupts and its priorities	15	30%
4	<b>Memory Organization</b> Memory classifications, Memory Hierarchy, Various types of Main memories, Various types of Auxiliary memories, Cache Memory, Virtual Memory	08	18%
5	<b>Input-Output Organization</b> Input-Output Interface, Various Modes of Data Transfer with I/O, CPU-IOP communication	06	15%



### Continuous Assessment:

Sr. No	Active Learning Activities	Marks
1	<b>Memory Devices:</b> Students have to get their hands on various types of memory devices like Floppy Drives, Magnetic Tapes etc. available in the old days to understand its working and the evolution from that memory to currently available disks after the completion students have to upload charts and documents with photographs on GMIU web portal.	10
2	<b>Micro Project:</b> Students have to make micro project on theoretical concepts learned in class, after the completion of micro project students have to upload image on GMIU web portal.	20
3	<b>Case Study:</b> Students have to analyze case studies of real computer architectures and their applications in current technologies after the completion of case study students have to upload pdf of case study on GMIU web portal.	20
Total		50

### Suggested Specification table with Marks (Theory): 60

Distribution of Theory Marks (Revised Bloom's Taxonomy)						
Level	Remembrance (R)	Understanding (U)	Application (A)	Analyze (N)	Evaluate (E)	Create (C)
Weightage %	40%	40%	20%	-	-	-

### Course Outcome:

After learning the course the students should be able to:	
CO1	Analyze computer systems at the hardware level, including CPU components & circuits, buses, and registers.
CO2	Examine 8085 Architecture and its working.
CO3	Perform Assembly language programming using 8085 Instruction Set.
CO4	Identify various parts of a system memory hierarchy.
CO5	Visualize CPU-I/O Communication and working.



### **Instructional Method:**

The course delivery method will depend upon the requirement of content and need of students. The teacher in addition to conventional teaching method by black board, may also use any of tools such as demonstration, role play, Quiz, brainstorming, MOOCs etc.

From the content 10% topics are suggested for flipped mode instruction.

Students will use supplementary resources such as online videos, NPTEL/SWAYAM videos, e-courses, Virtual Laboratory.

The internal evaluation will be done on the basis of Active Learning Assignment.

Practical/Viva examination will be conducted at the end of semester for evaluation of performance of students in laboratory.

### **Reference Books:**

- [1] Microprocessor Architecture, Programming and Application with 8085, Ramesh S. Gaonkar, 5th Edition, Prentice Hall
- [2] Computer system Architecture, Mano, M. Morris, Pearson, Latest Edition
- [3] Microprocessor and interfacing Programming and Hardware, Douglas V. Hall, McGraw-Hill, International Edition
- [4] Computer Architecture and Organization, Ghoshal, Subrata, Pearson, Latest Edition
- [5] Computer Architecture, Parhami, Behrooz, Oxford, Latest Edition

