AYDIN ADNAN MENDERES UNIVERSITY
COURSE INFORMATION FORM

Course Title	Optimization						
Course Code	EFN565		Couse Level	Second Cycle (Master's Degree)			
ECTS Credit	5	Workload	125 *(Hours)*	Theory	3	Practice	0	Laboratory	0
Objectives of the Course	The concept of optimization, fundamental principles related with the topic, teaching of standard level various optimization methods and dealing particularly with the application examples in structural engineering area proceeding from general expressions constitute the basic objectives of the course.						
Course Content	Classical Optimization Techniques,General view of mathematical programming techniques, Introduction to optimization,Optimization with Lagrange multipliers and its application						
Work Placement	N/A						
Planned Learning Activities and Teaching Methods		Explanation (Presentation), Discussion					
Name of Lecturer(s)	Lec. Yılmaz ERDEM						

Assessment Methods and Criteria

Method	Quantity	Percentage (%)
Midterm Examination	1	40
Final Examination	1	60

Recommended or Required Reading

1	Lecture Notes Supplementary Book(s): Related publications

Week	Weekly Detailed Course Contents	
1	Theoretical	Introduction to optimization. Basic descriptions and concepts.
2	Theoretical	Design space, constraint surfaces, objective function. Statement of an optimization problem.
3	Theoretical	General view of mathematical programming techniques.
4	Theoretical	Classical Optimization Techniques (Calculus methods), linear programming, non linear programming, quadratic program-ming, geometric programming, dynamic programming, integer programming, network methods (CPM, PERT) etc.
5	Theoretical	Classical Optimization Techniques: Single variable optimization techniques and its application
6	Theoretical	Classical Optimization Techniques: Multi variable optimization techniques with no constraints and its application
7	Theoretical	Various applications. Giving the term-assignment.
8	Final Exam	Mid-term exam
9	Theoretical	Classical Optimization Techniques: Multi variable optimization techniques with equality constraints and its application
10	Theoretical	Classical Optimization Techniques: Multi variable optimization techniques with inequality constraints and its application
11	Theoretical	Optimization with Lagrange multipliers and its application.
12	Theoretical	Linear Programming: Simplex Method
13	Theoretical	Applications
14	Theoretical	General Assesment
15	Theoretical	General Assesment
16	Final Exam	Final

Workload Calculation

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	2	3	70
Individual Work	3	5	4	27
Midterm Examination	1	10	1	11

Final Examination	1	16	1	17
			Total Workload (Hours)	125
			[Total Workload (Hours) / 25*] = **ECTS**	5

*25 hour workload is accepted as 1 ECTS

Learning Outcomes

1	To have a knowledge on optimization concept and fundamental principles
2	To be able relate engineering problems with mathematical modellings
3	To analyze enginnering problems by using mathematical modellings
4	To recognize informed and suitable results with optimization techniques
5	To develope optimum solution from alternative solutions

Programme Outcomes *(Economics and Finance Interdisciplinary Master)*

1	To be able to use the basic concepts in the field of economics and finance correctly
2	To be able to comprehend philosophical, social, historical and psychological principles influencing economics and finance
3	To be able to analyze economical and financial events theoretically and empirically
4	To be able to evaluate any economical and financial problem in accordance with scientific principles
5	To be able to prepare solutions for an economical or financial problem cooperatively in accordance with principles and criteria
6	To be able to follow contemporary implementations, and national and international academic publications
7	To be able to prioritize scientific methods and ethical principles in economics and finance while considering and implementing field specific professional issues
8	To be willing to do scientific research in the field of economics and finance
9	To be able to create value for economics and finance profession as a professional identity

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	5	4	5	5	4
P2	4	3	4	4	5
P3	3	5	3	3	4
P4	5	4	5	5	3
P5	4	3	4	4	5
P6	3	5	3	3	4
P7	5	4	5	5	3
P8	4	3	4	4	5
P9	3	5	3	3	4