Syllabus [2025Year 1 Term]

Course Information

Course Title	Digital Logic Circuits	Credits	3
Course Code	502320-1	Required/Elective (For Undergraduate Courses)	Mandatory Major
Department or Major	Department of Mobile Systems Engineering	Language	English
Methods of Teaching		Lecture Room	금9,10,11,12,13,14(국제608)
Time Allotment	Lecture(3) Experiments(0) Trainging & Practice(0) Performance(0) Designing & Planning(0)	Cyber Lectures	
Course Type	offline		

Lecturer

Lecturer	Name	KIM SEHWAN	Rank	Associate Professor	Final Academic Degree	공학박사
	Department & college	Dankook University Cheonan Campus Industry-Academic Cooperation Foundation		Office	141	
	Office Phone Number	—		e-mail	paul.kim@dankook.ac.kr	
	Field of Interest					

Course Summary

Course Description	This class is for a comprehensive study of the basic principles and techniques of modern digital systems. It teaches the fundamental principles of digital systems and covers thoroughly both traditional and modern methods of applying digital design and development techniques, including how to manage a systems-level project. The main contents are summarized as follows: Binary numbers, Boolean algebra and logic gates, Gate-level minimization, Combinational logic, and Sequential logic.
Description Related Courses	Although a background in basic electronics is helpful, most of the material requires no electronics training. No programming skill is required.
Course Goals	1. Understanding the digital system concepts and the logic gate operation and circuit configurations. 2. Analyzing the input and output functions of the digital systems composed of logic gates. 3. Representing the combinational logic circuits by truth table and implementation of hardw

	are from the fuction equations. 4. Understanding the overall architecture and operations of the computer.
Projected Results	1. Application ablility of mathmatics, basic science, engineering knowledge and information technology. 2. Ability of understanding and analyzing data, Ability of experiments planning and implementation. 3. Ability of understanding the engineering problems, building equations and solving the problems. 4. Ability of using the technologies, methods and tools for engineering field tasks.
Percentage of the original language classes(%)	

Syllabus

Times	Lecture Topic	Lecture Goals	Lecture Methods	Assignments
1	[Online Lecture] - Course Orientation - Introduction to the Digital Systems	- introduce the lecture syllabus	ppt lecture note Online lecture, please refer to notice at elearning site	At elearning site, the link will be provided to download lecture.
2	[Online Lecture] Boolean Algebra and Logic Gates - Basic Boolean Equation - Basic Logic Gates	- introduce Boolean Algebra and Logic Gates - make students understand the relationship between Boolean Algebra and logic gates	ppt lecture note Online lecture, please refer to notice at elearning site	Assignment #1 At elearning site, the link will be provided to download lecture.
3	[Online Lecture] Boolean Algebra and Logic Gates - Canonical and Standard Forms - Equation Simplification	- understand two presentation forms of Boolean Algebra	ppt lecture note Online lecture, please refer to notice at elearning site	At elearning site, the link will be provided to download lecture.
4	[Online Lecture] Gate-level Minimization - Product-of-Sums Simplification - Don't-care Conditions	- learn how to minimize the number of gates to save a power consumption	ppt lecture note Online lecture, please refer to notice at elearning site	Assignment #2 At elearning site, the link will be provided to download lecture.
5	[Online Lecture] Gate-level Minimization - NAND and NOR Implementation - Exclusive-OR Function	- learn the way to minimize the gate in case of NAND, NOR, and XOR	ppt lecture note Online lecture, please refer to notice at elearning site	At elearning site, the link will be provided to download lecture.
6	[Online Lecture] Combinational Logic - Analysis Procedure - Design Procedure	- Introduce the combination logic - explain analysis and design procedure of digital systems	ppt lecture note Online lecture, please refer to notice at elearning site	Assignment #3 At elearning site, the link will be provided to download lecture.
7	[Online Lecture] Combinational Logic - Binary Adder-Subtractor	- learn how to design Binary Adder-Subtractor	ppt lecture note Online lecture, please refer to notice at elearning site	At elearning site, the link will be provided to download lecture.

