



**MUTAH UNIVERSITY**  
**Faculty of Engineering**  
**Department of Computer Engineering**



**Course Syllabus**

Course Code	Course Name	Credits	Contact Hours
<b>0405271</b>	Digital Systems Design	3	3 T

**INSTRUCTOR/COORDINATOR**

Name	Eng. Basim Al-shar'
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**TEXTBOOK**

Title	Logic and Computer Design Fundamentals (5 <sup>th</sup> edition)
Author/Year	M. Morris Mano, Charles Kime and Tom Martin. / 2015
Other Supplemental Materials	
Title	Fundamentals of Logic Design (7 <sup>th</sup> Edition)
Author/Year	Jr. Charles H. Roth, Larry L Kinney/ 2013
Electronic Materials	Provided on e-learning

**SPECIFIC COURSE INFORMATION**

**A. Brief Description of the Content of the Course (Catalog Description)**

- **Introduction**
- **Number Systems**
- **Combinational Logic Circuits**
- **Combinational Logic Design**
- **Combinational Logic Design Using Building Blocks**
- **Arithmetic Functions**
- **Sequential Circuits**
- **Finite State Machines Analysis**
- **Finite State Machines Design**
- **Registers and Counters**
- **Memory Basics**

**B. Pre-requisites (P) or Co-requisites (C)**

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<b>C. Course Type (Required or Elective)</b>
Required

<b>SPECIFIC GOALS</b>						
<b>A. Specific Outcomes of Instruction</b>						
<b>By the end of this course, the student should be able to:</b>						
<b><u>CLO1</u>:</b> Understanding the basics of Boolean algebra and the operation of logic components, combinational, and sequential circuits [1].						
<b><u>CLO2</u>:</b> Design of digital circuits and systems [2].						
<b><u>CLO3</u>:</b> Design combinational circuits using decoders, ROM and transmission gates [2].						
<b>B. Student Outcomes Addressed by the Course</b>						
1	2	3	4	5	6	7
✓	✓					

<b>BRIEF LIST OF TOPICS TO BE COVERED</b>		
<b>List of Topics</b>	<b>No. of Weeks</b>	<b>Contact Hours</b>
Introduction	1	3
Number Systems	1	3
Combinational Logic Circuits	2	6
Combinational Logic Design	2	6
Combinational Logic Design Using Building Blocks	2	6
Arithmetic Functions	1	3
Sequential Circuits	2	6
Finite State Machines Analysis	1	3
Registers and Counters	1	3
Memory Basics	1	3
	<b>Total</b>	
	14	42

<b>EVALUATION</b>		
<b>Assessment Tool</b>	<b>Due Date</b>	<b>Weight (%)</b>
Mid Exam	According to the university calendar	30

Course Work (Homeworks, Quizzes, Projects, ...etc.)	One week after being assigned	20
Final Exam	According to the university calendar	50

<b>ABET's Students Learning Outcomes (Criterion # 3)</b>		
<b>Relationship to program outcomes</b>		
<b>ABET 1-7</b>	<b>Engineering Student Outcomes</b>	
1	√	an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2	√	an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
3		an ability to communicate effectively with a range of audiences.
4		an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
5		an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
6		an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
7		an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.