COURSE DESCRIPTION FORM	
Course Code and Title	CHE341 CHEMICAL REACTION ENGINEERING
Course Semester	5
Catalog Description (Content) of the Course	Rate expressions, isothermal and ideal batch and flow reactors, data analysis. Multiple reactor system . Multiple reaction systems, selectivity. Homogeneous and heterogeneous systems. Design equations for non-isothermal systems.
Main Textbook	•Levenspiel, O., Chemical Reaction Engineering, Third Edition, Wiley, 1999. •H. Scot Fogler, Essentials of Chemical Reaction Engineering, Second Edition, Wiley.
Supporting Textbooks	• Smith, J.M., "Chemical Engineering Kinetics", 3 rd Edition, McGrawHill, 1981. • Missen, R.W.,Mims C.A. andSaviie B.A., " Introduction to Chemical Reaction Engineering and Kinetics" , Wiley, 1999.
Course Credit (ECTS)	6
Prerequisites of the Course (Compulsory attendance should be indicated here.)	There is no prerequisite or co-requisite for this course. Attendance of the course must be 70%.
Type of the Course	Mandatory
Instruction Language of the Course	English
Object and Target of the Course	1.To give basic concepts about chemical reaction engineering and design of chemical reactors 2. To give design bases of multiple reactors and multiple reaction systems 3. Examination of temperature effects in reactors 4.To ensure active participation of students through design application 5. To gain ability to work effectively within the group 6. To gain written presentation skills
Learning Outcomes of the Course	Design skills; Team work; written communication skills; breadth and depth in fundamental concepts of chemical reaction engineering
Mode of Delivery	Courses are given only face to face.
Weekly Schedule of the Course	**1. Week** Introduction to chemical reaction engineering,rate concept and expressions **2. Week** Isothermal operation of ideal reactors, Design principles of ideal reactors, Data analysis **3. Week** Isothermal operation of ideal reactors, Design principles of ideal reactors, Data analysis **4. Week** Isothermal operation of ideal reactors, Design principles of ideal reactors, Data analysis **5. Week** Multiple reactor systems **6. Week** Heat effects in reactors, Energy balances, Optimum temperature profiles in tubular reactors; Stability of chemical reactors, Term project* **7. Week** Heat effects in reactors, Energy balances, Optimum temperature profiles in tubular reactors; Stability of chemical reactors, Term project* **8. Week** Heat effects in reactors, Energy balances, Optimum temperature profiles in tubular reactors; Stability of chemical reactors, Term project*

	9. Week Heat effects in reactors, Energy balances, Optimum temperature profiles in tubular reactors; Stability of chemical reactors, Term project* **10. Week** Heat effects in reactors, Energy balances, Optimum temperature profiles in tubular reactors; Stability of chemical reactors, Term project* **11. Week** Multiple reaction systems, Concept of selectivity and yield series, Parallel and series/parallel reactions **12. Week** Multiple reaction systems, Concept of selectivity and yield series, Parallel and series/parallel reactions **13. Week** Multiple reaction systems, Concept of selectivity and yield series, Parallel and series/parallel reactions **14. Week** Unsteady state operation of reactors, Optimization principles of chemical reactors
Educative Activities *(Credit will be determined based on the time given for these activities. Should be filled carefully.)*	Theoretical Study Hours of Course Per Week Reading Searching in Internet and Library Designing and Applying Materials Preparing Reports Mid-Term and Studying for Mid-Term Final and Studying for Final

Assessment Criteria

	Quantity	Total Contribution (%)
Midterm	2	45
Homework	5	10
Assignment	0	0
Projects	1	0
Practice	0	0
Quiz	1 (at least)	5
Contribution of In-term Studies to Overall Grade		60
Contribution of Final Examination and Term Project to Overall Grade		40
Attendance		70

Workload of the Course

Activity	Total Week Count	Weekly Duration (in hour)	Total Workload in Semester
Theoretical Study Hours of Course Per Week	14	4	56
Practicing Hours of Course Per Week	0	0	0
Reading	14	2	28
Searching in Internet and Library	4	1	4
Designing and Applying Materials	8	2	16
Preparing Reports	2	3	6
Preparing Presentation	0	0	0
Presentation	0	0	0
Mid-Term and Studying for Mid-Term	13	2	26

Final and Studying for Final	3	3	9	
Other	0	0	0	
Total work load			145	
Total work load/25			5,8	
ECTS of the course			6	

Course's Contribution To Program

Number	Program Outcomes	1	2	3	4	5
1	Adequate knowledge in mathematics, science and engineering subjects pertaining to the relevant discipline; ability to use theoretical and applied information in these areas to model and solve engineering problems.					X
2	Ability to identify, formulate, and solve complex engineering problems; ability to select and apply proper analysis and modeling methods for this purpose.			X		
3	Ability to design a complex system, process, device or product under realistic constraints and conditions, in such a way as to meet the desired result; ability to apply modern design methods for this purpose. (Realistic constraints and conditions may include factors such as economic and environmental issues, sustainability, manufacturability, ethics, health, safety issues, and social and political issues, according to the nature of the design.)			X		
4	Ability to devise, select, and use modern techniques and tools needed for engineering practice; ability to employ information technologies effectively.				X	
5	Ability to design and conduct experiments, gather data, analyze and interpret results for investigating engineering problems.			X		
6	Ability to work efficiently in intra-disciplinary teams.				X	
7	Ability to work efficiently in multi-disciplinary teams	X				
8	Ability to work individually.			X		
9	Ability to communicate effectively in Turkish/English, both orally and in writing; Ability to write effective reports and comprehend written reports, make effective presentations,			X		
10	Prepare design and production reports, give and receive clear and intelligible instructions.	X				
11	Recognition of the need for lifelong learning; ability to access information, to follow developments in science and technology, and to	X				

		continue to educate him/herself.					
	12	Awareness of professional and ethical responsibility.	X				
	13	Information about business life practices such as project management, risk management, and change management.	X				
	14	Information about awareness of entrepreneurship, innovation, and sustainable development.	X				
	15	Knowledge about contemporary issues and the global and societal effects of engineering practices on health, environment, and safety.	X				
	16	Knowledge about awareness of the legal consequences of engineering solutions.	X				
	17	Knowledge on standards used in engineering practice	X				
Name of Lecturer(s) and Contact Iınformation	1. Prof.Dr. NurdanSaraçoğlu 2. Prof.Dr. Kırali Mürtezaoğlu 3. Prof.Dr. NurayOktar 4. Araş.Gör. Dr. DolunayEslekKoyuncu						