Universidad Zaragoza

Year : 2019/20

27027 - Stochastic Optimisation

Syllabus Information

Academic Year: 2019/20
Subject: 27027 - Stochastic Optimisation
Faculty / School: 100 -

Degree: 453 - Degree in Mathematics

ECTS: 6.0
Year: 4
Semester: First semester
Subject Type: Optional
Module: ---

1.General information

1.1.Aims of the course

1.2.Context and importance of this course in the degree

1.3.Recommendations to take this course

2.Learning goals

2.1.Competences

2.2.Learning goals

2.3.Importance of learning goals

3.Assessment (1st and 2nd call)

3.1.Assessment tasks (description of tasks, marking system and assessment criteria)

4.Methodology, learning tasks, syllabus and resources

4.1.Methodological overview

The methodology followed in this course is oriented towards the achievement of the learning objectives. A wide range of teaching and learning tasks are implemented, such as lectures, problem-solving sessions and laboratory sessions.

4.2.Learning tasks

This course is organized as follows:

- **Lectures**. They consist on the 35% of the sessions. Lecture slides and other important materials will be posted on Moodle; please check it regularly.
- **Problem-solving sessions**. They consist on the 50% of the sessions.
- **Laboratory sessions**. They consist on the 15% of the classes.

4.3.Syllabus

This course will address the following topics:

- **Topic 1**: Decision Analysis.

- **Topic 2**: Dynamic Programming.
- **Topic 3**: Markov Chains.
- **Topic 4**: Queuing Theory.
- **Topic 5**: Simulation.

4.4.Course planning and calendar

Further information concerning the timetable, classroom, office hours, assessment dates and other details regarding this course will be provided on the first day of class, or please refer to the Faculty of Sciences website and Moodle.

4.5.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.
- 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.

http://biblos.unizar.es/br/br_citas.php?codigo=27027&year=2019