Times	Lecture Topic	Lecture Goals	Lecture Methods	Assignments
8	[Online Lecture] - Review Session - Mid-term Exam	- review Boolean Algebra, Gate-level minimization	ppt lecture note Online lecture, please refer to notice at elearning site	Assignment #4 At elearning site, the link will be provided to download lecture.
9	[Online Lecture] Combinational Logic - Decimal Adder - Binary Multiplier	- learn how to design Decimal Adder and Binary Multiplier	ppt lecture note Online lecture, please refer to notice at elearning site	At elearning site, the link will be provided to download lecture.
10	[Online Lecture] Combinational Logic - Decoders - Encoders	- learn how to design Decoders and Encoders	ppt lecture note Online lecture, please refer to notice at elearning site	Assignment #5 At elearning site, the link will be provided to download lecture.
11	[Online Lecture] Synchronous Sequential Logic - Sequential Circuits - Latches	- Introduce the Synchronous Sequential Logic - explain the features of Sequential Circuits and Latches	ppt lecture note Online lecture, please refer to notice at elearning site	At elearning site, the link will be provided to download lecture.
12	[Online Lecture] Synchronous Sequential Logic - Flip-Flops	- learn how to use Flip-Flops	ppt lecture note Online lecture, please refer to notice at elearning site	Assignment #6 At elearning site, the link will be provided to download lecture.
13	[Online Lecture] Synchronous Sequential Logic - Analysis of Clocked Sequential Circuits	- learn the way to analyze Clocked Sequential Circuits	ppt lecture note Online lecture, please refer to notice at elearning site	At elearning site, the link will be provided to download lecture.
14	[Online Lecture] - Review Session	-Review entire topics in this digital logic circuits	ppt lecture note Online lecture, please refer to notice at elearning site	Assignment #7 At elearning site, the link will be provided to download lecture.
15	- Final Exam		- Data: June 26, 2020 - Time: 4:00~7:00pm - Place: Int'l Building 608	

Methods of Grading

sequence	Description	Percentage	Details
1	Mid-tem Exam	30%	
2	Final-exam	40%	
3	Pop Quizzes	0%	
4	Assignments	10%	
5	Reports	0%	
6	Presentations & Discussions	0%	
All		100%	

sequence	Description	Percentage	Details
7	Attendance	20%	
8		0%	
9	Others	0%	
All		100%	

Core of Value

핵심가치	전공역량	역량정의	역량구분	값(%)
혁신 (Discovery)	창의적문제해결 (Creative problem-solving)	주어진 상황과 문제를 창의적으로 해결할 수 있는 능력		0%
혁신 (Discovery)	도전 (Challenging)	전공 지식을 새로운 분야와 융합하고 아우를 수 있는 능력		0%
혁신 (Discovery)	지식융합 (Knowledge convergence)	새로운 분야를 개척하거나 도전적으로 임할 수 있는 능력		0%
헌신 (Dedication)	세계시민 (Universal value)	세계 공동체 구성원으로 전공자로서 국제적 이슈에 대응할 수 있는 능력		0%
헌신 (Dedication)	상호협력 (Cooperation)	공동의 목적 달성을 위해 타인과 상호협력을 할 수 있는 능력		0%
헌신 (Dedication)	공동체 (Sense of community)	공동체의 구성원으로서 필요한 태도와 윤리의식을 가질 수 있는 능력		0%
능동 (self- Determination)	자기주도 (Self-Managing)	주어진 상황과 문제를 주도적이고 능동적으로 해결할 수 있는 능력	부역량	0%
능동 (self- Determination)	지식활용 (Knowledge application)	주어진 상황과 문제에 대해 논리적으로 파악하고 분석할 수 있는 능력	주역량	0%
능동 (self- Determination)	논리적사고 (Logical thinking)	전공관련 지식을 필요에 따라 다양하게 적용하고 활용할 수 있는 능력	부역량	0%
능동 (self- Determination)	의사소통 (Articulation)	대화를 통해 다양한 의견을 조율하고 합의를 이끌어 낼 수 있는 능력		0%

Textbook(s) & References

Description	Title	Author	Publisher
Required Textbook	Digital Design (4/e)	M. Morris Mano and Michael D. Ciletti	Pearson
References	디지털 디자인 (4판)	Mano 외 (이근영, 김수원, 예윤해, 이현수 역)	교보문고

Memo

All the lectures will be delivered in English.