2309 EIE330 Course Outline

Subject Code	:	EIE330
Subject Title	:	FPGA-BASED SYSTEM DESIGN
Course Type	:	Compulsory
Level	:	3
Credits	:	3
Teaching Activity	:	Lecture 8 hours
	:	Experiment 40 hours
Prior Knowledge*	:	**Co-requisite:** Digital Circuits (Course code: EIE130)
Class Schedule	:	

Class	Week	Time	Classroom	Date
D1	FRI	15:30-18:20	C408	01/09/2022 - 14/12/2022

Instructor	:	Shenlu Jiang
E-mail Address	:	shenlujiang@must.edu.mo
Office	:	A324
Office Hour	:	Mon 15:30-19:00 Tue 12:30-15:00 Wed 14:30-17:30 Thu 12:30-15:30

COURSE DESCRIPTION

FPGA is a Programmable Logic Device (PLD). This course is an experiment-based course to lead the student to understand the design flow of Digital Integrated Circuit (IC) with the help of FPGA circuit implementation. In this course, students will conduct and simulate some practical experiments about some combinational circuits and sequential circuits with FPGA design tool. Therefore, students can learn principles and some practical skills on the FPGA design and the design flow of Digital Integrated Circuit.

TEXT BOOK

Required Text Book:

No recommended textbook, but the learning materials will be provided to students during the classes.

INTENDED LEARNING OUTCOMES

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

1. Design, simulate, and implement digital circuits using FPGA tool.
2. Design digital circuits to solve practical problems and meet desired needs.
3. Understand the system design method and how to debug it.
4. Understand the IC design flow with the help of FPGA.
5. Write technical reports.

Weekly Schedule

Index	Topic	Hours	Teaching

			Method
1	Introduction to Integrated Circuit and FPGA Hardware	3	Lecture
2	Description Language – Verilog	3	Lecture
3	Lab 1: Open LED Lantern	3	Lecture+ Lab
4	Lab 2: Multiplexer	3	Lecture+ Lab
5-6	Lab 3: Decoder and Half adder	6	Lecture+ Lab
7-8	Lab 4: Counter	6	Lecture+ Lab
9	Lab 5: Touch Button to control lantern	3	Lecture+ Lab
10-11	Lab 6: breathing light	6	Lecture+ Lab
12-13	Lab 7: statemachine	6	Lecture+ Lab
14-15	Lab 8: Digital tube display	6	Lecture+ Lab
16	Exam	3	Lecture

ASSESSMENT APPROACH

Assessment method	% weight
1. Attendance	30%
2. Lab	50%
3. Exam	20%
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