# Course Plan: Computer Organization

Start Date: 04/03/2025

End Date: 09/05/2025

Total Hours: 20

Hours per Week: 4

## Unit Details

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| Unit | Subtopics | Start Date | End Date | Pedagogy | Resources/References |
| BASICS OF DIGITAL ELECTRONICS AND MICRO OPERATIONS | Basics Of Digital Electronics: Multiplexers and De multiplexers, Decoder and Encoder, Registers., shift registers, Introduction to combinational circuit, introduction to sequential Circuits Register Transfer and Micro Operations: Register Transfer Language and Register  Transfer, Bus and Memory Transfer, Logic Micro Operations, Shift Micro Operations,  Design of arithmetic logic unit., arithmetic microoperations | 04/03/2025 | 17/03/2025 | Lecture, Discussion, Hands-on | • https://scholar.google.com/scholar?q=BASICS OF DIGITAL ELECTRONICS AND MICRO OPERATIONS • https://www.coursera.org/search?query=BASICS OF DIGITAL ELECTRONICS AND MICRO OPERATIONS • https://www.edx.org/search?q=BASICS OF DIGITAL ELECTRONICS AND MICRO OPERATIONS • https://www.khanacademy.org/search?page\_search\_query=BASICS OF DIGITAL ELECTRONICS AND MICRO OPERATIONS • https://www.udemy.com/courses/search/?q=BASICS OF DIGITAL ELECTRONICS AND MICRO OPERATIONS |
| COMPUTER ARITHMETIC | Data representation: signed number representation, fixed and floating point representations, character representation. Computer arithmetic - integer  addition and subtraction, ripple carry adder, carry look-ahead adder, etc. multiplication -  shift-and-add, Booth multiplier, carry save multiplier, etc. Division - non-restoring and  restoring techniques, floating point arithmetic | 18/03/2025 | 31/03/2025 | Lecture, Discussion, Hands-on | • https://scholar.google.com/scholar?q=COMPUTER ARITHMETIC • https://www.coursera.org/search?query=COMPUTER ARITHMETIC • https://www.edx.org/search?q=COMPUTER ARITHMETIC • https://www.khanacademy.org/search?page\_search\_query=COMPUTER ARITHMETIC • https://www.udemy.com/courses/search/?q=COMPUTER ARITHMETIC |
| BASIC PROCESSING MODULE | Fundamental concepts – Execution of a complete instruction – Multiple bus organization – Hardwired control – Micro programmed control - Basic concepts – Data hazards – Instruction hazards – Influence on Instruction sets – Data path and control consideration – Superscalar operation | 01/04/2025 | 14/04/2025 | Lecture, Discussion, Hands-on | • https://scholar.google.com/scholar?q=BASIC PROCESSING MODULE • https://www.coursera.org/search?query=BASIC PROCESSING MODULE • https://www.edx.org/search?q=BASIC PROCESSING MODULE • https://www.khanacademy.org/search?page\_search\_query=BASIC PROCESSING MODULE • https://www.udemy.com/courses/search/?q=BASIC PROCESSING MODULE |
| MEMORY SYSTEM | Memory Hierarchy and Processor Vs Memory Speed– Semiconductor RAMs – ROMs –Speed – size and cost – Cache memories – Performance consideration – Virtual memory-Memory Management requirements – Secondary storage | 15/04/2025 | 28/04/2025 | Lecture, Discussion, Hands-on | • https://scholar.google.com/scholar?q=MEMORY SYSTEM • https://www.coursera.org/search?query=MEMORY SYSTEM • https://www.edx.org/search?q=MEMORY SYSTEM • https://www.khanacademy.org/search?page\_search\_query=MEMORY SYSTEM • https://www.udemy.com/courses/search/?q=MEMORY SYSTEM |
| PARALLEL PROCESSING | Introduction to Parallel Processing: Pipelining, Characteristics of multiprocessors,Interconnection Structures, parallel processing Latest technology and trends in computer architecture : multi-cores processor., next generation processors architecture, microarchitecture, latest processor for smartphone or tablet and  desktop Multiprocessors : Categorization of multiprocessors(SISD,MIMD,SIMD.SPMD),  Introduction to GPU. | 29/04/2025 | 12/05/2025 | Lecture, Discussion, Hands-on | • https://scholar.google.com/scholar?q=PARALLEL PROCESSING • https://www.coursera.org/search?query=PARALLEL PROCESSING • https://www.edx.org/search?q=PARALLEL PROCESSING • https://www.khanacademy.org/search?page\_search\_query=PARALLEL PROCESSING • https://www.udemy.com/courses/search/?q=PARALLEL PROCESSING |