

# CSCI 210 OUTLINE

## COMPUTER LOGIC

TEXT: Fundamentals of Logic Design 4th Edition Roth

**Approved:**

**Effective: FALL 2007**

<b>MATERIAL TO BE COVERED</b>	<b>SECTIONS FROM TEXT</b>	<b>TIME LINE</b>
Introduction: digital and analog systems, switching networks. Number systems and conversions, binary and hexadecimal arithmetic. Binary codes.	1.1 - 1.4	2.5 Hours
Boolean algebra: basic operation, boolean expressions and truth tables, basic theorems, commutative, associative and distributive laws, simplification theorems, multiplying out and factoring, inversion and duality, exclusive OR and logical equivalence, positive and negative logic. Consensus theorem and algebraic simplification of switching expressions.	2.1 - 2.7 & 3.1 - 3.5 & 4.1 - 4.3	7.5 Hours
Applications of Boolean Algebra: conversion of English sentences to Boolean expressions, combinational network design using a truth table. Minterm and maxterm expansions, incompletely specified functions.	5.1 - 5.6	2.5 Hours
Karnaugh maps (2, 3, 4, 5, 6 variables). Quine-McCluskey method, Petrick method.	6.1 - 6.7 & 7.1 - 7.6	5 Hours
Multi-level gate networks, NAND and NOR gates.	8.1 - 8.7	2.5 Hours
Multiple output networks, multiplexers, decoders, ROM's (read only memory), PLA (programmable logic arrays). Combinational network design.	9.1 - 9.7 & 10.1 - 10.3	5 Hours
Flip flops (FF), gate delays and timing diagrams, the set-rest FF, trigger FF, clocked T FF, (optional) J-K and clocked J-K FF, characteristic equations. Counters and shift registers design using FF. Design of a code converter.	11.1 - 11.9 & 12.1 - 12.9	7.5 Hours
Analysis of clocked sequential networks: a sequential parity checker, analysis by signal tracing and timing charts, state tables and graphs. Derivation of state graphs and tables, reduction of state tables. State assignment. Sequential network design.	13.1 - 13.6 & 14.1 - 14.4 & 15.1 - 15.8	7.5 Hours

\*\*\* 1 Hours = 1 hour of face time. \*\*\*\*This outline allows for 3 hours review and exams.

16 Week Term: 1 week = 2.8333 hours (face time)    6 Week Term: 1 week = 7.5 hours (face time)

Keep in mind that most holidays affect M/W or M/W/F classes, so this timeline -- NOTE the topical outline -- may need adjustment. At least one to three exams plus a comprehensive final will be given during the semester.

Submitted by: Pop