



AYDIN ADNAN MENDERES UNIVERSITY COURSE INFORMATION FORM

Course Title		Chemometrics							
Course Code		KİM615		Course Level		Third Cycle (Doctorate Degree)			
ECTS Credit	8	Workload	200 (<i>Hours</i>)	Theory	3	Practice	0	Laboratory	0
Objectives of the Course		After having recalled the subject of descriptive statistics and statistical tests, regression and correlation are discussed on actual analytical data.							
Course Content		The subject of experimental design with special emphasis on optimization is examined. The need for classification and pattern recognition of analytical data is stressed and methods of principal component, cluster and discriminant analysis are presented both in a theoretical and practical fashion.							
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	Chemometrics. M. Otto. Wiley-VCH, 1999.
2	Statistics and Chemometrics for Analytical Chemistry, 4th Ed.. J.N. Miller, J.C. Miller. Pearson Education Ltd., 2000
3	Statistical Methods for Chemists. W.P. Gardiner. The Royal Society of Chemistry, 1997

Week	Weekly Detailed Course Contents	
1	Theoretical	Descriptive statistics
2	Theoretical	Statistical tests
3	Theoretical	Analysis of variance
4	Theoretical	Regression and correlation
5	Theoretical	Experimental design and optimization. Quiz
6	Theoretical	Response surface methods
7	Theoretical	Sequential optimization
8	Theoretical	Factorial methods. Principal component analysis
9	Theoretical	Student presentation
10	Theoretical	Cluster analysis
11	Theoretical	Discriminant analysis. Quiz-2
12	Theoretical	Nonlinear regression
13	Theoretical	Nonparametric tests
14	Theoretical	Quality control in analytical chemistry
15	Theoretical	Student presentations, 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 the subjects of descriptive statistics and statistical tests.
2	To learn the principle of variance analysis and examine some applications.
3	To understand the need and principle of experimental design and learn variations applied in practise.
4	To learn response surface methodologies in context of optimization strategies.
5	To review the subjects of cluster and discriminant analysis as applied for classification of experimental data.

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
P2	3	3	3	3	3
P3		2	2	2	2
P5		2	2	2	2

