

## 27027 - Stochastic Optimisation

### Información del Plan Docente

<b>Academic Year</b>	2016/17
<b>Academic center</b>	100 - Facultad de Ciencias
<b>Degree</b>	453 - Degree in Mathematics
<b>ECTS</b>	6.0
<b>Course</b>	4
<b>Period</b>	First semester
<b>Subject Type</b>	Optional
<b>Module</b>	---

### **1.Basic info**

#### **1.1.Recommendations to take this course**

#### **1.2.Activities and key dates for the course**

### **2.Initiation**

#### **2.1.Learning outcomes that define the subject**

#### **2.2.Introduction**

### **3.Context and competences**

#### **3.1.Goals**

#### **3.2.Context and meaning of the subject in the degree**

#### **3.3.Competences**

#### **3.4.Importance of learning outcomes**

### **4.Evaluation**

### **5.Activities and resources**

#### **5.1.General methodological presentation**

Lectures (35% classes)

Problems resolution (50% classes)

Laboratories (15% classes)

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### 5.2. Learning activities

Lectures, problems resolution classes and laboratories.

Lecture slides and other important materials will be posted on moodle2@unizar.es. Please check there regularly.

### 5.3. Program

Course outline:

Topic 1: Decision Analysis.

Topic 2: Dynamic Programming.

Topic 3: Markov Chains.

Topic 4: Queuing Theory.

Topic 5: Simulation.

### 5.4. Planning and scheduling

See the oficial scheduling in the Faculty of Sciences web page.

### 5.5. Bibliography and recomended resources

A.O. Allen. Probability, statistics, and queueing theory : with computer science applications. Academic Press, New York, 2nd edition, 1990.

U.N. Bhat. Elements of Applied Stochastic Processes. John Wiley and Sons, New York, 2nd edition, 1984.

D. Gross, J.F. Shortle, J.M. Thompson, C.M. Harris. Fundamentals of queueing theory. John Wiley and Sons, 4th edition, 2008.

D.P. Heyman, M.J. Sobel. Stochastic Models in Operations Research, vol. I. Dover Publications, INC, Mineola, NY, 1982.

F.S. Hillier, G.J. Lieberman. Introducción a la Investigación de Operaciones. McGrawHill, México, octava edition, 2006.

L. Kleinrock. Queueing Systems, vol. 1: Theory. John Wiley and Sons, New York, 1975.

L. Kleinrock. Queueing Systems, vol. 2: Computer Applications. John Wiley and Sons, New York, 1975.

V.G. Kulkarni. Modeling, Analysis, Design and Control of Stochastic Systems. Springer, New York, 1999.

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A.M. Law, W.D. Kelton. Simulation Modeling and Analysis. McGrawHill, Boston, 3rd edition, 2000.

A. Ravindran, D.T. Phillips, J.J. Solberg. Operations Research. Principles and Practice. John Wiley and Sons, New York, 2nd edition, 1987.

K.S. Trivedi. Probability and Statistics with Reliability, Queuing and Computer Science Applications. John Wiley and Sons, 2nd edition, 2002.

W.L. Winston. Operations Research. Thomsom Brooks/Cole, Belmont, CA, 4th edition, 2004.