VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

COMPUTER ORGANIZATION & MICRO PROCESSORS

B. TECH- III Semester **L/T/P/C**
3/0 /0 /3

Pre-Requisites: None

Course Objectives:

- To understand common forms of number representation in digital electronic circuits and to be able to convert between different representations.
- To understand the basic components of computers.
- To understand the basic chip design and organization of 8086 with assembly language programming.

UNIT - I:

Introduction to Digital Logic circuits: Number System, complements, binary codes, error detection codes, Logic gates, Boolean algebra, maps simplification.

UNIT - II:

Basic Structure of Computers: Computer Types, Functional unit, Basic operational concepts, Bus structures, Data Representation: Fixed Point Representation, Floating - Point Representation
Register Transfer Language: Register Transfer language, Register Transfer Bus and memory transfers.

UNIT - III:

Pipeline and Vector Processing: Parallel processing, pipelining, Arithmetic Pipeline, Instruction Pipeline.
Multiprocessors: Characteristics of multiprocessors, Interconnection Structures-Time shared common bus, Multi port memory, Crossbar switch, Multistage switching network, Hypercube interconnection.

UNIT - IV:

Architecture of Microprocessors: Introduction to Microprocessors & Overview of 8086 microprocessor, Signals and pins of 8086 microprocessor, Physical memory organization.
Assembly language of 8086: Machine language Instruction format, Addressing modes, Instruction set of 8086, Assembler Directives and Operators, Assembly software programs with algorithms.

UNIT - V:

Interfacing with 8086: Interfacing with RAMs, ROMs, interfacing with peripheral ICs like 8255. ADCs, DACs, serial data transfer schemes USART 8251 serial data communication, interrupt vector table, interrupt structure with 8259 etc.

Course Outcome:

Upon completion of this course, the students will be able to:

CO-1: Utilize and explain the functionality of logic gates.
CO-2: Describe the fundamental organization of a computer system.
CO-3: Understand the concepts of parallel processing, pipelining.
CO-4: Develop assembly language programs for various applications.
CO-5: Design Memory Interfacing circuits.

TEXT BOOKS:

1. Digital Design – Morris Mano, PHI, 3rd Edition, 2006.
2. Switching and Finite Automata Theory- Zvi Kohavi & Niraj K. Jha, 3rdEdition, Cambridge
3. Computer System Architecture- Morris Mano, 3rd Edition.
4. D. V. Hall, Microprocessors and interfacing, TMGH, 2nd Edition 2006