COMBINED ANALYTICAL TECHNIQUES IN ELEMENTARY									
		GENERATION							
1	Course Title:	COMBINED ANALYTICAL TECHNIQUES IN ELEMENTARY GENERATION							
2	Course Code:	KIM4066							
3	Type of Course:	Optional							
4	Level of Course:	First Cycle							
5	Year of Study:	4							
6	Semester:	8							
7	ECTS Credits Allocated:	5.00							
8	Theoretical (hour/week):	3.00							
9	Practice (hour/week):	0.00							
10	Laboratory (hour/week):	0							
11	Prerequisites:	To take the optional course of "Inductively Coupled Plasma (ICP) Analysis Techniques"							
12	Language:	Turkish							
13	Mode of Delivery:	Face to face							
14	Course Coordinator:	Doç. Dr.	ÜMRAN SEVEN ERDEMİR						
15	Course Lecturers:	Prof. Dr.	Belgin İZGİ						
16	Contact information of the Course	Doç. Dr. Ümran SEVEN ERDEMİR							
		Fen-Edebiyat Fakültesi Kimya Bölümü 16059 Görükle-Nilüfer/Bursa Tel: 0224 29 42943 e-posta: useven@uludag.edu.tr							
17	Website:								
18	Objective of the Course:	The aim of the course is to gain knowledge to chemistry students in elemental speciation and inductively coupled plasma (ICP) technique. Students will be learn the importance of elemental speciation analysis in food or environmental samples. Coupled analytical techniques combined with different separation methods in which ICP-MS is used as a detector will be introduced to ensure that students have sufficient knowledge about the devices with different combinations, hardware, software, operating principles, measurement methods, interpretation of the outputs. Current studies in elementary speciation analysis will be given as examples from the literature and students will gain sufficient knowledge about the analytical importance of the results.							
19	Contribution of the Course to Professional Development:	The student will learn the ICP-MS based combined analytical techniques that allow elemental analysis studies based on organic matrix, and will be able to look at total metal analysis in different dimensions in terms of toxicity and bioavailability.							
20	Learning Outcomes:								
		1	Learns the importance of elemental speciation.						
		2	Learns the technological importance and differences of applications of coupled analytical techniques in which the ICP-MS device is used as a detector.						
		Gains knowledge about analytical approaches to coupled analytical techniques through current examples of elemental speciation from the literature.							
		4	Gains the ability of the transfer of the current knowledge on a given subject by presentation.						

		5	Uses foreign language knowledge at a level to follow the current literature within the context of coupled analytical techniques in elementary speciation.						
		6	lechniques in elementa						
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21	Course Content:								
		Co	urse Content:						
Week	Theoretical		Practice						
1	Description of coupled analytical tech and needs for their use	niques							
2	ICP-MS as a detector in coupled ana techniques	lytical							
3	Introduction to current ICP-MS couple techniques and current applications: approaches to total metal determinati speciation analysis and requirements	ed new ion, s							
4	Comparison of collision / reaction cel ICP-MS / DRC-ICP-MS) with standar ICP-MS	l (CC- d mode							
5	GC-ICP-MS as a coupled analytical technique, basic principles								
Activit	es		Number	Duration (hour)	Total Work Load (hour)				
Theore	rechnique, basic principies		14	3.00	42.00				
• Practica	LUDIC/LCICE MS dovice component	te /	0	0.00	0.00				
Se la stu	dwanicheireperation fHPLC-HG-ICP-N	/IS as a	14	3.00	42.00				
Homew	vorks		1	10.00	10.00				
Project			0	0.00	0.00				
Field S	tudies		0	0.00	0.00				
Midtern	resame		1	20.00	20.00				
Others			0	0.00	0.00				
Final F	kame			40.00	40.00				
Total M	Submission of homework + LA-ICP-N	/IS,		40.00	154.00				
10 (a) W	ICurrent/trends in quantitative analysis	s of tin.			F 12				
	Ulead mercury chromium selenium :	arsenic			5.15				
ECISC	Credit of the Course				5.00				
22	Textbooks, References and/or Other Materials:		 Hyphenated Techniques in Speciation Analysis, Joanna Szpunar, Ryszard Lobinski, Ed. Roger M. Smith, Royal Society of Chemistry, 2003 Analytical Atomic Spectrometry with Flames and Plasmas, 2nd, Completely Revised and Enlarged Edition, José A. C. Broekaert, Wiley, ISBN: 978-3-527-31282-5 July 2005. 						
			Yayıncılık, 1998						
23	Assesment								
TERM L	EARNING ACTIVITIES	NUMBE R	WEIGHT						

Midterm Exam	1	30.00							
Quiz	0	0.00							
Home work-project	1	10.00							
Final Exam	1	60.00							
Total	3	100.00							
Contribution of Term (Year) Learning Activitie Success Grade	es to	40.00							
Contribution of Final Exam to Success Grade	Э	60.00							
Total		100.00							
Course	sed in the	Traditional and new complementary approaches will be used together in measurement. Traditional methods (80% effective): 1. Classic written exam (2 exams, mid-term and final) 2. Quizzes (4 exams during the semester) Complementary methods (20% effective): 1. Performance evaluation by assigning research homework and making oral presentations 2. Observation / self-assessment according to participation with answering questions asked during the lesson The evaluation will be made according to the scores specified in Bursa Uludağ University Undergraduate Education and Training Regulations for classes with less than 20 students or by relative evaluation system for classes more than 20.							
24 ECTS / WORK LOAD TABLE									

24 ECTS / WORK LOAD TABLE

25	CONTRIBUTION OF LEARNING OUTCOMES TO PROGRAMME QUALIFICATIONS															
	PQ1	PQ2	PQ3	PQ4	PQ5	PQ6	PQ7	PQ8	PQ9	PQ1 0	PQ11	PQ12	PQ1 3	PQ14	PQ15	PQ16
ÖK1	1	1	1	3	3	1	2	1	1	1	1	3	3	0	0	0
ÖK2	1	1	1	4	3	1	2	1	2	1	2	3	3	0	0	0
ÖK3	1	1	1	3	3	1	2	1	2	1	2	3	3	0	0	0
ÖK4	1	1	1	1	1	4	4	4	3	4	3	3	3	0	0	0
ÖK5	1	1	1	1	1	2	2	3	2	4	3	3	3	0	0	0
LO: Learning Objectives PQ: Program Qualifications																
Contrib ution Level:	b 1 very low :			2 Iow	low 3			3 Medium		4 High			5 Very High			