

TOROS ÜNİVERSİTESİ

Faculty Of Engineering
Electrical And Electronics Engineering (English)

Course Information

OPTIMIZATION METHODS					
Code	Semester	Theoretical	Practice	National Credit	ECTS Credit
		Hour / Week			
CSE433	Fall	3	0	3	5

Prerequisites and co-requisites	
Language of instruction	English
Type	Elective
Level of Course	Bachelor's
Lecturer	Asst. Prof. Omid SHARIFI
Mode of Delivery	Face to Face
Suggested Subject	
Professional practise (internship)	None
Objectives of the Course	Mathematical Programming: Linear, Integer and Quadratic Programs - Linear Programming: Simplex and Dual Simplex Methods, Duality and Precision Analysis, Expansions - Integer Programming: Branch Boundary, Cutting and Transportation Algorithms - Nonlinear Programming: Single Variable Optimization, Multivariate Constrained and Unconstrained CPM - Inventory Models - Estimation Models: Regression Methods, Plane Methods - Game Theory - Decision Theory - Markov Processes - Queuing Systems: Optimization - Dynamic Programming - Network Analysis: Minimum Span, Shortest Path, and Maximum Flow Problems - Project Management: PERT / CPM - M / M / 1, M / M / s, M / M / 1 / K and M / M / s / K Systems
Contents of the Course	Mathematical Programming: Linear, Integer and Quadratic Programs - Linear Programming: Simplex and Dual Simplex Methods, Duality and Precision Analysis, Expansions - Integer Programming: Branch Boundary, Cutting and Transportation Algorithms - Nonlinear Programming: Single Variable Optimization, Multivariate Constrained and Unconstrained CPM - Inventory Models - Estimation Models: Regression Methods, Plane Methods - Game Theory - Decision Theory - Markov Processes - Queuing Systems: Optimization - Dynamic Programming - Network Analysis: Minimum Span, Shortest Path, and Maximum Flow Problems - Project Management: PERT / CPM - M / M / 1, M / M / s, M / M / 1 / K and M / M / s / K Systems

Learning Outcomes of Course

#	Learning Outcomes
1	Provides solutions to engineering problems
2	The lecture informs the student about optimization science.
3	The lecture solves the problems that are related to optimization.
4	The latest technological developments are taught in optimization science.

Course Syllabus

#	Subjects	Teaching Methods and Technics
1	Mathematical Programming: Linear, Integer and Quadratic Programs	Lecture
2	Mathematical Programming: Linear, Integer and Quadratic Programs	Lecture
3	Linear Programming: Simplex and Dual Simplex Methods, Duality and Precision Analysis, Expansions	Lecture
4	Integer Programming: Branch Bounding, Cutting and Transportation Algorithms	Lecture

5	Nonlinear Programming: Single Variable Optimization, Multivariate Constrained and Unconstrained Optimization	Lecture
6	Dynamic Programming	Lecture
7		
8	Network Analysis: Minimum Propagation, Shortest Path, and Maximum Flow Problems	Lecture
9	Project Management: PERT / CPM - Inventory Models	Lecture
10	Estimation Modeler: Regression Methods, Leveling Methods	Lecture
11	Game Theory	Lecture
12	Decision Theory	Lecture
13	Markov Processes - Queuing Systems: M / M / 1, M / M / s, M / M /	Lecture
14		
15		
16	Final Exam	

Course Syllabus

#	Material / Resources	Information About Resources	Reference / Recommended Resources
1	Optimization methods books, internet resources		

Method of Assessment

#	Weight	Work Type	Work Title
1	40%	Mid-Term Exam	Mid-Term Exam
2	60%	Final Exam	Final Exam

Relationship between Learning Outcomes of Course and Program Outcomes

#	Learning Outcomes	Program Outcomes	Method of Assessment
1	Provides solutions to engineering problems	1	1,2
2	The lecture informs the student about optimization science.	1	1,2
3	The lecture solves the problems that are related to optimization.	1	1,2
4	The latest technological developments are taught in optimization science.	1	1,2

PS. The numbers, which are shown in the column Method of Assessment, presents the methods shown in the previous table, titled as Method of Assessment.

Work Load Details

#	Type of Work	Quantity	Time (Hour)	Work Load
1	Course Duration	14	3	42
2	Course Duration Except Class (Preliminary Study, Enhancement)	0	0	0
3	Presentation and Seminar Preparation	0	0	0
4	Web Research, Library and Archival Work	0	0	0
5	Document/Information Listing	0	0	0
6	Workshop	0	0	0
7	Preparation for Midterm Exam	1	10	10
8	Midterm Exam	1	1	1
9	Quiz	0	0	0
10	Homework	0	0	0

11	Midterm Project	0	0	0
12	Midterm Exercise	0	0	0
13	Final Project	0	0	0
14	Final Exercise	0	0	0
15	Preparation for Final Exam	0	0	0
16	Final Exam	1	72	72
				125