



COURSE / MODULE / BLOCK DETAILS

ACADEMIC YEAR / SEMESTER

<b>Offered by:</b> Endüstri Mühendisliği			
<b>Course Title:</b> DISCRETE OPTIMIZATION MODELS AND ALGORITHMS		<b>Course Org. Title:</b> DISCRETE OPTIMIZATION MODELS AND ALGORITHMS	
<b>Course Level:</b> Lisans		<b>Course Code:</b> IND 4903	
<b>Language of Instruction:</b> İngilizce		<b>Form Submitting/Renewal Date</b> 21/02/2013	
<b>Weekly Course Hours:</b> 3		<b>Course Coordinator:</b> DOÇENT ŞEYDA AYŞE TOPALOĞLU	
<b>Theory</b>	<b>Application</b>	<b>Laboratory</b>	<b>National Credit:</b> 3
3	0	0	<b>ECTS Credit:</b> 4



DOKUZ EYLUL UNIVERSITY

FACULTY OF ENGINEERING OFFICE OF THE DEAN

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Offered to:

Course Status: Compulsory/Elective

Name of the Department:

Industrial Engineering

Elective Course

Wire: 0 232 301 72 15

Fax: 0 232 301 72 10

Access: <http://www.eng.deu.edu.tr>

Address: Dokuz Eylül Üniversitesi Tınaztepe Yerleşkesi 35160 Buca/İZMİR E-mail: [muhendislik@deu.edu.tr](mailto:muhendislik@deu.edu.tr)



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Instructor/s:

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Wire: 0 232 301 72 15

Fax: 0 232 301 72 10

Access: <http://www.eng.deu.edu.tr>

Address: Dokuz Eylül Üniversitesi Tınaztepe Yerleşkesi 35160 Buca/İZMİR E-mail: [muhendislik@deu.edu.tr](mailto:muhendislik@deu.edu.tr)



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**Course Objective:**

The aim of this course is to present classic integer and combinatorial optimization models forms to students and to make them capable of solving these models using exact and heuristic solution approaches.

**Learning Outcomes:**

- 1 To be able know the application areas of discrete optimization and identify different problems
- 2 To be able to know exact solution methods for discrete optimization problems
- 3 To be able to use exact solution methods
- 4 To be able to know heuristic solution methods for discrete optimization problems
- 5 To be able to use heuristic solution methods

**Learning and Teaching Strategies:**

Lecture / Question-Answer / Discussion / Problem Solving

**Assessment Methods:**

Name	Code	Calculation formula
Vize	VZ	
Ödev	OD	
Final	FN	
Bütünleme Notu	BUT	
BNS	BNS	$VZ * 030 + D * 020 + FN * 050$
Bütünleme Sonu Başarı Notu	BBN	$VZ * 030 + D * 020 + BUT * 050$

**Further Notes about Assessment Methods:****Assessment Criteria:**



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Textbook(s)/References/Materials:

- 1- Optimization in Operations Research, Ronald L. Rardin, Prentice-Hall, USA, 1998
- 2- Introduction to Operations Research, F. S. Hillier, G. J. Lieberman, McGraw-Hill Inc., USA, 2005

Course Policies and Rules:

Contact Details for the Instructor:

Assoc.Prof. Dr. Şeyda Topaloğlu, seyda.topaloglu@deu.edu.tr

Office Hours:

Assoc.Prof.Dr. Şeyda Topaloğlu, Afternoons on Monday and Tuesday

Course Outline:

Week	Topics:	Notes:
1	Integer and Combinatorial Optimization Models	
2	Integer and Combinatorial Optimization Models	
3	Relaxations of Optimization Problems	
4	Relaxations of Optimization Problems	
5	Enumerative Algorithms (Total Enumeration, Branch-and-Bound, Branch-and-Cut, Branch-and-Price, Column Generation)	
6	Enumerative Algorithms Continue	
7	Enumerative Algorithms Continue	
8	Heuristic Discrete Optimization (Greedy/Constructive Heuristics, Local Improvement, Tabu Search, Simulated Annealing, Genetic Algorithms)	
9	Midterm Exam	



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10	Heuristic Discrete Optimization Continues
11	Heuristic Discrete Optimization Continues
12	Discrete Dynamic Programming
13	Homework Presentations
14	Homework Presentations Continue



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## ECTS Table

Course Activities	Number	Duration (hour)	Total Work Load (hour)
In Class Activities			
Lectures	11	3	33

## Exams

Midterm	1	1,5	2
Final	1	2	2

## Out Class activities

Preparations before/after weekly lectures	11	1	11
Preparation for midterm exam	1	15	15
Preparation for final exam	1	20	20
Preparation for homework	1	20	20
Total Work Load (hour)			103
ECTS Credits of the Course= Total Work Load (hour) / 25			4