

**INDIAN INSTITUTE OF TECHNOLOGY TIRUPATI**  
**PROFORMA FOR NEW COURSE**

1.	Title of the Course	Computer Organization Laboratory
2.	Course Number	CS2292
3.	Status of the Course	Core
4.	Structure of Credits	0-0-3-2
5.	Offered To	UG
6.	New Course/Modification to	New
7.	To be Offered by	Department of Computer Science and Engineering
8.	To take effect from	July 2018
9.	Prerequisite	Nil
10.	Whether approved by the Department	Yes
11.	<b>Course Objective:</b> 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.	
12.	<b>Course Content:</b> 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.	
13.	Text book(s): 1. Patterson D and Hennessy J, <i>Computer Organisation and Design: The Hardware/Software Interface</i> , Morgan Kaufmann (2014).	
14.	Reference(s): 1. Roth C H and John L K, <i>Digital System Design Using VHDL</i> , Cengage Learning (2008).	