

SUBJECT: Numerical Methods for Data Science

MASTER DEGREE: Statistics for Data Science	ECTS: 3	QUARTER: 1

TIMETABLE FOR THE SUBJECT								
WEEK	SESSION	DESCRIPTION OF EACH SESSION	GROUP (X mark)		Indicate if a different lecture room is needed (computer,	HOMEWORK PER WEEK		
			1	2	audiovisual, etc.)	DESCRIPTION	ATTENDING HOURS	HOMEWORK Max. 7H/WEEK
1	1	 Linear optimization models. Introduction: decision optimization, analytics and operations research; formulations; graphical and software-based solution. 	x			Study of Topic 1.1	1.5	3
1	2	Exercises of Topic 1.1	x			Practical class	1.5	3
2	1	1.2. Duality; economic interpretation; optimality conditions; sensitivity analysis; robustness.	x			Study of Topic 1.2	1.5	3
2	2	Exercises of Topic 1.2	x			Practical class	1.5	3
3	1	1.3. Applications.	x			Study of Topic 1.3	1.5	3
3	2	Exercises of Topic 1.3	X			Practical class	1.5	3



4	1	 Discrete optimization models. 1. Formulations; graphical solution; linear relaxations; optimality gap. 	X	Study of Topic 2.1	1.5	3
4	2	Exercises of Topic 2.1	X	Practical class	1.5	3
5	1	2.2. The branch and bound method; valid inequalities; applications.	X	Study of Topic 2.2	1.5	3
5	2	Exercises of Topic 2.2		Practical class	1.5	3
6	1	 3. Dynamic optimization models. 3.1. Formulations; finite-horizon models; optimality equations; numerical solution; applications. 	X	Study of Topic 3.1	1.5	3
6	2	Exercises of Topic 3.1	X	Practical class	1.5	3
7	1	3.2. Infinite-horizon models; optimality equations; numerical solution; applications.	X	Study of Topic 3.2	1.5	3
7	2	Exercises of Topic 3.2	X	Practical class	1.5	3
TOTAL HOURS					21	42