

Syllabus [2025Year 2 Term]

Course Information

Course Title	Capstone Design1	Credits	1
Course Code	545660-1	Required/Elective (For Undergraduate Courses)	Mandatory Major
Department or Major	Convergent Systems Engineering	Language	English
Methods of Teaching		Lecture Room	수15,16(3공518)
Time Allotment	Lecture(0) Experiments(0) Trainging & Practice(0) Performance(0) Designing & Planning(1)	Cyber Lectures	
Course Type	offline		
Cyber Lectures Preview			

Lecturer

Lecturer	Name	HUANG ZHEN GMIN	Rank	Invited Professor	Final Academic Degree	박사
	Department & college	Department of Bio and Material Engineering		Office	Seok Juseon Memorial Museum 226	
	Office Phone Number	—		e-mail	jungmin@dankook.ac.kr	
	Field of Interest					

Course Summary

Course Description	This course aims to cultivate creative and integrated design capabilities based on foundational knowledge of simulation and CAD modeling. Students will learn 2D and 3D modeling, mesh techniques, material properties, and result analysis skills. Through a project-based approach, students will develop practical and applicable integrated design competencies.
Description Related Courses	This course serves as a foundational subject for CAD and simulation-based design education in various interdisciplinary engineering fields, including mechanical, energy, and biochemical engineering. It is particularly designed to enhance practical project execution skills and is closely linked with advanced design courses.
Course Goals	<ul style="list-style-type: none"><li>- Develop proactive problem-solving skills and self-directed design capabilities.</li><li>- Transform creative design ideas into 2D and 3D models using CAD tools.</li><li>- Enhance the ability to analyze and derive results through simulation-based team projects.</li></ul>

Projected Results	By completing this course, students will acquire practical skills in CAD modeling and simulation-based design methodologies. Through team projects, they will also improve their communication and problem-solving abilities. Students will gain hands-on experience in the entire design process, including planning, modeling, analysis, and report writing.
Percentage of the original language classes(%)	
Cyber Lectures Preview	

## Syllabus

Times	Lecture Topic	Lecture Goals	Lecture Methods	Assignments
1	Introduction to Simulation	Understanding introduction to simulation	강의,	
2	Introduction to Simulation	Understanding introduction to simulation	강의,	
3	Geometry & CAD 1 (2D Modeling)	Understanding geometry & CAD 1 (2D modeling)	강의,	
4	Geometry & CAD 1 (2D Modeling)	Understanding geometry & CAD 1 (2D modeling)	강의,	
5	Geometry & CAD 2 (3D Modeling)	Understanding geometry & CAD 2 (3D modeling)	강의,	
6	Geometry & CAD 2 (3D Modeling)	Understanding geometry & CAD 2 (3D modeling)	강의,	
7	Mesh Techniques	Understanding mesh techniques	강의,	
8	Midterm Report			
9	Materials, Physics, Study Setups & Results Analysis	Understanding materials, physics, study setups & results analysis	강의,	
10	Materials, Physics, Study Setups & Results Analysis	Understanding materials, physics, study setups & results analysis	강의,	
11	Case Study	Understanding case study	강의,	
12	Case Study	Understanding case study	강의,	
13	Design activity in designate lab		팀기반학습(TBL), 프로젝트기반학습(PBL),	

Times	Lecture Topic	Lecture Goals	Lecture Methods	Assignments
14	Design activity in designate lab		팀기반학습(TBL), 프로젝트기반학습(PBL),	
15	Final Report			

## Methods of Grading

sequence	Description	Percentage	Details
1	Mid-tem Exam	40%	중간보고서로 대체 / Midterm Exam Replaced by Report
2	Final-exam	40%	최종보고서로 대체 / Final Exam Replaced by Report
3	Pop Quizzes	0%	
4	Assignments	0%	
5	Reports	0%	
6	Presentations & Discussions	0%	
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	부역량	0%
헌신 (Dedication)	공동체 (Sense of community)	공동체의 구성원으로서 필요한 태도와 윤리의식을 가질 수 있는 능력		0%

핵심가치	전공역량	역량정의	역량구분	값(%)
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		0%
능동 (self-Determination)	논리적사고 (Logical thinking)	전공관련 지식을 필요에 따라 다양하게 적용하고 활용할 수 있는 능력		0%
능동 (self-Determination)	의사소통 (Articulation)	대화를 통해 다양한 의견을 조율하고 합의를 이끌어 낼 수 있는 능력	주역량	0%

Textbook(s) & References

Description	Title	Author	Publisher
Required Textbook	n/a	n/a	n/a

Memo