2309 EIE130 Course Outline

Subject Code : **EIE130**
Subject Title : Digital Circuits
Level : 2
Credits : 3
Teaching Activity : Lecture 45 hours
Prerequisite : N/A

Class Schedule :

Class	Time		Classroom	Date
D1	Thur	12:30-15:20	C308	4/9/2023-17/12/2023

Instructor : Dr. KinTak U
Contact Number : (853)8897-2249
Email Address : ktu@must.edu.mo
Office : C403
Office hours : Tue. 13:30-15:30; Wed. 15:20-18:20
Thur. 15:20-18:20; Fri. 13:30-15:30

Course Description

This subject aims to make the students familiar with the basic principle, analysis and design method of the digital circuit through some practical exercises. Topics including number system, Boolean algebra, combinational logic circuit, arithmetic function, and sequential logic circuit will be conducted and studied.

In the lecture part, the students can understand and learn the principles of number system and Boolean algebra, the analysis and design methods of the combinational logic circuit, arithmetic function and the sequential logic circuit.

Typical exercises and assignments are used to help the students to understand and practise the circuit analysis and design methods manually.

Textbook(s)

Book title： Logic and Computer Design Fundamentals: International Editions
Author/Editor： M. Morris Mano, Charles R. Kime.
Edition： 5/6
ISBN： 9781292096070
Publisher： Pearson, Prentice Hall
Date： 2015

References

Book title：Digital Design: International Editions
Author/Editor：M. Morris Mano, Michael D. Ciletti.
Edition：5
ISBN：9780273764526
Publisher：Pearson, Prentice Hall
Date：2012

INTENDED LEARNING OUTCOMES

Upon successful completion of this subject, students will be able to:

1. Represent Boolean functions in standard forms, to optimize them, and to implement them as combinational logic circuits.
2. Analyze the behaviour of digital circuits.
3. Construct some typical combinational logic circuits, including various "functional blocks" such as decoders, multiplexers, encoders, and tri-state buffers.
4. Design and implement arithmetic the logic circuits.
5. Ability to analyze, design, and implement the sequential circuits.

Schedule

Index	Topic	Hours	Teaching Method
1	Digital System and Information (Number System and its operations)	5	Lecture
2	Combinational Logic Circuits Part I: Gate Circuits and Boolean Equations	5	Lecture
3	Combinational Logic Circuits Part II: Circuit Optimization	5	Lecture
4	Combinational Logic Circuits Part III: Additional Gates and Circuits	5	Lecture
5	Combinational Logic Design Part I: Design Procedure. Part II: Combinational Logic	5	Lecture
6	Review	2	Lecture
7	Mid-term Exam.	3	
8	Arithmetic Functions	5	Lecture
9	Sequential Circuits Part I: Storage Elements and Analysis Part II: Sequential Circuit Design	5	Lecture
10	Review	2	Lecture
11	Final Exam.	3	Lecture

ASSESSMENT APPROACH

Assessment method	Percentage %
1. Exercise	**10**
2. Assignment	**30**
3. Mid-term Exam.	**30**
4. Final Exam.	**30**
Total	**100 %**

Guideline for Letter Grade:

Marks	Grade
93 - 100	A+
88 - 92	A
83 - 87	A-
78 - 82	B+
72 - 77	B
68 - 71	B-
63 - 67	C+
58 - 62	C
53 - 57	C-
48 - 52	D+
43 - 47	D
0 - 42	F

Notes:

Exercises are designed to help the students to learn the analyzing and optimizing method of digital circuits. Assignments are graded by comprehensiveness and effectiveness in solving the analyzing and designing problems given. The assignments should be submitted on time and a delay submission will lead to score penalty (50% of their original marks) no matter how many days of their delays.