Content

Course Code	Course Name	Semester	Theory	Practice	Lab	Credit	ECTS
IND 501	Linear Optimization	1	3	0	0	3	6

Prerequisites	
Admission Requirements	

Language of Instruction	
Course Type	
Course Level	Masters Degree
Objective	
Content	
References	

Theory Topics

Week	Weekly Contents
1	Modeling of optimization problems (Bazaraa, Jarvis & Sherali, Chapter 1, Bertsimas & Tsitsiklis, Chapter 1)
2	Modeling of optimization problems (Bazaraa & Sherali, Chapter 1, Wolsey, Chapter 1) and solution through GAMS and MATLAB+CPLEX
3	Basic concepts in linear algebra (Bazaraa, Jarvis & Sherali, Chapter 2)
4	Basic concepts in convex analysis (Bazaraa, Jarvis & Sherali, Chapter 2)
5	The simplex and big-M algorithms (Bazaraa, Jarvis & Sherali, Chapter 3)
6	The two-phase algorithm, degeneration, cycling, and cycling prevention rules (Bazaraa, Jarvis & Sherali, Chapter 4)
7	Farkas' lemma, Karush-Kuhn-Tucker optimality conditions (Bazaraa, Jarvis & Sherali, Chapter 5)
8	Midterm I
9	Duality and sensitivity analysis (Bazaraa, Jarvis & Sherali, Chapter 6, Bertsimas & Tsitsiklis, Chapter 4)
10	Parametric analysis, the revised simplex algorithm (Bazaraa, Jarvis & Sherali, Chapter 6, Bertsimas & Tsitsiklis, Chapter 5)
11	The dual simplex and the primal-dual algorithms (Bazaraa, Jarvis & Sherali, Chapter 6)
12	Dantzig-Wolfe decomposition (Bazaraa, Jarvis & Sherali, Chapter 7, Bertsimas & Tsitsiklis, Chapter 6)
13	Programming the Dantzig-Wolfe decomposition in MATLAB+CPLEX
14	Midterm II