



## AYDIN ADNAN MENDERES UNIVERSITY COURSE INFORMATION FORM

Course Title		Liquid Chjromatography							
Course Code		KİM611		Couse Level		Third Cycle (Doctorate Degree)			
ECTS Credit	8	Workload	200 ( <i>Hours</i> )	Theory	3	Practice	0	Laboratory	0
Objectives of the Course		The aim of this course is to provide information about High Performance Liquid Chromatography.							
Course Content		The importance of modern liquid chromatography in other chromatographic methods and the place of HPLC amongst the analytical methods are introduced. The modes of liquid chromatography (adsorption, partition, ion-exchange and size exclusion) are presented in detail. Instrumentation of HPLC is introduced in real laboratory conditions. The applications of liquid chromatographic analysis in biomedical, clinical, environmental, food pharmaceutical areas are examined.							
Work Placement		N/A							
Planned Learning Activities and Teaching Methods				Explanation (Presentation), Individual Study, Problem Solving					
Name of Lecturer(s)									

### Assessment Methods and Criteria

Method	Quantity	Percentage (%)
Midterm Examination	1	20
Final Examination	1	35
Assignment	3	45

### Recommended or Required Reading

1	High Performance Liquid Chromatography. Fundamental Principles and Practice. Eds: W.J. Lough, I.W. Wainer. Chapman & Hall, 1996
2	Practical High Performance Liquid Chromatography. V.R. Meyer. Wiley-VCH, 2004

Week	Weekly Detailed Course Contents	
1	Theoretical	HPLC versus other analytical methods
2	Theoretical	Efficiency, retention, selectivity and resolution
3	Theoretical	Modes of chromatography. Partition and adsorption
4	Theoretical	Modes of chromatography. Ion exchange and size exclusion
5	Theoretical	Normal and reverse phase chromatography
6	Theoretical	Support materials and solvents-Quiz
7	Theoretical	Instrumentation. Pumps, injectors and column design
8	Theoretical	Instrumentation. Detectors
9	Theoretical	Student presentation, Discuss
10	Theoretical	Method development and quantitation
11	Theoretical	Sample preparation. Quiz-2
12	Theoretical	HPLC in biomedical and clinical analysis
13	Theoretical	HPLC in environmental analysis
14	Theoretical	HPLC in food and pharmaceutical analysis
15	Theoretical	Student presentation, Discuss
16	Final Exam	Final exam

### Workload Calculation

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	0	3	42
Assignment	6	0	12	72
Midterm Examination	1	30	2	32



Final Examination	1	52	2	54
Total Workload (Hours)				200
[Total Workload (Hours) / 25*] = ECTS				8
*25 hour workload is accepted as 1 ECTS				

### Learning Outcomes

1	To review fundamental knowledge on chromatographic equilibrium and rate theories.
2	To discuss and apprehend the place and significance of liquid chromatography among other analytical technics.
3	To apprehend theoretical principles of liquid chromatographic separation modes.
4	To learn the principles of normal and reverse phase chromatography and discuss practical applications.
5	To get acquainted with liquid chromatographic instrumentation.

### Programme Outcomes (Chemistry Doctorate)

1	Depending on the master degree competences, develops, insights and innovates current and advanced knowledge and/or research in proficiency level.
2	Gains high skill levels in using research methods in the field of his/her study.
3	Comprehends the interaction between disciplines related to his/her field. Reaches to original results using his/her expertise in order to analyze, synthesize and evaluate new and complicated ideas.
4	Enlarges the boundaries of his/her field of knowledge by publishing at least one research paper in national and/or international peer-reviewed journals.
5	Defends his/her original opinions related to his/her field before authority and communicates effectively illustrating his/her competence.
6	May communicate and debate written, orally and visually in European Language Portfolio level C1.
7	Follows the developments in computer software and information and communication technologies developed for his/her research area and uses these in order to solve research problems.
8	Collaborates for scientific research with national and international research teams.
9	Contributes to the course of creation and maintenance of knowledge based society and by introducing the scientific, social and cultural developments to the society he/she is living in.

### Contribution of Learning Outcomes to Programme Outcomes 1:Very Low, 2:Low, 3:Medium, 4:High, 5:Very High

	L1	L2	L3	L4	L5
P1	4	4	4	4	4
P2	3	3	3	3	3
P3	3	3	3	3	3
P5	2	2	2	2	2

