Logic gates

Course module description:

- This class is an introduction to the basic concepts, analysis, and design of digital systems.
- This consists of both combinational and sequential logic. Lectures will enable students to experience with several levels of digital systems.

Course Contents

(1) Course Overview

(2) Introduction to Digital Systems. Number Systems and Conversions

(3) Boolean Algebra and Logic Gates

(4) Minimization Methods and Don't care conditions

(5) Representation and implementation of Boolean circuits using other logic gates.

(6) Tutorials, review, and study guide of first exam material

(7) Analysis Procedure of combinational circuits

(8) Combinational Circuits design, BCD Display

(9) Adder and Subtractor, Magnitude comparators,

(10) Multiplexers, Encoders, and Decoders.

(11) Tutorials, review and study guide of second

Books (title , author (s), publisher, year of publication) (Text Book) Digital Design, 4th Edition, M. Morris Mano and Michael D. Ciletti, Prentice Hall, 2007.

Support material (s) (Course website: Includes reference books and Course Notes_ Power Point Slides).

Teaching methods: Lectures, tutorials, and problem solving. Learning outcomes: • Knowledge and understanding - Ability to analyse and understand the behaviour of combinational and sequential digital circuits. - Ability to map and minimize Boolean functions as well as represent them in various standard forms. - Ability to design and implement combinational and sequential logic circuits. - Understanding of various combinational "building blocks" such as decoders, multiplexers, and encoders. - Ability to design and implement arithmetic logic circuits. - Understanding of the behaviour exhibited by latches and flip-flops. - Ability to design and implement sequential circuits. - Understanding of various sequential "building blocks" such as counters and shift registers