

CC442 - Digital design & introduction to Microprocessors

Hour: Lecture: 2 Hrs.

Tutorial: 2 Hrs.

Credit: 3.

Coordinator: Rowayda Sadek

Text Book:

- Thomas L. Floyd, Digital Fundamentals, 9th Edition, Prentice Hall, 2006.

Reference Books:

- M. Mano, Digital Design, 3rd Edition, Prentice Hall, 2002.
- J. P. Hayes, Introduction To Digital Logic Design, Addison Wesley, 1993.
- John F. Wakerly, Digital Design Principles and Practices, 4th Edition, Prentice Hall, 2005.
- TTL Data Book, 5th Edition, Motorola Inc., 1992.

Specific course information

- a. Number systems, binary arithmetic and codes, logic gates, Boolean algebra and logic simplifications, Design and realization of combinational circuits, Functions of combinational circuits logic: Flip-Flops, analysis design and realization of counters, analysis and realization of shift registers, Computer – aided engineering.
- b. Prerequisite: CC112
- c. Designation: Required

Specific goals for the course:

- An ability to apply knowledge of mathematics, science, and engineering.
- An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, ethical and safety, and manufacturability.
- An ability to design and conduct experiments, analyze and interpret data.

Course instruction outcomes:

- The students will be able to develop engineering skills in the design and analysis of digital logic circuits with applications to digital computer.
- The students will be able to Know the basic differences between analog and digital systems
- The students will be able to Use binary numbers and codes
- The students will be able to Describe the operation of logic gates
- The students will be able to Apply Boolean algebra on K-map
- The students will be able to Design a combinational and sequential logic circuits to simplify function
- The students will be able to Draw and interpret timing diagrams

Student outcomes:

A, B, C

Topics Covered:

- Introduction to digital concepts
- Number systems, operations, and codes
- Logic gates
- Boolean algebra and logic simplification
- Functions of combinational logic
- Decoder, encoder, MUX, DMUX
- Flip-Flops and related devices
- Flip-Flops applications
- Counters
- Shift registers
- Sequential logic
- Introduction to microprocessor

Course / credit hours	Math & Basic Sciences	Engineering Topics	General Education
Digital Electronics and Microprocessors (CC442) / 3	1	2	