

Syllabus [2025Year 2 Term]

Course Information

Course Title	Chemical Reaction Engineering 1	Credits	3
Course Code	346830-1	Required/Elective (For Undergraduate Courses)	Selective majors
Department or Major	Department of Chemical Engineering	Language	English
Methods of Teaching		Lecture Room	월1,2,3/수4,5,6(3공517)
Time Allotment	Lecture(2) Experiments(0) Training & Practice(0) Performance(0) Designing & Planning(1)	Cyber Lectures	
Course Type	offline		
Cyber Lectures Preview			

Lecturer

Lecturer	Name	Soohwan Jang	Rank	Professor	Final Academic Degree	공학박사
	Department & college	Semiconductor Specialized Work force Training Project Group		Office	College of Engineering – Building 3 510	
	Office Phone Number	031-8005-3623		e-mail	jangmountain@dankook.ac.kr	
	Field of Interest					

Course Summary

Course Description	<p>One of the basic industrial activities is the manufacturing process of valuable products through physical and chemical change. Building-up of chemical plants and manufacturing of chemical products are included in these activities, in which reactor design is most important. For the successful design, choices of proper reaction process and operation conditions should be made in economical and engineering point of view. Chemical reactor design is solving process of commercial design problems based on thermodynamics, transport phenomena and reaction engineering.</p> <p>* The prerequisite course, Computer Programming for Chemical Engineering, is required. * This course requires following Chemical Reaction Engineering 2.</p>
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Description Related Courses	Physical Chemistry, Thermodynamics, Biochemical Engineering, Computer Programming for Chemical Engineering, Reaction Engineering
Course Goals	1. Interpretation of chemical reaction rate. 2. Understanding of reactor design parameters. 3. Understanding how to treat and analyze the data from chemical reactions.
Projected Results	1. Application of math, basic science, and engineering knowledge. 2. Design of systems, elements, and processes considering limiting conditions. 3. Formulating and solving of engineering problems.
Percentage of the original language classes(%)	
Cyber Lectures Preview	

Syllabus

Times	Lecture Topic	Lecture Goals	Lecture Methods	Assignments
1	Introduction			
2	Ch.1. Mole Balances			
3	Ch.1. Mole Balances			
4	Ch.2. Conversion and Reactor Sizing			
5	Ch.2. Conversion and Reactor Sizing			
6	Ch.3. Rate Laws and Stoichiometry			
7	Ch.3. Rate Laws and Stoichiometry			
8	Mid Exam.			
9	Ch.4 Isothermal Reactor Design			
10	Ch.4 Isothermal Reactor Design			
11	Ch.4 Isothermal Reactor Design			
12	Ch.5. Collection and Analysis of Rate Data			
13	Ch.5. Collection and Analysis of Rate Data			
14	Final Exam Team Presentation			
15	Team Presentation			

Methods of Grading

sequence	Description	Percentage	Details
1	Mid-tem Exam	35%	
2	Final-exam	35%	
3	Pop Quizzes	0%	
4	Assignments	10%	
5	Reports	0%	
6	Presentations & Discussions	10%	
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		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	부역량	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%

핵심가치	전공역량	역량정의	역량구분	값(%)
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		0%

Textbook(s) & References

Description	Title	Author	Publisher
Recommended Textbook	Elements of Chemical Reaction Engineering	H. Scott Fogler	Pearson Education

Memo

1. Text : Elements of Chemical Reaction Engineering, H. Scott Fogler, 4th edition
2. 2 exams, 5 assignments, 1 group presentaion
3. 3 lateness equal to 1 absence