

Course Outline
ENSC 252
Digital Logic Design
3 semester hours

The Community College of Baltimore County

Description

Digital Logic Design

Covers gates, flip-flops, registers, counters, switching algebra, Karnaugh Map simplification of gate networks, and synchronous sequential systems; examines the elements of PLA's and binary arithmetic units.

Prerequisites: PHYS 251 and ENSC 241 (conc.) or consent of instructor.

Overall Course Objectives

Upon completion of this course the student will be able to:

1. convert between base 10, octal, and hexadecimal number systems.
2. recognize the various logic gates and associated truth tables.
3. generate the truth tables for various logical functions.
4. use Boolean algebra to simplify logical expressions.
5. use Karnaugh maps to simplify logical expressions.
6. perform combinational logic design.
7. understand and use decoders, adders, comparators, multi- and demulti-plexers.
8. apply programmable logic devices to implement logic designs.
9. perform synchronous sequential logic design
10. understand and use flip-flops, shift registers, counters.
11. the basic electrical circuit level operation of the logic gates.

Major Topics

- I. Number systems and conversions
- II. Boolean Algebra
- III. Logic gates and their truth tables
- IV. Truth tables for logical functions
- V. Karnaugh Maps for logical simplification
- VI. Combinational logic design
- VII. Decoders, adders, comparators, multi- and demultiplexers
- VIII. Flip-flops, shift registers, counters
- XI. Synchronous sequential logic design
- X. Programmable logic devices

XI. Circuit electrical characteristics

Course Requirements

Grading/Exams: Grading procedures will be determined by the individual faculty member but will be based on exams.