DOKUZ EYLUL UNIVERSITY

FACULTY OF ENGINEERING OFFICE OF THE DEAN

COURSE / MODULE / BLOCK DETAILS

ACADEMIC YEAR / SEMESTER

Offered by: Endüstri Mühendisliği			
Course Title: SELECTED TOPICS ON MATHEMATICAL PROGRAMMING			Course Org. Title: SELECTED TOPICS ON MATHEMATICAL PROGRAMMING
Course Level: Lisans			Course Code: IND 4910
Language of Instruction: İngilizce			Form Submitting/Renewal Date 24/07/2013
Weekly Course Hours: 3			Course Coordinator: PROFESÖR ADİL BAYKASOĞLU
Theory	Application	Laboratory	National Credit: 3
3	0	0	ECTS Credit: 4

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

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COURSE / MODULE / BLOCK DETAILS

ACADEMIC YEAR / SEMESTER

Offered to:	Course Status: Compulsory/Elective
Name of the Department:	
Industrial Engineering	Elective Course

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Instructor/s:
PROFESÖR ADİL

Wire: 0 232 301 72 15 Fax: 0 232 301 72 10 Access: http://www.eng.deu.edu.tr

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Course Objective:
Introducing students several topics which are not covered in usual operational research courses. During the course basic non-linear programming theory and methods like geometric programming, topics related to multiple objective optimization and programming and some more advanced topics will be introduced.

Learning Outcomes:	
1	An ability to derive non-linear programming models for solving the engineering problems
2	An ability to apply multi-objective optimization techniques for solving the industrial engineering problems which have more than one objective
3	An ability to use mathematical programming languages such as LINGO, ILOG OPL studio in the solution phase of the developed non-linear programming models
4	An ability to identify main concepts of non-linear programming and multi-objective optimization
5	An ability to solve design optimization problems via non-linear programming models

Learning and Teaching Strategies:
The presentations which are prepared by using books, articles and proceedings as well as class board will be used in the scope of the course programme. Theoretical Lectures, Case studies and Projects

Assessment Methods:

Name	Code	Calculation formula
Vize	VZ	
Proje	PR	
Final	FN	
Bütünleme Notu	BUT	
BNS	BNS	VZ * 025 + PR * 025 + FN * 050
Bütünleme Sonu Başarı Notu	BBN	VZ * 025 + PR * 025 + BUT * 050

Further Notes about Assessment Methods:
If the instructor needs to add some explanation or further note, this column can be selected from the DEBIS menu.

Assessment Criteria:
Optional, if the instructor needs to add some explanation or further note, this column can be selected from the DEBIS menu.

Textbook(s)/References/Materials:
Suggested Sources for the Course: Textbook(s): Optimization Concepts and Applications in Engineering, A.D. Belegundu, T.R. Chandrupatla, Prentice Hall, New Jersey, 1999. Supplementary Book(s): Introduction to Engineering Design Optimization, C. Onwubiko, Prentice Hall, New Jersey, 1999. Practical Optimization Methods with Mathematica Applications, M.A. Bhatti, Springer and Verlag, New York, 2000. Operations Research: An Introduction, H.A. Taha, Prentice Hall, New Jersey, 2007.

Course Policies and Rules:

Contact Details for the Instructor:
Professor Adil BAYKASOĞLU, Phd. adil.baykasoglu@deu.edu.tr Research Assistant Kemal SUBULAN, Msc. kemal.subulan@deu.edu.tr

Office Hours:

Course Outline:		
Week	Topics:	Notes:
1	Preliminary concepts in nonlinear programming	

2	One and multi-dimensional unconstrained nonlinear programming
3	Multi-dimensional unconstrained nonlinear programming
4	Constrained nonlinear programming and penalty methods
5	Midterm
6	Geometric programming-1
7	Geometric programming-2
8	Applications of nonlinear programming to design optimization problems
9	Preliminary concepts in multiple objective optimization
10	Pareto optimality
11	Multiple objective optimization techniques
12	Multiple objective optimization techniques and implementation
13	Applications of multiple objective optimization to industrial engineering problems
14	Project presentations

ECTS Table			
Course Activities	Number	Duration (hour)	Total Work Load (hour)
In Class Activities			
Lectures	14	3	42
Exams			
Final	1	2	2
Midterm	1	1,5	2
Out Class activities			
Preparations before/after weekly lectures	14	2	28
Preparation for midterm exam	1	3	3
Preparation for final exam	1	5	5
Preparing presentations	7	3	21
Total Work Load (hour)			103
ECTS Credits of the Course= Total Work Load (hour) / 25			4

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