



**YOZGAT BOZOK UNIVERSITY FACULTY OF ARTS AND SCIENCES**  
**CHEMISTRY DEPARTMENT COURSE PLAN**

Course Code	Course Title	Semester	Course Type (C/E)	T+A+L (Time/Week)	Credit	ECTS	Course Language
KİM730	Chemical Kinetics and Catalysis	1-2	E	2+0+0		4	Turkish

**COURSE INFORMATION**

<b>Course Catalog Description (Content)</b>	Reaction rate, reaction rate and molecularity, reaction rate constant, reaction rate determination, effect of temperature on reaction rate and activation energy Collision theory, absolute reaction rate theory, kinetic analysis of reactions in solution, complex reactions, chain reactions, catalysis, adsorption kinetics.
<b>The Aim of the Course</b>	To teach the kinetic concepts and the factors affecting the reaction rate, to explain the experimental methods of determining the reaction rates.
<b>Course Level</b>	Bachelor degree
<b>Course Language</b>	Turkish
<b>Teaching method</b>	(X) Formal ( ) Online ( ) Mixed/Hybrid
<b>Teaching Staff of the Course</b>	Prof. Dr. Ramazan COŞKUN, Prof. Dr. Ali DELİBAŞ, Asst. Prof. Dr. Hatice ARI
<b>Prerequisite Course(s) of the Course</b>	-
<b>Learning Outcomes from the Course</b>	1- Can use chemical reaction rate terms. 2- Can apply simple speed laws and solve related problems. 3- Distinguish the relationship between order and molecularity in simple reactions. 4- Will be able to apply experimental techniques to the determination of rate laws and constants. 5- Can use the results obtained from chemical kinetic methods for practical applications.

**COURSE CONTENT**

Week	Theory	Practice/Laboratory
1	Basic concepts in chemical kinetics	
2	Reaction rate, degree, mechanism, molecularity	
3	Activation energy	
4	Evaluation of kinetic data	
5	Determination of rate constant and reaction rate	
6	Theoretical determination of the reaction rate	
7	Gas phase reactions	
8	Lindemann theory	
9	Solution reactions	
10	Collision theory	
11	Catalysis, homogeneous and heterogeneous	
12	Complex reactions	
13	Polymerization reaction kinetics	
14	Adsorption kinetics	
15	Final Exam	

### Course Learning Resources

1. M. Fringe, Chemical Kinetics, Gazi Publishing House, 2004.
2. T. Atalay, Chemical Kinetics, Nobel Academic Publishing, 2005.
3. C. Şenvar, Chemical Kinetics and Macromolecules, Marmara University Faculty of Pharmacy, 1986.
4. M. J. Pilling and P. W. Seakins, Reaction Kinetics, Oxford science Publications, 2nd Edition, 1996.
5. K.J. Laidler, Chemical Kinetics, Pearson, 3rd Edition, 1987.

### ASSESSMENT CRITERIA

Work Activities During the Semester	Number	Contribution
Homework	1	30
Practice		
Forum/ Discussion Application		
Short Exam (Quiz)	2	70
Ratio Of Semester Studies To Semester Success (%)		%40
Ratio of Final to Success (%)	1	%60
Total		%100

### COURSE WORKLOAD TABLE

Activity	Total Weeks	Duration (Weekly Hours)	Total Workload
Theory	14	2	28
Practice			
Forum/ Discussion Application			
Reading	14	2	28
Internet Scanning, Library Study			
Individual study	14	1	14
Brainstorming	14	1	14
Presentation Preparation			
Presentation			
Final Exam	1	1	1
Preparation for the Final Exam	3	5	15
Diğer (Belirtiniz: Ev Ödevi)			
Total Workload			100
Total Workload / 25 (s)			100/25
ECTS Credits of the Course			≅4

Note: The workload of the course will be determined by the instructor on a per-course basis.

### PROGRAM LEARNING OUTPUTS CONTRIBUTION LEVELS

No	Program Learning Outputs	1	2	3	4	5
1	Gains extensive knowledge about the basic chemical properties of matter and uses this knowledge in daily life, industrial scale, and practical chemistry and shares them with the society.					X
2	Performs experiments, collects data, interprets, evaluates results, defines problems parallel to current technological developments, produces solutions against problems encountered in the laboratory.					X
3	Calculates and processes chemical information and data.				X	
4	Applies her/his knowledge and understanding of chemistry to the solution of unconventional qualitative and quantitative problems.				X	

5	Defines and comprehends chemical concepts and theories in Inorganic Chemistry, Organic Chemistry, Physical Chemistry, Analytical Chemistry, Biochemistry.									X
6	Can conduct research in the light of scientific data on any subject in the field of chemistry.									X
7	Writes, presents, discusses scientific material, and presents it orally to a knowledgeable audience.								X	
8	Brings a chemical approach to the solution of environmental problems, makes environmental analyzes and reports.							X		
9	Knows a foreign language at a level to read and understand the basic terms and processes of the chemist profession.							X		
10	Can use computer software and information and communication technologies at the level required by the field.							X		
11	Adapts and transfers the knowledge gained in the field to secondary education.							X		
12	Apart from the field of chemistry, she/he gains knowledge in different branches of science that she feels close to.								X	
13	Carries out a study independently, makes group work and gains the awareness of taking responsibility.								X	
14	They can develop a positive attitude towards lifelong learning and constantly renew their professional knowledge and skills.									X
15	Have sufficient awareness of the universality of social rights, social justice, quality culture and protection of cultural values, environmental protection, occupational health and safety.								X	

*Bozok*