INDIAN INSTITUTE OF TECHNOLOGY TIRUPATI

भारतीय प्रौद्योगिकी संस्थान तिरुपति

Yerpedu-Venkatagiri Road, Yerpedu Post, Tirupati District, Andhra Pradesh - 517 619

1.	Title of the course	Computer Organisation and Architecture Laboratory
2.	Course number	CS209M
3.	Structure of credits (L-T-P-C)	1-0-2-2
4.	New course/modification to	New
5.	To be offered by	Computer Science and Engineering
6.	Prerequisite	None
7.	**Course Objective(s):** To practice programming of processors using assembly language instructions. To design and develop a small scale central processing unit.	
8.	**Course Content:** Assembly language programming: program translation, assembly programming on arithmetic, control, and data transfer instructions, recursive function call, stack utilization, interrupt and programming input output devices; Hardware descriptor language programming: verilog hardware descriptor language, field programmable gate array board and synthesis flow; Processor design: instruction fetch and decode unit design, arithmetic and logic unit design, load and store unit design, component integration, multi-cycle processor design, simulation and verification.	
9.	**Textbook(s):** 1. Patterson D and Hennessy J, Computer Organisation and Design: The Hardware/Software Interface, Morgan Kaufmann (2014).	
10.	**Reference(s):** 1. Edson Borin, An Introduction to Assembly Programming with RISC-V, 1st Online Edition (2022) 2. Roth C H, John L K, and B Lee, Digital System Design Using Verilog, Cengage Learning (2017)	