

2309 CS130 Course Outline

Subject Code : CS130
Subject Title : DIGITAL LOGIC
Course Type : Compulsory
Level : 2,3
Credits : 3
Teaching Activity : Lecture 45 hours
Prior Knowledge* : No formal prerequisites.
Class Schedule :

Class	Week	Time	Classroom	Date
D1	Thursday	12:30-15:20	C309	2023/9/4 - 2023/12/17
D2	Friday	12:30-15:20	N218	2023/9/4 - 2023/12/17

Instructor : Lo Sio Long
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Office : A216
Office Hour : Tuesday (13:30-15:30)
Wednesday (14:30-17:30)
Thursday (15:30-18:30)
Friday (15:30-17:30)

COURSE DESCRIPTION

This course aims to provide an introduction of digital circuits to undergraduates. The course will cover digital systems and information, combinational logic circuits, combinational logic design, arithmetic functions, sequential circuits, registers and register transfers, etc. Through the learning of this course, students will obtain the fundamental knowledge and the basic design techniques of digital circuits.

TEXT BOOK

Recommended Text Books:

1. Book title : Logic and Computer Design Fundamentals
Author/Editor : M. M. Mano and C. R. Kime. M. Kelley
Edition : 5th
ISBN : 978-0133760637
Publisher : Prentice-Hall
Date : 2015
2. Book title : Digital Fundamentals
Author/Editor : T. L. Floyd
Edition : 11th
ISBN : 978-0132737968
Publisher : Pearson
Date : 2014

Reference Book:

- 1 Book title: Digital Design: With an Introduction to the Verilog HDL
Author/Editor: M. M. Mano and M. D. Ciletti
Edition: 5
ISBN: 978-0132774208
Publisher: Pearson
Date: 2012
- 2 Book title: Digital Logic Design: Tutorial and Laboratory Exercises
Author/Editor: J. Passafiume and M. Douglas
Edition: 1
ISBN: 978-0471603450
Publisher: Wiley
Date: 1984
- 3 Book title: Digital Design and Computer Architecture
Author/Editor: D. Harris and S. Harris
Edition: 2
ISBN: 978-0123944245
Publisher: Morgan Kaufmann
Date: 2012

INTENDED LEARNING OUTCOMES

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

- Understand the basics of digital number systems;
- To be able to convert a number from one number system to another number system;
- Understand the combinational logic circuits;
- To be able to design combinational logic circuits;
- Understand the sequential circuits;
- To be able to design simple sequential circuits;
- To be able to design simple counters.

WEEKLY SCHEDULE

WEEK	TOPICS	hours
1	Chapter 01. Digital System and Information Part I	3
2	Chapter 01. Digital System and Information Part II	3
3	Chapter 02. Combinational Logic Circuits: Part I: Gate Circuits and Boolean Equations	3
4	Chapter 02. Combinational Logic Circuits: Part II: Circuit Optimization	3
5	Chapter 02. Combinational Logic Circuits: Part III: Additional Gates and Circuits	3

6	Chapter 03. Combinational Logic Design Part I: Design Procedure	3
7	Review for Midterm Exam	3
8	Midterm Exam	3
9	Chapter 03. Combinational Logic Design Part II: Combinational Logic (I)	3
10	Chapter 03. Combinational Logic Design Part II: Combinational Logic (II)	3
11	Chapter 03. Combinational Logic Design Part III: Arithmetic Functions	3
12	Chapter 04. Sequential Circuits Part I: Storage Elements and Analysis	3
13	Chapter 04. Sequential Circuits Part II: Sequential Circuit Design	3
14	Chapter 06. Registers and Register Transfers	3
15	Review for Final Exam	3
Exam Week	Final Exam	

ASSESSMENT APPROACH

Assessment Method	WEIGHT / PERCENTAGES
Attendance	5%
Assignments / Exercises	15%
Midterm Exam	30%
Final Exam	50%
Total	100%

Notes:

- Students will be assessed on the basis of continuous assessment (i.e. coursework in the form of individual assignments) and an end of semester examination.
- The coursework assessment items (e.g. assignments) are used to evaluate students' ability to apply concepts, to construct knowledge and skills in solving problems in digital circuits.
- Final examination will primarily evaluate students' knowledge of the theoretical aspects of the course contents.

GUIDELINE FOR LETTER GRADE

Marks	Grade	Grade Point
88-100	A+/A	4.0
83-87	A-	3.7
78-82	B+	3.3
72-77	B	3.0
68-71	B-	2.7
63-67	C+	2.3
59-62	C	2.0
56-58	C-	1.7
53-55	D+	1.3
50-52	D	1.0
49-	F	0.0

NOTES FROM THE INSTRUCTOR

1. Any adjustment to this course outline will be announced in class and will be uploaded to the course website in MOODLE.
2. Class attendance and participation are very important. The attendance evaluates the student's participation of discussion in the classes.
3. When a submission is required for an assignment, there will be a penalty involved for late submission beyond the due day: 5 points reduction per day for no more than 1 school day after the due day. No credit will be given to any submission beyond the 5 school-day grace period.
4. The midterm exam and the final exam evaluate the student's understanding of the fundamentals of digital circuits; and evaluates the student's ability to apply the knowledge to solve practical problems.