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
KİM727	Trace Element Analysis	2	E	2+0+0	2	4	Turkish

COURSE INFORMATION

Course Catalog Description (Content)	Analysis of trace elements in science and technology / Overview of enrichment techniques, the role of enrichment techniques in trace element analysis, control of loss and contamination, Evaporation, Liquid-liquid extraction, Selective dissolution / precipitation, Electrochemical deposition and precipitation, Sorption / ion exchange chromatography, Liquid chromatography, Flotation, Enrichment techniques in water analysis / Enrichment techniques in gas analysis
The Aim of the Course	To teach the importance of trace analysis, to teach enrichment techniques, Selecting the method for trace analysis to use these methods ,to apply Enrichment techniques to a variety examples (water, gas and so on. analyses),Introduction of the equipment used in the enrichment technique, in laboratory studies to develop the ability to achieve high analytical data.
Course Level	Undergraduate
Course Language	Turkish
Teaching method	() Formal ( ) Online (X) Mixed/Hybrid
Teaching Staff of the Course	Prof. Dr. İsmail AKDENİZ
Prerequisite Course(s) of the Course	-
Learning Outcomes from the Course	1. Learns the importance of trace analysis and enrichment techniques. 2. Will be able to apply the methods used in the analysis of works. 3. By introducing the devices used in the application of enrichment techniques, they improve their skills in obtaining high analytical data in laboratory studies. 4. Performs experiments, collects data, interprets, evaluates the results, produces solutions to the problems encountered in the laboratory. 5. Makes calculations about chemical information and data and processes the data.

COURSE CONTENT

Week	Theory	Practice/Laboratory
1	Analysis of trace elements in science and technology / Enrichment techniques, an overview	
2	The role of enrichment techniques in the trace element analysis , Control of the loss and contamination	
3	Evaporation	
4	Liquid-liquid extraction	
5	Selective solving / Precipitation	
6	Electrochemical deposition and precipitation	
7	Electrochemical deposition and precipitation	

8	Liquid chromatography	
9	Liquid chromatography	
10	Enhancement techniques in Water analysis	
11	Enhancement techniques in Water analysis	
12	Flotation	
13	Freezing and regional melting	
14	Enhancement techniques in Gas analysis.	
15	Final Exam	

Course Learning Resources

1. Enrichment Techniques for Inorganic Traces Analysis, A. Mizuike, 1983, Springer-Verlag
2. Preconcentration Techniques for Trace Elements, Zeev Alfassi, Chien M. Wai, CRC Press, 1991
3. Sekine, T.; Hasegawa, Y.: Solvent Extraction Chemistry Fundementals and Applications, New York, Marcel, Dekker, 1977

ASSESSMENT CRITERIA

Work Activities During the Semester	**Number**	**Contribution**
Homework		
Practice		
Forum/ Discussion Application		
Short Exam (Quiz)	3	100
Ratio Of Semester Studies To Semester Success (%)		50
Ratio of Final to Success (%)		50
Total		%100

COURSE WORKLOAD TABLE

Activity	**Total Weeks**	**Duration (Weekly Hours)**	**Total Workload**
Theory	14	2	28
Practice			
Forum/ Discussion Application			
Reading			
Internet Scanning, Library Study	14	2	28
Material Design, Application			
Report Preparation			
Presentation Preparation			
Presentation			
Final Exam	1	2	2
Preparation for the Final Exam	1	10	10
Other(s) (Preparation for Quizzes and Exams)	3	10	30
Total Workload			98
Total Workload / 25 (s)			98/25
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**	