

## Syllabus [2025Year 2 Term]

## Course Information

Course Title	Polymeric Materials	Credits	3
Course Code	545720-2	Required/Elective (For Undergraduate Courses)	Selective majors
Department or Major	Convergent Systems Engineering	Language	English
Methods of Teaching		Lecture Room	월9,10,11,12,13,14(국제 501)
Time Allotment	Lecture(3) Experiments(0) Trainging & Practice(0) Performance(0) Designing & Planning(0)	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 studies the basics of polymeric materials, covers the fundamental concepts to understand the interrelationships of structure–property–processing of polymers, and examines raw materials, structures, properties, and uses for each polymer, including commodity polymers and engineering polymers.
Description Related Courses	
Course Goals	It aims to have a broad understanding of the basic properties and applications of polymer materials and to learn professional knowledge.
Projected Results	Students can identify and analyze the molecular structure and physical property changes of various polymeric materials, can also learn the application and use of polymeric materials in various industries.

Percentage of the original language classes(%)	
Cyber Lectures P review	

## Syllabus

Times	Lecture Topic	Lecture Goals	Lecture Methods	Assignments
1	Introduction to polymer science	Understanding introduction to polymer science	강의,	
2	Chain structure and configuration	Understanding chain structure and configuration	강의,	
3	Dilute solution thermodynamics, molecular weights, and sizes	Understanding dilute solution thermodynamics, molecular weights, and sizes	강의,	
4	Concentrated solutions, phase separation behavior, and diffusion	Understanding concentrated solutions, phase separation behavior, and diffusion	강의,	
5	The amorphous state	Understanding the amorphous state	강의,	
6	The crystalline state	Understanding the crystalline state	강의,	
7	Polymers in the Liquid Crystalline State	Understanding polymers in the liquid crystalline state	강의,	
8	Mid-term Exam			
9	Glass-rubber transition behavior	Understanding glass-rubber transition behavior	강의,	
10	Cross-linked polymers and rubber elasticity	Understanding cross-linked polymers and rubber elasticity	강의,	
11	Polymer viscoelasticity and rheology	Understanding polymer viscoelasticity and rheology	강의,	
12	Mechanical behavior of polymers	Understanding mechanical behavior of polymers	강의,	
13	Polymer surfaces and interfaces	Understanding polymer surfaces and interfaces	강의,	
14	Modern Polymer Topics	Understanding modern polymer topics	강의,	

Times	Lecture Topic	Lecture Goals	Lecture Methods	Assignments
15	Final-exam			

## Methods of Grading

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

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

## Textbook(s) &amp; References

Description	Title	Author	Publisher
Required Textbook	Introduction to Physical Polymer Science	L.H. Sperling	Wiley
References	Properties of Polymers	D. W. van Krevelen	Elseviers
References	Polymer Physics	M. Rubinstein	Oxford University Press
References	An Introduction to Polymer Physics	D. I. Bower	Cambridge University Press

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