EE 321 Computer Architecture & Organization/Laboratory			
Credit Hours:	3-1-4	**Prerequisites**	Nil

Course Learning Outcomes:

S No	**CLO**	**Domain**	**Taxonomy Level**	**PLO**
1.	Recognize the function of major components of computer systems.	Cognitive	2	1
2.	Solve the problems related to internal architecture and organization of computer system.	Cognitive	3	2
3.	Apply the underlying theoretical concepts of computer architecture and organization through simulations.	Cognitive	5	5

Course Content:

Introduction to Computer Architecture, Evolution of Computers, Types of Computers, Hardware, Firmware and Software. Future trends. Programming model of 8086 family. Addressing Modes. Data types, complements, fixed point representation, floating point representation, binary codes. Register Transfer Language. Bus and Memory Transfer. Arithmetic Micro- operations, Logic Micro-operations, shift micro-operation, Arithmetic Logic Unit. Instruction Codes, Computer Register, Computer Instruction, Timing and Control, Instruction Cycle, Memory-Reference Instruction, Input-Output, Interrupt, Complete description and design of Basic Computer. Design of Accumulator and ALU. Assembly Language Programming with help of MASM and Debugger. Control Memory, Address Sequencing, Micro program, Computer Configuration, Microinstruction format, Symbolic Microinstruction. The Fetch Routine, Symbolic Micro program, Binary Micro program, Design of Control Unit, Micro program Sequencer. Memory Hierarchy, Main Memory, Cache Memory, Virtual Memory, Memory Management. General Register Organization, Stack Organization, Instruction format, Addressing Modes, Date transfer and manipulation, Program Control, RISC & CISC Computer and their characteristics. Parallel Processing, Pipelining, Arithmetic Pipeline, Instruction Pipeline, Vector Processing.

Teaching Methodology:

Lectures, Written Assignments, Semester Project, Presentations

Course Assessment:

Midterm Exam, Home Assignments, Quizzes, Project, Presentations, Final Exam
Reference Materials: 1. Computer Architecture and Organization by John P. Hayes, 3rd Edition, McGraw -Hill. 2. David A. Patterson, John L. Hennessy, "Computer Organization & Design ", 5th Edition, Morgan Kaufmann, or Latest Edition. 3. Computer System Architecture by M. Morris Mano, Third Edition 4. Computer Architecture by Morio De Blasi. 5. Computer Architecture & Organization by A.J.Van De Goor.
In addition there will be lecture notes and selected articles.