

INTRODUCTION TO COMPUTER ORGANIZATION WITH ASSEMBLY.
CSCI 2121 TOPICS FOR MID-TERM WINTER 2016

1. **Number representations:**

Idea of the base (radix) of a number, Representation in binary/hex/decimal and conversions between the reps. for unsigned integers. Fixed point representations for signed binary numbers (2's Complement, signed magnitude), conversions between representations, be able to carry out 2's Complement addition and know the limits of the representation (largest/smallest etc etc). Basics of floating point (IEEE-754) representation.

2. **Basic Boolean Functions:**

Simplifying B. functions using basic B. identities Truth tables for B. expr. (sum of minterms and its dual: Prod. of maxterm) The Basic B. gates and circuits from truth tables. Universal gates and implementing circuits using universal gates.

3. **Basic Combinatorial Circuits:**

MUX, DEMUX, DECODERS, ADDERS (1/2, full, n-bit, 2's Complement) implementations and uses. Universality of MUX, DECODERS. Implementation of basic BF's using universal circuits. A simple ALU using basic comb. circuits

4. **Basic Sequential Circuits:** R-S and D latches and flip-flops: Implementations, timing diagrams. Registers: Serial registers (linear shift), Parallel load registers Memory: Structure, size and addressing. RAM/ROM. Static v/s dynamic memory.