CEN263 Digital Design

Fall 2020-2021

Instructor: Dr. Barış ATA (bata@cu.edu.tr)

Office Hours: Monday, 10:00-12:00

Description:

This course aims to teach the basics of digital design, specifically design and analysis of combinational and synchronous sequential circuits. This course focuses on number systems in digital design, Boolean Algebra and applications, basic logic gates and behaviors, implementation of logic functions using basic logic circuits, concepts of sequential and combinational circuits, mechanism of the state machines, registers, counters, and memory units.

Textbook:

- Digital Design and Computer Architecture, Harris and Harris, 2nd Edition, Morgan Kaufmann.

Reference Text:

- Digital Design, M. Morris Mano and Michael D. Ciletti, Pearson.

Course Schedule:

Week 1:   Introduction

Week 2:   Number Systems

Week 3:   Logic Gates – Logic Levels

Week 4:   Boolean Equations

Week 5:   Boolean Algebra

Week 6:   Multilevel Combinational Logic

Week 7:   Problem Solution

Week 8:   Karnaugh Maps

Week 9:   Multiplexers, Decoders

Week 10:   Latches and Flip Flops

Week 11:   Registers and Finite State Machines

Week 12:   Timing Sequential Circuits, Parallelism

Week 13:   Arithmetic Circuits

Week 14:   Sequential Building Blocks

Grading: Midterm 40 %, Final exam 60 %.