Approval: 9th Senate Meeting

Course Name: Computer Organization Laboratory

Course Number: CS 201P

Credits: 0-0-2-1

Prerequisites: None

Intended for: UG

Distribution: Discipline Core

Semester: V

Course Outline:

In the theory course CS201: Computer Organization, students study the organization of computers at the abstraction of microarchitecture i.e. the internal implementation of a computer at the register and functional unit level and at the abstraction of instruction set architecture i.e. the the programmer's abstraction of a computer. This laboratory subject is intended to assigst the students to relate the concepts studied in the theory.

Modules:

Lab assignments (listed below) require 3 hours in the lab, preceded by at least 3 hours at home. The weekly assignments would be targeted at understanding the concepts covered in the theory course. Some examples of the structure of assignment is as follows:

- Week 1 Getting familiarity in the Verilog/VHDL programming.
- Week 2-3 Design and simulation of simple combinational and sequential circuits (flip flops) using Verilog/VHDL programming.
- Week 4 Design and similation of 16-bit signed and unsigned integer adder-subtractor circuit.
- Week 5 Design and similation of 16-bit signed and unsigned integer multiplication circuit using carry save addition.
- Week 6 Design and similation of 16-bit signed and unsigned integer combinational division circuit using non-restoring procedure.
- Week 7 Design and similation of 16-bit signed and unsigned arithmatiac and logic unit (ALU) as a single unit by combining all the circuits simulated from week 2-7.
- Week 8-13 Programming in assembly language, e.g., assembly language in IA32 architecture

Text books

1. Sivarama P. Dandamudi, "Guide to Assembly Languag Programming in Linux", Springer, 2005.