Academic Year 2014-2015

Course Guide

Decision Methods (3 ECTS)

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<td>ECTS</td>
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<tr>
<td>Type</td>
<td>Elective</td>
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<tr>
<td>Duration</td>
<td>15 weeks</td>
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<td>1st term</td>
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Basic and General Competences

CB2. Know how to apply and integrate knowledge, the understanding of it, its scientific basis, and problem-solving capabilities in new and loosely defined environments, including multidisciplinary contexts, both for research and highly-specialized professions.

Specific Competences of this Master’s Degree Course

CE9. Know the techniques, methods and/or tools required to approach a specific research topic in a specific technological context or sector.

Optative Competences

CO7. Know the different methods available to formalize decision processes in the presence of ambiguity, and be able to apply them to real problems.

Learning results

At the end of the course, the students must be able to:

1. To recognize the elements that characterize a decision-making process, in order to apply the methods most appropriate for solving it.

2. To understand the basic concepts behind the different decision-making methodologies.

3. To be able to use these methodologies in real life problems.
4. To critically analyze and make sense of the results obtained.

5. To be able to assess their own learning in an autonomous way.

6. To be prepared to widen their knowledge on the topic.

Activities and teaching methodology

The goal is to promote learning and to incentivize the autonomy and critical thinking of the student. To that end, the following resources are used:

1. Lectures (18h, 100% in class): presentation of the course contents, open discussion about subjective aspects that allow different approaches and incentve the creativity and critical thinking of the student.

2. Personal work (20h, 0% in class): study of the contents taught in the lectures, and additional readings that must be done before and after the lectures.

3. Problem solving (20h, 50% in class): may take place in groups or invidually, are proposed by the instructor and allow the assimilation of contents and incentve the autonomy of the student.

4. Term paper (30h, 0% in class): allows applying the knowledge acquired to a real situation known by the student. It may eventually lead to a publication.

5. Public presentation of the term papers (2h, 100% in class): allow assessing the skills acquired by the student.

The monitoring of the students is done in an individual basis. Learning resources require the active participation of the students. It is essential that the activity done in class is complemented with the student’s personal work, and accordingly, will be considered for the final evaluation.

Evaluation System

In what follows the evaluation system is described, pointing out the different activities involved. In brackets the weighting of each activity is explicited.

Exams (40 %)

There will two tests, which will cover the theoretical concepts of the course. Questions will be open-format or multiple-choice.

1. The first test will cover the first part of the course (1-6) and will take place in the last session of this part. It will account for 10% of the final grade.
2. The second test will be given in the last day of the course, and will cover all the contents of the course. Students must get at least a 4 (over 10) in this test to pass the course. It will account for 30% of the final grade.

Evaluation of performance (60 %)

3. Active participation in class and case studies (10%).

4. A term paper, accounting for the remaining 50% of the grade, in which the student must apply the concepts and methodologies learned to a real decision making problem. The paper must be presented under the usual format for a scientific journal (50%).

Brief description of the contents of the course

1. Introduction to decision methods. Defining decision problems

2. Rational and Non-rational decisions


4. Multiple criteria decision making: Multiobjective programming, Compromise programming, Goal programming, Multi-attribute utility theory, Analytic Hierarchy Process, Outranking methods.

5. Group decision making.

Bibliography


