

1.	Title of the course	Computer Organisation and Architecture
2.	Course number	CS209L
3.	Structure of credits (L-T-P-C)	3-0-0-3
4.	New course/modification to	New
5.	To be offered by	Computer Science and Engineering
6.	Prerequisite	None
7.	<b>Course Objective(s):</b> To discuss the functioning of different hardware subsystems and how they interact within a computer system. To analyze various micro-architectural designs.	
8.	<b>Course Content:</b> Introduction and performance: components of computer, Moore's law, technology trends, central processing unit performance, Amdahl's law, performance metrics, benchmarking; Instruction sets architecture: reduced instruction set computer and complex instruction set computer paradigms, registers, address space, encoding and decoding of instructions, addressing modes; Arithmetic and logic unit design review; Data and control path: von-Neuman architecture, single-cycle design, multi-cycle design, control unit, pipeline micro-architecture, hazards, superscalar processor; Core architecture: single core, multi core, multi-threading; Memory hierarchy: cache, main memory, virtual memory, non-volatile memory, memory management unit; Input output systems: device types, device mapping, program controlled, interrupt controlled, direct memory access.	
9.	<b>Textbook(s):</b> 1. Patterson D A and Hennessy J L, Computer Organization and Design -The Hardware Software Interface, RISC-V Edition, Morgan Kaufmann (2017). 2. Stallings W, Computer Architecture and Organization - Designing for Performance, Pearson Education (2016).	
10.	<b>Reference(s):</b> 1. John P Shen and Mikko H Lipasti, Modern Processor Design: Fundamental of Superscalar Processors, Waveland press (2013). 2. Hamacher C, Vranesic Z, Zaky S and Manjikian N, Computer Organization and Embedded Systems, McGraw-Hill (2012). 3. Mano M M and Mall R, Computer System Architecture, Pearson Education (2017). 4. J L Henessay and David Patterson, Computer Architecture: A Quantitative Approach, 6th Edition, MK Publisher (2017).	