

1.	Title of the course	Computer Organization Laboratory
2.	Course number	CS203P
3.	Structure of credits	0-0-3-2
4.	Offered to	UG
5.	New course/modification to	Modification To CS2292/8
6.	To be offered by	Department of Computer Science and Engineering
7.	To take effect from	July 2022
8.	Prerequisite	Nil
9.	Course Objective(s): To provide hands-on skills on designing of modern processors and to develop and enhance the programming skills using assembly languages such as MIPS and x86.	
10.	Course Content: Assembly language programming: Compiling high-level program to RISC and CISC type assembly and machine codes, Assembly program to explore arithmetic, control, and data transfer instructions, Recursive function call and stack utilization, Interrupt and I/O devices; Hardware description languages: Verilog HDL, VHDL, FPGA board and synthesis flow; Single-cycle processor design: instruction fetch and decode unit design, arithmetic and logic unit design, load and store circuit design, integration of all the units to design a processor; Multi-cycle Processor design: Data and control path design, simulation and timing analysis.	
11.	Textbook(s): 1. Patterson D and Hennessy J, <i>Computer Organisation and Design: The Hardware/Software Interface</i> , Morgan Kaufmann (2014).	
12.	Reference(s): 1. Roth C H and John L K, <i>Digital System Design Using VHDL</i> , Cengage Learning (2008).	