Course Name	Advanced Computer Architecture
References	1. J.L. Hennessy, D. Patterson: Computer Architecture: A Quantitative Approach, Morgan Kaufmann Publisher. Sixth Edition. 2019. 2. M. Dubois, M. Annavaram, P. Stenström: Parallel Computer Organization and Design, Cambridge University Press 3. A. Rodriguez: Deep Learning Systems: Algorithms, Compilers, and Processors for Large-Scale Production, Morgan & Claypool Publishers, 2020 4. L. Chen, D. Penney, D. Jiménez, AI for Computer Architecture: Principles, Practice, and Prospects, November 2020 5. N. Enright, J. M. Martonosi, M. D. Hill, Synthesis Lectures on Computer Architecture, Morgan & Claypool Publishers.
Course instructor	Dr. Masoud Dehyadegari
Syllabus	1. Fundamentals of Quantitative Design and Analysis 2. Instruction level parallelism, Pipeline Hazards and Analysis 3. Branch Prediction, MIPS Pipeline for Multi-Cycle Operations 4. Superscalar and VLIW Processors 5. Dynamic Scheduling with Tomasulo's Algorithm and Speculative Execution. 6. Thread-Level Parallelism 7. Multicore Processors, Network on Chip(NoC) 8. Memory system, DRAM, Memory controllers 9. Shared Memory, Memory Consistency, and Cache Coherence 10. Domain Specific architectures 11. Parallel programing