Syllabus [2025Year 1 Term]

Course Information

Course Title	Polymer Design 1	Credits	2
Course Code	441230-5	Required/Elective (For Undergraduate Courses)	Mandatory Major
Department or Major	Polymer Science and Engineering	Language	English
Methods of Teaching		Lecture Room	수11,12,13,14(사회B108)
Time Allotment	Lecture(0) Experiments(0) Trainging & Practice(0) Performance(0) Designing & Planning(2)	Cyber Lectures	
Credit Allotment	Lecture(0) Experiments(0) Trainging & Practice(0) Performance(0) Designing & Planning(2)		
Pre-requisite	Introductory Polymer Laboratory, Introductory Polymer Laboratory, Introductory Polymer Laboratory, Creative Engineering Design, Creative Engineering Design		
Course Type	offline		

Lecturer

Lecturer	Name	Park, Minsu	Rank	Assistant Professor	Final Academic Degree	공학박사
	Department & college			Office	College of Engineering - Building 3 513	
	Office Phone Number	031-8005-3594		e-mail	minsupark@dankook.ac.kr	
	Field of Interest					

Course Summary

Course Description	The objective of this course is to facilitate the selection of research thesis topics and engage in a year-long, two-semester design process to enhance the research and presentation skills of undergraduate students. This curriculum aims to maximize students' abilities to draw conclusions. Students will autonomously choose tasks, formulate task execution plans, carry out research, and ultimately submit research papers. This experiential process prepares students for future industry engagement, cultivating foundational skills to enhance the overall polymer industry processes and innovate new methodologies. The initial semester focuses on comprehensive design, with an emphasis on fundamental design ability.

Description Related Courses	Basic Polymer Experiment, Creative Engineering Design
Course Goals	The goal of this course is to develop students' practical design skills, preparing them for entry into the workforce after graduation. Through this course, students aspire to enhance their overall design abilities by learning about the essential components of design and applying this knowledge to project-based scenarios.
Projected Results	Upon completion of this course, students will have a comprehensive understanding of design components and the capability to independently engage in the design process. This acquired design proficiency serves as a foundational skill for students as they enter the professional sphere, allowing them to effectively undertake practical design work based on this knowledge.
Percentage of the original language classes(%)	

Syllabus

Times	Lecture Topic	Lecture Goals	Lecture Methods	Assignments
1	Overview of the design			
2	Setting goals for design projects			
3	Setting goals for design projects			
4	Setting goals for design projects			
5	Performing experiments			
6	Performing experiments			
7	Performing experiments			
8	Performing experiments			
9	Design			
10	Design			
11	Design			
12	Design			
13	Fabrication			
14	Fabrication			
15	Presentation			

Methods of Grading

sequence	Description	Percentage	Details
1	Mid-tem Exam	0%	
All		100%	

sequence	Description	Percentage	Details
2	Final-exam	0%	
3	Pop Quizzes	0%	
4	Assignments	0%	
5	Reports	40%	
6	Presentations & Discussions	40%	
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	주역량	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%
능동 (self- Determination)	자기주도 (Self-Managing)	주어진 상황과 문제를 주도적이고 능동적으로 해결할 수 있는 능력		0%
능동 (self- Determination)	지식활용 (Knowledge application)	주어진 상황과 문제에 대해 논리적으로 파악하고 분석할 수 있는 능력	부역량	0%
능동 (self- Determination)	논리적사고 (Logical thinking)	전공관련 지식을 필요에 따라 다양하게		0%

핵심가치	전공역량	역량정의	역량구분	값(%)
		적용하고 활용할 수 있는 능력		
능동 (self- Determination)	의사소통 (Articulation)	대화를 통해 다양한 의견을 조율하고 합의를 이끌어 낼 수 있는 능력		0%

Textbook(s) & References

Description	Title	Author	Publisher
no result			

Memo

Course Goal Input & Methods of Teaching and Grading

sequence	Course Goals	Methods of Teaching	Methods of Grading
1	You can understand and analyze the data, and plan and carry out experiments	Modifying the design plan through a comparative analysis with the pre-executed foundational experiment.	Report evaluation, evaluation by the advisor
2	You can play the role of a member of the advisor's research team	Conducting experiments and analysis on joint and individual topics within each advisor's research team	Report and presentation evaluation
3	You can possess the ability to identify engineering problems and formulate effective solutions.	Recognizing all problems through case study and investigating their solutions	Report evaluation
4	You can design the chemical and physical properties of polymeric materials at a molecular aggregate level	Designing and conducting an in-depth experiment	Report and presentation evaluation
5	You can organize the results of the experiment logically and present them effectively.	Preparing reports and practicing presentation skills	Report and presentation evaluation

Relationship between the Goal & Learnability of the Program

Goal	Achievement1	Achievement2	Achievement3	Achievement4	Achievement5	Achievement6	Achievement7	Achievement8	Achievement9	Achievement10
Goal1	☑	☑	☑	☑	☐	☐	☑	☑	☐	☐
Goal2	☑	☐	☑	☐	☐	☑	☑	☐	☐	☐
Goal3	☑	☑	☑	☑	☐	☐	☐	☑	☐	☐
Goal4	☑	☑	☑	☑	☑	☐	☐	☐	☐	☐
Goal5	☑	☑	☑	☑	☑	☐	☐	☐	☐	☐

Learning Achievement

검색결과는 [10 건] 입니다.

sequence	Learning Achievement
1	an ability to apply knowledge of mathematics, basic science, engineering, and information technology to the solution of engineering problems
2	an ability to analyze data and experimentally verify given facts or hypotheses
3	an ability to define and formulate engineering problems
4	an ability to apply state-of-the-art information, research-based knowledge, and appropriate tools to the solution of engineering problems
5	an ability to design systems, components and processes within realistic constraints
6	an ability to contribute to project team in the solution of engineering problems
7	an ability to communicate effectively in diverse situations
8	an ability to understand the impact of engineering solutions in the context of health, safety, economics, environment and sustainability
9	an ability to understand professional ethics and social responsibilities as an engineer
10	a recognition of the need for, and an ability to engage in life-long learning in the context of technological change

Check points about Designing & Planning

Examples of Designing & Planning	Polymer-related subject design topics, including the content of goal setting, synthesis, analysis, design, fabrication, testing and evaluation for each individual and group	
Assignments	Report according to each step of the overall design for each design topic	
Factors to Consider for Designing & Planning		
	☑ Setting of the Design objective	
	☑ Synthesis	
	☑ Analysis	
	☑ Designing & Planning	
	☑ Production	
	☑ Test	
	☑ Evaluation of the Output	
	☐ The Others	

Limitations for designing & Planning		
	☑ Cost	
	☑ Environment	
	☐ Society	
	☑ Ethics	
	☑ Aesthetics	
	☑ Health & Safety	
	☑ Productivity & Durability	
	☑ Industry Standard	
	☐ The Others	