Department of Electronics and Communications Engineering
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ECE221: Digital Logic Design

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I Aim of Course

- We introduce binary number systems, binary arithmetic, and Boolean algebra.
  - ☞ Octal and hexadecimal numbers, and logic gates are studied as well.
- We introduce combinational logic circuits and its realization.
  - ☞ Modular design of combinational circuits is studied as well.
- Finally, memory elements and sequential logic circuits are introduced.
  - ☞ Finite-state machines and analysis of synchronous/asynchronous circuits are studied as well.

II Outline

- Introduction.
- Binary Number System.
- Binary Arithmetic Operations.
- Boolean Algebra.
- Logic Gates.
- Gate-Level Minimization.
- Combinational Logic Circuits.
- Encoders and Multiplexers.
- Synchronous Sequential Logic.
- Analysis of Sequential Circuits.
- Design of Sequential Circuits.
- Registers.
- Counters.

III Text Books and References

[1] M. M. Mano and M. D. Ciletti, *Digital Design*, 6th ed. Upper Saddle River, New Jersey: Pearson, 2018.

IV Handouts and Assignments

- Handouts and assignments can be downloaded from
  - ☞ http://www.eng.alexu.edu.eg/∼hshalaby/

V Teaching and Assessments

- Credit hours = 2 hrs.
- Teaching hours per week: Total = 2 hrs.
  1. Lectures: 2 hrs.
  2. Tutorials: 0 hr.
  3. Laboratories: 0 hr.
- Exams and their durations:
  1. Midterm exam: 1 hr.
  2. Final exam: 2 hrs.
- Distribution of a total mark of 200:
  1. Midterm exam: 60% marks.
  2. Quizes and class work: 40% marks.
  3. Term project: 20% marks
  4. Final exam: 80% marks.