

UNDERGRADUATE COURSE DETAILS

Course Title: METHOD VALIDATION AND MEASUREMENT UNCERTAINTY				Code : USD2		Faculty or VS:SCIENCES AND ARTS		Programme: CHEMISTRY	
Education and Teaching Methods							Credits		
Lecture	Application	Lab.	Project/ Field Study	Homework	Other	Total	Credit T+A+L=Credit	ECTS	
42	-	-	-	-	-	42	2	3	
Semester			7	Language			Turkish/English		
Course Type		Basic Scientific ☐	Scientific ☐	Technical Elective ☒	Social Elective ☐				
Course Objectives		To introduce method validation and calculation of measurement uncertainty in chemical analysis, to prepare a document about validation and measurement uncertainty							
Learning Outcomes and Competencies		1- Overviewing to chemical analysis steps 2- Understanding basic statistical treatment 3- Understanding measurement uncertainty of the used measurement techniques and methods, seeing the effect of these to analysis results. 4-Calculating the uncertainty and preparing a traceable validation document.							
Textbooks and /or References		1- EURACHEM Guide, The Fitness for Purpose of Analytical Methods, First Edition, 1998. 2-EURACHEM/CITAC Guide, CG 4 Quantifying Uncertainty in Analytical Measurement, 2 th Edition, 2000. 3- EURACHEM Guide, Traceability in chemical measurement, 2003 4-Course Notes and papers.							
ASSESSMENT CRITERIA									
Theoretical Courses				Project Course and Graduation Study					
	If any, mark as (X)	Percent (%)		If any, mark as (X)	Percent (%)				
Midterm Exams	X	40	Midterm Exams						
Quizzes			Midterm Controls						
Homework			Term Paper						
Term Paper, Project Reports, etc.			Oral Examination						
Laboratory Work			Final Exam						
Final Exam	X	60	Other						
Other									
Week	Subjects								
1	The Importance of Chemical Analysis, Classification of Quantitative Analysis Methods, Steps in Quantitative Analysis, Errors in Chemical Analysis, Calibration Graphs used in Instrumental Analysis, Regression Analysis, Significance Tests, Laboratory Accreditation: Technical Criteria for accreditation, Validation: what, why, when, where, who and how?, Parameters of validation, instrument validation, method validation, Measurement uncertainty: fundamental terms The process of measurement uncertainty , top-down and bottom-up approaches estimation; Specification, identifying uncertainty sources, Quantifying of uncertainty, calculating the combined and expanded uncertainty, Reporting the result with uncertainty, traceability, Calculation examples Calculation examples								
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