OPTIMIZATION METHODS

1	Course Title:	OPTIMIZATION METHODS	
2	Course Code:	EEM4119	
3	Type of Course:	Optional	
4	Level of Course:	First Cycle	
5	Year of Study:	4	
6	Semester:	7	
7	ECTS Credits Allocated:	4.00	
8	Theoretical (hour/week):	3.00	
9	Practice (hour/week):	0.00	
10	Laboratory (hour/week):	0	
11	Prerequisites:	-	
12	Language:	Turkish	
13	Mode of Delivery:	Face to face	
14	Course Coordinator:	Yrd.Doç.Dr. NEYİR ÖZCAN SEMERCİ	
15	Course Lecturers:	-	
16	Contact information of the Course Coordinator:	neyir@uludag.edu.tr Elektrik-Elektronik Mühendisliği Bölümü 4. Kat Oda No:433 0224 294 06 50	
17	Website:		
18	Objective of the Course:	To teach the Optimization Methods which are being widely used in engineering.	
19	Contribution of the Course to Professional Development:		
20	Learning Outcomes:		
		1	Students can recognize and classify different questions related to optimization problems in engineering.
		2	Students can translate the optimization problems to the correct mathematical formalization.
		3	Students can apply the correct techniques to solve such problems
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21	Course Content:		

Course Content:

Week	Theoretical	Practice
1	Fundamental mathematical concepts	
2	Vector spaces, definition of inner product, normed spaces	
3	Vertical reflection, linear independence, series	

4	Gram-Schmidt orthonormalization method, elements of differential geometry	
5	Repetitive gradiant methods for non-constrained optimization	
6	Steepest-Descent Method	
7	Newton-Raphson Method	
8	Midterm Exam	
9	Conjugate-gradient methods	
10	Variable metric methods	
11	Conditional optimization methods	
12	Lagrange multiplier method, repetitive solutions	
13	Simplex method	
14	Kuhn-Tucker Method	

22	Textbooks, References and/or Other Materials:	Linear and Nonlinear Programming, McGraw Hill, 1996, ISBN:0-07-114537-0 Stephen G. Nash, Ariela Sofer. E. K. P. Chong and S. H. Zak, An Introduction to Optimization, Fourth edition, Wiley & Sons, 2013.
23	Assesment	

TERM LEARNING ACTIVITIES	**NUMBER**	**WEIGHT**
Final Exam	1	60.00
Contribution of Term (Year) Learning Activities to		40.00
Contribution of Final Exam to Success Grade		60.00
Measurement and Evaluation Techniques Used in the		

24 ECTS / WORK LOAD TABLE

Activites	Number	Duration (hour)	Total Work Load (hour)
Theoretical	14	3.00	42.00
Practicals/Labs	0	0.00	0.00
Self study and preperation	14	2.00	28.00
Homeworks	0	0.00	0.00
Projects	0	0.00	0.00
Field Studies	0	0.00	0.00
Midterm exams	1	20.00	20.00
Others	0	0.00	0.00
Final Exams	1	30.00	30.00
Total Work Load			120.00
Total work load/ 30 hr			4.00
ECTS Credit of the Course			4.00

25 CONTRIBUTION OF LEARNING OUTCOMES TO PROGRAMME QUALIFICATIONS

	PQ1	**PQ2**	**PQ3**	**PQ4**	**PQ5**	**PQ6**	**PQ7**	**PQ8**	**PQ9**	**PQ10**	**PQ11**	**PQ12**	**PQ13**	**PQ14**	**PQ15**	**PQ16**
ÖK1	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK2	0	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK3	0	0	0	5	5	0	0	0	0	0	0	0	0	0	0	0

LO: Learning Objectives PQ: Program Qualifications

Contribution Level:	1 very low	2 low	3 Medium	4 High	5 Very High