

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

1.	Title of the Course	Computer Organization
2.	Course Number	CS2204
3.	Status of the Course	Core
4.	Structure of Credits	3-0-0-3
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 understand the subsystems of modern computer system, design aspects of these subsystems, and interactions between the subsystems; To learn techniques for evaluation and enhancement of performance of computer systems.	
12.	<b>Course Content:</b> Introduction and Performance: CPU, memory, I/O subsystems, bus, technology trends, measuring CPU performance, Amdahl's law, performance metrics and benchmarking; Instruction sets: RISC and CISC paradigms, encoding/decoding of instructions, addressing modes, assembly language programming; ALU design: adder, multiplier, floating point; Datapath and Control: single-cycle and multi-cycle datapaths, control of datapaths and implementing control unit, pipeline, hazards, multi-pipeline; Memory organization: main memory, cache, memory hierarchy performance metrics; I/O: device types and characteristics, program controlled, interrupt controlled and DMA.	
13.	Text book(s): 1. Hamacher C, Vranesic Z, Zaky S and Manjikian N, <i>Computer Organization and Embedded Systems</i> , McGraw-Hill (2012). 2. Patterson D A and Hennessy J L, <i>Computer Organization and Design -The Hardware/Software Interface</i> , Morgan Kaufmann (2013).	
14.	Reference(s): 1. Mano M M and Mall R, <i>Computer System Architecture</i> , Pearson Education (2017). 2. Nisan N and Schocken S, <i>The Elements of Computing Systems - Building a Modern Computer from First Principles</i> , MIT Press (2008). 3. Stallings W, <i>Computer Architecture and Organization - Designing for Performance</i> , Pearson Education (2016).	