

Decision Support Systems

Code: 102192
ECTS Credits: 6

Degree	Type	Year	Semester
2501232 Business and Information Technology	OT	4	2

Contact

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Use of Languages

Principal working language: catalan (cat)
Some groups entirely in English: No
Some groups entirely in Catalan: Yes
Some groups entirely in Spanish: No

Prerequisites

For a good understanding of the subject, it is recommended that the student has basic knowledge about quantitative techniques and statistics equivalents to the subject of Statistic and Design of Algorithmic (first year) and Operational Research (second year).

Likewise, the analysis of the situations in which the course focuses on requires a basic understanding of the elements of a company that are achieved in Economics of Business and in Technology and Business I.

Objectives and Contextualisation

The Decision Systems Support Systems course, together with the Introduction to Problem Solving and Algorithm Design, and Operational Research, intends to introduce the basic computational techniques and tools that allow technology managers to make decisions in a systematic and formal way according to specific criteria.

The basic objectives of the subject are the following:

- Present the basis of the methodological approach of decision making and its complexity.
- Develop the main decision making algorithms, and apply them in case of study through the use of computer tools that use the exposed methodologies.

At the end of the course, students must be able to model decision-making situations in companies and organizations and identify decision-making methods that may be useful. Likewise, they must be able to solve these problems by using computational tools and to present in a convenient manner the recommendations that emerge from the quantitative analysis carried out. In particular, they can critically evaluate the use of models, algorithms and decision-making software in the situations studied, taking into account the complexity and uncertainty in today's world.

Competences

- Demonstrating a comprehension of the business information systems, taking into account their three specific dimensions (informational, technological and organisational) and being active in the specification, design and implementation of said systems.

- Demonstrating a comprehension of the impact of the information systems on the decision making processes in different levels of organisations, searching and designing solutions to specific problems.
- Demonstrating creativity and initiative.
- Demonstrating the ability to plan in accordance to the objectives and available resources.
- Students must be capable of communicating information, ideas, problems and solutions to both specialised and non-specialised audiences.

Learning Outcomes

1. Assessing specific solutions of information systems aimed to help make decisions about the classic managing problems of semi-structured decision systems.
2. Demonstrating a comprehension of the impact of the information systems on the decision making processes in different levels of organisations, searching and designing solutions to specific problems.
3. Demonstrating creativity and initiative.
4. Demonstrating the ability to plan in accordance to the objectives and available resources.
5. Using the more effective and up-to-date technical means in oral and written communication.

Content

The subject will be developed from 6 subjects, one of them transversal to the entire duration of the course (subject 0), and the rest that will be introduced more linearly. They are the following:

Topic 0. The methodological process of decision making in the Technology Company

In this topic the fundamental steps of the decision making in the company will be introduced, emphasizing the particular case of the technological company. Classic algorithms of decision-making (some already known in other courses) will be remembered and some software programs will be introduced that will be used as tools for decision-making help. In this sense, the course is specially oriented to the knowledge of computational tools that help us to make decisions and solve case studies of business interest with the help of these tools. Likewise, the complexity in the decision-making process and the role of formal models in this process will be analyzed. The preparation and presentation of projects and results, both orally and in writing, also forms an important part of this general decision-making methodology.

Topic 1. Data collection in decision making: Google Analytics

The initial compilation of data is undoubtedly the first step in the decision-making process. These data can, in general, have very different characteristics depending on the type of decision to take and range from financial data to personal data, sales, etc. However, in the world of technology companies many of the data of interest arise from the use of different web pages and their options. This topic will introduce the Google software called Analytics that is used to compile data from the use of websites and to analyze it. When finalizing, some techniques of forecasting of data will be presented.

Topic 2. Decision making with certainty: Visual Interactive Sensitivity Analysis, VISA

The process and decision-making algorithms are introduced in a state of certainty. This type of decisions are found when the decision-maker has complete information on how all the elements that are part of the problem and the results that will report their decisions will behave. The VISA software is introduced to solve this type of problems in some cases of study. Similarly, the Analytical methodology Hierachy Process will be used as a general procedure for decision making

Topic 3. Decision making with uncertainty: TreePlan

Situations are analyzed in which the decision-maker takes decisions without knowing the whole environment or the situation or the results that can be expected from each decision. In this case, the TreePlan software will be introduced to analyze some case studies that can be represented according to this model.

Topic 4. Decision making software

In this subject the student will be asked to carry out an analysis of the different software introduced in the subject as well as the personal evaluation of an additional software chosen from a list of software that the teacher will provide. The student will make a report of the use of this software highlighting its main features as well as its main scope of application.

Topic 5. Group decisions

This last topic introduces the decision-making process in which the decision is not taken by an individual but only by a group of people that must be taken into account by mutual consent to make a collective decision.

Methodology

The teaching methodology of the subject focuses mainly on problem-based learning, motivating the learning of the student from the presentation and analysis of different projects or case studies connected with the reality of decision-making. In particular, the various software that will be introduced during the course will be used, among others.

This approach requires a special involvement of the students in the development of face-to-face sessions (activity directed) of the course, since their initiatives are those that promote the development of the subject. It is also for this reason that the order of the agenda items, and in particular topic 0, will not be followed strictly, as the chosen course of learning will depend, in part, on the initiatives of the students themselves.

