Dept Number	CS 315	Course Title	Computer Logic and Digital Design
Semester Hours	3	Course Coordinator	Mehdi Zargham
Catalog Description	Introduction to switching algebra and its applications. Combinational logic and combinational circuit components. Sequential logic and sequential circuit components. Asynchronous sequential circuits.		

Textbooks

Morris Mano and Chales Kime, 2003. Logic and Computer Design Fundamentals (3rd Edition)

References

Course Learning Outcomes

- To learn the basic principles of digital system design and analysis.
- To learn the analysis and design of combinational circuits using Boolean algebra and truth tables.
- To learn state transition techniques for the analysis and design of sequential circuits**.**

Assessment of the Contribution to Program Outcomes

Outcome →	1	2	3	4	5	6	7	8	9	10
Assessed →	X	X	X		X					

Prerequisites by Topic

215 with a grade of *C* or better

Major Topics Covered in the Course

1. Introduction to switching algebra and its applications: fundamental postulates, switching expressions and their manipulation, De Morgan's theorems, canonical forms of switching functions, Boolean algebra, minimization of switching functions {5 classes}
2. Combinational logic: design procedure, analysis procedure, code conversion, multilevel NAND circuits, multilevel NOR circuits {8 classes}
3. Combinational circuit components: adders and sub tractors, decoders and encoders, read-only memory (ROM), programmable logic array (PLA) {8 classes}
4. Sequential logic: flip-flops, triggering of flip-flops, sequential and finite state machines, state assignment problems, design procedure, analysis procedure, races {6 classes}
5. Sequential circuit components: registers, counters, random access memory (RAM), algorithmic state machines, implementation of control, Mealy and Moore systems {8 classes}
6. Asynchronous sequential circuits: design procedure, analysis procedure, reduction of state tables, race-free state assignment, hazards {5 classes}