MUTAH NIVERSITY
Faculty of Engineering Department of Electrical Engineering

Course Syllabus

Course Code	Course Name	Credits	Contact Hours
0401363	Digital Electronics	3	3 T

INSTRUCTOR/COORDINATOR

Name	Dr. Omar Al-Ayasrah
Email/Office	o_alayasrah@mutah.edu.jo / Eng. Bldg.-Vice Dean Office
Office Hours	12:00-13:00 (Sun, Tues)
Classroom/Time	Eng. 8 / 11:00 – 12:00 (Sun., Tues.), (Thurs.-Online)

TEXTBOOK

Title	Principles of Electronic Circuits
Author/Year/Edition	S. G. Burns and P. R. Bond, West Publishing Co
Other Supplemental Materials	
Title	Digital Integrated Circuits
Author/Year/Edition	T. DeMassa and Z. Cicconi, John Wiley and Sons Inc.
Title	Microelectronic Circuits
Author/Year/Edition	Adel S.Sedra,Kenneth C.Smith./2015/ 7th Edition

SPECIFIC COURSE INFORMATION

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

Diodes and transistors as switches. Noise margin, Switching time, Fan-out, speed limitations, and Voltagetransfer characteristics (VTC). RTL, DTL, TTL, ECL, MOS, CMOS/Bi-MOS logic gates. Interfacing and expansion of logic circuits. Comparators, A/D and D/A converters. Sample and hold circuits**.** ALU, Memories and memory mapping. Schmitt triggers. Multivibrators. Timing circuits.

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

Electronics (2) (0401362) (P)

C. Course Type (Required or Elective)

Elective

SPECIFIC GOALS

A. Course Learning Objectives (CLOs)

By the end of this course, the student should be able to:

CLO 1: apply electronic circuits in different logic gates [1]**.**

CLO 2. analyze DTL**,**TTL,MOS ,and CMOS logic gates [1].
CLO 3: analyze and design symmetric CMOS gates, multivibrators circuit [2]**.**
CLO 4: analyze and design the A/D and D/A converters and TDM systems [2]**.**

B. Student Learning Outcomes (SLOs) 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 to diodes, BJT and MOSFET as a switch for digital circuits.	1	3
Analyze and Design RTL,DTL,and TTL logic families . Understand :Noise margin, ,propagation delay, Switching time ,speed limitations, fan- out and voltage transfer characteristics VTC .	3	9
PMOS, NMOS and CMOS logic gates, analysis and design.	2	6
Interfacing and expansion of logic circuits.	1	3
Analysis and design the multivibrator circuit :Bistable, monostable and astable .	2	6
Comparator and Schmitt Trigger circuit : analysis and some applications	2	6
555 Timer and some applications in the timing circuits application**.**	1	3
Analog to digital A/D and digital to analog D/A converters	2	6
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.