

## 27027 - Stochastic Optimisation

### Información del Plan Docente

Academic Year	2017/18
Faculty / School	100 - Facultad de Ciencias
Degree	453 - Degree in Mathematics
ECTS	6.0
Year	4
Semester	First semester
Subject Type	Optional
Module	---

### **1.General information**

#### **1.1.Introduction**

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

#### **1.3.Context and importance of this course in the degree**

#### **1.4.Activities and key dates**

### **2.Learning goals**

#### **2.1.Learning goals**

#### **2.2.Importance of learning goals**

### **3.Aims of the course and competences**

#### **3.1.Aims of the course**

#### **3.2.Competences**

### **4.Assessment (1st and 2nd call)**

#### **4.1.Assessment tasks (description of tasks, marking system and assessment criteria)**

### **5.Methodology, learning tasks, syllabus and resources**

#### **5.1.Methodological overview**

Lectures (35% classes)

Problem resolution classes (50% classes)

Laboratories (15% classes)

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### 5.2. Learning tasks

Lectures, problem resolution classes and laboratories.

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

### 5.3. Syllabus

Course outline:

Topic 1: Decision Analysis.

Topic 2: Dynamic Programming.

Topic 3: Markov Chains.

Topic 4: Queuing Theory.

Topic 5: Simulation.

### 5.4. Course planning and calendar

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

### 5.5. Bibliography and recommended 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.