



MUTAH UNIVERSITY
Faculty of Engineering
Department of Computer Engineering



Course Syllabus

Course Code	Course Name	Credits	Contact Hours
0405271	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 th edition)
Author/Year	M. Morris Mano, Charles Kime and Tom Martin. / 2015
Other Supplemental Materials	
Title	Fundamentals of Logic Design (7 th 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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C. Course Type (Required or Elective)
Required

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

BRIEF LIST OF TOPICS TO BE COVERED		
List of Topics	No. of Weeks	Contact Hours
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
	Total	
	14	42

EVALUATION		
Assessment Tool	Due Date	Weight (%)
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

ABET's Students Learning Outcomes (Criterion # 3)		
Relationship to program outcomes		
ABET 1-7	Engineering Student Outcomes	
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.