During the course, various decision-making software will be introduced. The objective of this fact is double: on the one hand, the student is required to know various computational tools that can be used in the decision-making process and on the other hand, the student is required to take elements that Then you can use it to choose an appropriate decision-making tool during your professional work.

During the course, teamwork and the collaborative exchange of information and tools for the modeling and resolution of case studies will be encouraged. However, the final learning process must be individual, highlighted by the autonomous activity of each student, who will have to complement and enrich the work initiated in the course's directed sessions. The supervised activity, around regular tutorials and sporadic consultations carried out during the course, is also an indispensable tool in acquiring the knowledge that the subject provides.

Annotation: Within the schedule set by the centre or degree programme, 15 minutes of one class will be reserved for students to evaluate their lecturers and their courses or modules through questionnaires.

Activities

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Practices in the classroom	23	0.92	1, 3, 2
Presentation of Works	5	0.2	1, 2
Theory classes	17	0.68	1
Type: Supervised			
Tutorials	15	0.6	1, 4
Type: Autonomous			
Case Study and Report Writing Work	58	2.32	1, 4
Reading and Study of Material of Course and of Case Studies	30	1.2	1, 2

Assessment

The assessment of the subject will be progressively and continuously throughout the semester. The evaluation system is based on the following learning evidences:

Individual contributions made to face-to-face sessions of the course, thus encouraging the active participation of students in their own learning process.

The presentation of written reports related to certain problems or study cases studied during the course, in order to follow the evolution of each student in the understanding and use of the tools worked on the subject, and At the same time, it encourages the acquisition of transversal competences. Final examination, in the last weeks of the semester, to promote the consolidation of all the material worked during the course.

Evaluation criteria

The final grade of the subject will be obtained from the weighted sum of the valuations of the different evidences, taking into account that each of the three components mentioned has a different specific weight:

10% (contributions) + 45% (presentation reports) + 45% (final exam)

It will be a necessary condition to be able to carry out this weighted sum that the presentation of a report has a score greater or equal to 5, and that the qualification obtained in the final exam is equal to or greater than 4.5.

If, at the end of the assessment process, a student has not obtained a grade equal to or greater than 4.5 for the final exam, but has more than 5 in practice, it can also be eligible for the recovery process in the aforementioned conditions More down.

Calendar of evaluation activities

The dates of the evaluation activities (exercises, assignments ...) will be announced well in advance during the semester.

The date of the final exam is scheduled in the assessment calendar of the Faculty.

*"The dates of evaluation activities cannot be modified, unless there is an exceptional and duly justified reason why an evaluation activity cannot be carried out. In this case, the degree coordinator will contact both the teaching staff and the affected student, and a new date will be scheduled within the same academic period to make up for the missed evaluation activity."***Section 1 of Article 115. Calendar of evaluation activities**

(Academic Regulations UAB). Students of the Faculty of Economics and Business, who in accordance with the previous paragraph need to change an evaluation activity date must process the request by filling out an Application for exams' rescheduleat

https://eformularis.uab.cat/group/deganat_feie/application-for-exams-reschedule

Grade revision process

After all grading activities have ended students will be informed of the date and way in which the course grades will be published. Students will be also be informed of the procedure, place, date and time of grade revision following University regulations.

Retake Process

"To be eligible to participate in the retake process, it is required for students to have been previously been evaluated for at least two thirds of the total evaluation activities of the subject." Section 3 of Article 112 ter. The recovery (UAB Academic Regulations). Additionally, it is required that the student to have achieved an average grade of the subject between 3.5 and 4.9.

The date of the retake exam is posted in the calendar of evaluation activities of the Faculty. Students taking this exam and passing will get a grade of 5 for the subject. For the students that do not pass the retake, the grade will remain unchanged, and hence, will fail the course.

Irregularities in evaluation activities

Despite other disciplinary measures deemed appropriate, and in accordance with current academic regulations, *"whenever a student makes any irregularity that could lead to a significant variation in the grade of an evaluation activity, it will be graded with a 0, regardless of the disciplinary process that can be instructed. In case of occurrence of various irregularities in the evaluation of the same subject, the final grade of this subject will be 0"*. **Section 10 of Article 116. Results of the evaluation. (UAB Academic Regulations).**

Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
1.- Contributions during the sessions of the course	10%	0	0	3, 2, 5
2.- Presentation of reports (written)	45%	0	0	1, 4, 3, 2
3.- Final exam	45%	2	0.08	1, 2

Bibliography

- [Clyde W. Holsapple](#), [Andrew B. Whinston](#), Decision support systems: a knowledge-based approach, West Group, 1996.
- Daniel J. Power, Decision Support Systems: Concepts and Resources for Managers, Praeger, 2002.
- Vicki L. Sauter, Decision Support Systems for Business Intelligence, Wiley, 2011.
- [Jay E. Aronson](#), [Ting-Peng Liang](#), [Ramesh Sharda](#) [Efraim Turban](#), Decision Support and Business Intelligence Systems, Prentice-Hall, 2010.
- Sixto Ríos, Concepción Bielza, Alfonso Mateos, Fundamentos de los sistemas de ayuda a la decisión, Ed. Ra-Ma, 2002.

Software

For the introduction of the concept of Multi-Criteria Decision-Making (MCDM) we will use the free

1000minds and MeenyMo applications.

For the practice on decision trees, we will use the application

Simple Decisión Tree.