



<b>COURSE: Operations Research</b>		
<b>DEGREE: Statistics and Business</b>	<b>YEAR:</b>	<b>TERM:</b>

WEEKLY PLANNING								
WEEK	SESSION	DESCRIPTION	GROUPS (mark X)		Special room for session (computer classroom, audio-visual classroom...)	WEEKLY PROGRAMMING FOR STUDENT		
			LECTURES	SEMINARS		DESCRIPTION	CLASS HOURS	HOMEWORK HOURS (Max. 7h week)
1	1	Topic 1.1. Introduction to Operations Research; Linear optimization (LO) models, formulations and applications.	X			Study of Topic 1.1	1,5	6
1	2	Practical class.Linear optimization with Excel.		X	computer classroom	Computer lab class	1,5	
2	3	Topic 1.2. Graphical solution and sensitivity analysis; introduction to robust LO.	X			Study of Topic 1.2	1,5	6
2	4	Practical class.		X		Exercises for Topic 1.2	1,5	
3	5	Topic 1.3. The fundamental theorem of LO; basic feasible solutions and vertices; the simplex method.	X			Study of Topic 1.3	1,5	6
3	6	Practical class.		X		Exercises for Topic 1.3	1,5	
4	7	Topic 1.4. Problems with unbounded objective; the	X			Study of Topic 1.4	1,5	6

		two-phase simplex method.						
4	8	Practical class. The simplex method. Examples.		x		Exercises for Topic 1.4	1,5	
5	9	Topic 1.5. Duality in LO; economic interpretation and application to sensitivity analysis.	x			Study of Topic 1.5	1,5	6
5	10	Practical class.		x	computer classroom	Computer lab class	1,5	
6	11	Topic 1.6. Optimal network flow models.	x			Study and exercises for Topic 1.6	1,5	6
6	12	Practical class.		x		<b>1<sup>st</sup> midterm exam</b>	1,5	
7	13	Topic 2.1. Integer optimization models and applications; linear relaxations; optimality gap; optimality test; graphical and computer solution.	x			Study of Topic 2.1	1,5	6
7	14	Practical class.		x		Exercises for Topic 2.1	1,5	
8	15	Topic 2.2. The Branch and Bound method.	x			Study of Topic 2.2	1,5	6
8	16	Practical class.		x	computer classroom	Computer lab class	1,5	
9	17	Topic 2.3. Combinatorial optimisation models; strengthening formulations with valid inequalities.	x			Study of Topic 2.3	1,5	6
9	18	Practical class.		x		Exercises for Topic 2.3	1,5	
10	19	Topic 3.1. Queueing models and applications; performance metrics; utilisation factor and stability; Little's law; PASTA property.	x			Study of Topic 3.1	1,5	6
10	20	Practical class.		x		Exercises for Topic 3.1	1,5	
11	21	Topic 3.2. The M/M/1 model.	x			Study of Topic 3.2	1,5	6
11	22	Practical class.		x		Exercises for Topic 3.2	1,5	
12	23	Topic 3.3. The M/M/m model.	x			Study of Topic 3.3	1,5	6
12	24	Practical class.		x		Exercises for Topic 3.3	1,5	
13	25	Topic 4.1. Simulation models; Monte Carlo method and applications; computer generation of pseudo-random numbers.	x			Study and exercises for Topic 4.1	1,5	6
13	26	Practical class.		x		<b>2<sup>nd</sup> midterm exam</b>	1,5	
14	27	Topic 4.2. Computer generation of discrete and continuous statistical distributions.	x			Study of Topic 4.2	1,5	6

14	28	Practical class.		x	computer classroom	Computer lab class	1,5	
<b>Subtotal 1</b>							<b>42</b>	<b>84</b>
<b>Total 1</b> ( <i>Hours of class plus student homework hours between weeks 1-14</i> )							<b>126</b>	

15		Tutorials, handing in, etc				Tutorials	6	
16		Assessment					3	15
17								
18								
<b>Subtotal 2</b>							<b>3</b>	<b>21</b>
<b>Total 2</b> ( <i>Hours of class plus student homework hours between weeks 15-18</i> )							<b>24</b>	

<b>TOTAL</b> ( <i>Total 1 + Total 2</i> )							<b>150</b>	
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