

Computer Architecture (CSC 201)
Tribhuvan University
Soch College of Information Technology
Bachelor of Science in Computer Science and Information Technology

Course Title: Computer Architecture

Course no: CSC-201 ----- Full Marks: 80+20

Credit hours: 3 ----- Pass Marks: 32+8

Nature of course: Theory (3 Hrs.) Course Synopsis: This course gives the fundamental knowledge concern with the way the hardware components are connected together to form a computer system and how they interact to provide the processing needs of the user.

Goals: · Introduces the fundamental concepts behind the design working and organization of a computer system. · Instruction set architecture, memory hierarchies and interconnection.

Course Contents:

Unit 1. Data Representation ----- 5 Hrs.

Complements, Fixed point representation, Floating-Point Representation, Gray Code, Error Detection Codes

Unit 2. Microoperations ----- 5 Hrs.

Arithmetic Microoperations, Logic Microoperations, Shift Microoperations, Arithmetic Logic Shift Unit

Unit 3. Fundamental of Computer Organization and Design ----- 7 Hrs.

Computer Register, Computer Instructions, Instruction Cycle, Input and Output and Interrupt, Basic computer Design and Accumulator Logic

Unit 4. Control Unit ----- 5 Hrs.

Control Memory, Hardwired control, Microprogrammed Control

Unit 5. Central Processing Unit ----- 6 Hrs.

Register Organization, Register Stack and memory Stack, One address and two address instruction, Addressing Modes, Data transfer and Manipulation, Introduction to RISC and CISC

Unit 6. Fixed point Computer Arithmetic ----- 5 Hrs.

Addition and Subtraction, Multiplication, Division Algorithm

Unit 7. Input and Output Organization ----- 6 Hrs.

Introduction to Peripheral Devices, I/O interface, Direct Memory Access (DMA), I/O Processor, Data communication processor

Unit 8. Memory Organization ----- 6 Hrs.

Hierarchy of Memory System, Primary and Secondary Memory, Virtual Memory, Memory Management hardware

Text Books: M. Morris Mano, Computer System Architecture

References: M. Morris Mano "Digital Design", Pearson Education, Third Edition

M. Morris Mano "Logic and Computer Design Fundamentals, Pearson Education, 2nd Edition Updated.