

DEPARTMENT OF ENERGY SCIENCE AND TECHNOLOGIES **COURSE SYLLABUS**

Course Details									
Code				Acade	Academic Year			Semester	
EWT402				2	2			4	
Title	Title			т	Α	L	ECTS		
Optimization in Energy Systems				2	1	0	6		
Language	German								
Level	Undergraduate X Graduate Postgraduate				duate				
Department / Program	Department of Energy Science and Technology (German)								
Forms of Teaching and Learning	Face to Face								
Course Type	Compulsory Elective X								
Objectives	To provide students with analysis knowledge and skills of different energy conversion plants To gain optimization skills in energy system issues								
Content	Basic concepts of optimization, optimization methods of energy systems, Objective function (thermodynamic, economic, thermoeconomic), optimization methods, Linear Programming, Nonlinear programming, Simplex method, Optimization Application Methods in energy conversion plants								
Prerequisites									
Coordinator									
Lecturer(s)									
Assistant(s)									
Work Placement									
Recommended or Required Reading									
Books / Lecture Notes	Design Analysis of Thermal Systems", W.F. Stoecker. (McGraw Hill,1989) Introduction to Optimum Design", F.S.Arora (McGraw Hill, 1989) Optimization of Chemical Presses", T.F. Edger (McGraw Hill, 1989)								
Other Sources									
Additional Course Material									
Documents									
Assignments									
Exams									
Course Composition	Course Composition								
Mathematics und Basic Sciences							% 30)	
Engineering							% 30)	
Engineering Design	% 40)				
Social Sciences	% 0								



100

Total

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Educational Sciences		% 0
Natural Sciences		% 0
Health Sciences		% 0
Expert Knowledge		% 0
Assessment		
Activity	Count	Percentage (%)
Midterm Exam	2	% 50
Quiz	0	% 0
Assignments	2	% 10
Attendance	0	% 0
Recitations	0	% 0
Projects	0	% 0
Final Exam	1	% 40

ECTS Points and Work Load				
Activity	Count	Count Duration		
Lectures	13	3	26	
Self-Study				
Assignments	2	13	26	
Presentation / Seminar Preparation				
Midterm Exam	2	12	24	
Recitations				
Laboratory				
Projects				
Final Exam	1	14	14	
		Total Work Load	90	
ECTS Points (Total Work Load / Hours)			2	

Learning Outcomes Knows the concepts of optimization problem. 1 It can turn energy systems problems into optimization problems. 2 Can solve optimization problems. 3 The computer can be used in solving optimization problems. 4 5 6 7



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8							
9							
10							
11							
12							
Weekly Conten	nt						
1	Optimization	Basic Concept	S				
2	Optimization	Optimization methods in energy systems					
3	Optimization	Optimization Concept and Its Elements (Purpose, Function, Constraint etc.)					
4	One-Dimensi	One-Dimensional Unconstrained Optimization					
5	One Dimensional Constraint Optimization						
6	Multidimensi	Multidimensional Constraint Optimization					
7	Linear and Non-Linear Equation Solutions						
8	Midterm Exam 1						
9	Optimization in Energy Systems - Example						
10	Optimization in Energy Systems						
11	Optimization Application in Energy Systems						
12	Linear Programming						
13	2nd Midterm Exam / Linear Programming and Graphic Solution						
14	Simplex Algorithm						
15	Final						
Contribution of	f Learning Outo	comes to Prog	ram Objectives	(1-5)			
	P1	P2	P3	P4	P5	P6	P7
1							
2							
4							
5							
6							
7							
8							
9							
10							
11							
Contribution Lev	rel	1: Low 2: Low-ir	ntermediate 3: In	termediate 4:	High 5: Very High		



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Compiled by:	
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