Teaching guide

IDENTIFICATION DETAILS

Degree:	Business Analytics
Field of Knowledge:	Social and Legal Science
Faculty/School:	Law, Business and Governance
Course:	DECISION SUPPORT SYSTEMS
Type:	Compulsory
ECTS credits:	3
Year:	3
Code:	5330
Teaching period:	Fifth semester
Area:	Business Intelligence
Module:	Disciplinary Training
Teaching type:	Classroom-based
Language:	English
Total number of student study hours:	75

Teaching staff	E-mail
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SUBJECT DESCRIPTION

Decision Support Systems are computer-based systems designed to support managerial decision making and strategic planning in semistructured and unstructured environments. The orientation is towards prescription, i.e. the recommendation of a course of action, based upon intelligence or predictions developed by other data analytics fields. DSS works on targeted, partially structured management problems, to be addressed using models and allowing user interaction through an interface through which the decision-maker can incorporate his or her own managerial insights.

The area also considers group decision making, collaborative systems and AI support.

GOAL

The student will learn to develop these support systems to address targeted, partially structured management problems using a combination of models (from simple heuristics to complex neural networks) and user interfaces through which the decision-maker can incorporate his or her own managerial insights.

The specific aims of the subject are:

The student will learn to apply a particular DSS framework based on intelligence, design, modeling, and deployment phases.

The student will learn to understand, define, and use models, particularly in the context of machine learning, to support decision making and strategic planning.

The student will learn to apply models on specific cases though case studies

The student will also reflect and learn to be more aware of DSS implementation issues like ethics, privacy and change management (within organizations and from the perspective of the broader society).

PRIOR KNOWLEDGE

Statistics. Algebra. Calculus. Excel.

COURSE SYLLABUS

The course will cover a framework to analyze and deploy DSS systems, the models that support these systems and the application to specific problems through case studies.

Cases:
-Transportation
-Healthcare
-Industry
-Hospitality
-Legal

Models:
-Formulas and heuristics
-Decision trees
-Simulations

-Optimizations
-Machine learning

EDUCATION ACTIVITIES

The teacher will blend theory and practice.

In class activities:
- Master classes
- Cases: we will follow a Flipped Classroom methodology. The student is expected to have read the case and be prepared for active participation in class. Being not prepared for a case will impact the in-class activity grade severely
- Problem based learning (ABL, ABP): an introductory class be structured around a particular video/game presented in class.
- Assignments and Quizzes: There will be several graded quizzes throughout the term. The quizzes will be structured as multiple-choice or essay questions and short so that they can be completed in class. Questions will refer to key concepts or cases discussed in earlier classes, or to be discussed in the following class. The idea of the quizzes to provide early feedback both to the student and the professor.

Out of class activities:
- Individual work will be required to prepare the class by reading the corresponding sections of the textbook and cases.
- Reading of articles and cases

DISTRIBUTION OF WORK TIME

CLASSROOM-BASED ACTIVITY	INDEPENDENT STUDY/OUT-OF-CLASSROOM ACTIVITY
30 hours	45 hours

SKILLS

Basic Skills

Students must have demonstrated knowledge and understanding in an area of study that is founded on general secondary education. Moreover, the area of study is typically at a level that includes certain aspects implying knowledge at the forefront of its field of study, albeit supported by advanced textbooks

Students must be able to apply their knowledge to their work or vocation in a professional manner and possess skills that can typically be demonstrated by coming up with and sustaining arguments and solving problems within their field of study

Students must have the ability to gather and interpret relevant data (usually within their field of study) in order to make judgments that include reflections on pertinent social, scientific or ethical issues

Students must be able to convey information, ideas, problems and solutions to both an expert and non-expert audience

Students must have developed the learning skills needed to undertake further study with a high degree of independence

General Skills

Capacity for communicating in a native or foreign language in the information society.

Capacity for critical, self-critical, analytical and reflexive thought.

Specific skills

Know and understand the basic principles of business analytics and its essential concepts and tools, geared towards identifying and assessing opportunities in all the functional areas of the business: general and strategic management, human resources, finance, marketing, production and operations.

Know how to identify and resolve real business problems through advanced data analysis and the selection of the correct techniques for decision-making.

Know how to manage quantative and computer tools for decision-making.

LEARNING RESULTS

Understand representations of complex business environments

Capacity to understand, develop and use models to support managerial decision making and strategic planning.

Understand and be aware of the DSS implementation issues like ethics, privacy and change management (within organizations and from the perspective of the broader society).

Understand how a decision-maker can incorporate his or her own managerial insights to the result of models to identify and evaluate business opportunities.

LEARNING APPRAISAL SYSTEM

Evaluation items, ordinary call:
[1] Written exam covering theory and practice: 50% of the final grade
[2] In class activities and quizzes: 15% of the final grade
[3] Assignments (individual work based on case): 30% of the final grade
[4] Participation (5%) of the final grade
Criteria to pass:
- At least a 5 (out of 10) in the written exam
- At least an average grade of 5 (out of 10) in the weighted average of in class activities [2] and assignments [3]
Assignments will have a due date. Students can submit late after this due date and up one week after the due date, but the grade of the late assignments will be reduced daily by 5% as a penalty, up to a maximum of 35%. No submissions will be allowed after 1 week.
Presenting all assignments and class quizzes is not a requirement, but the grade of a missed assignment will be zero and will be averaged with the rest of the submissions.
Alternative evaluation system:
For students with an approved academic waiver or UFV students participating in an exchange program: student may obtain an academic waiver for reasons of work, incompatibility of schedules, illness or others deemed by the Career Directorate, from the Academic Coordination Office, providing the required documentation. Once granted, both the affected teacher and the student who has requested it from the Office of Academic Affairs (“Coordinación Académica”) will be officially notified. In any case, it is the student's responsibility to be aware and follow the requirements of the course, as well as its evaluation system.
For students in second or successive enrollments: these students may benefit from the continuous assessment system, as long as they meet all the requirements, including class attendance. Otherwise, they must follow the alternative evaluation system. They don’t need to file the request for an academic waiver, but they must notify the corresponding professor by email so that they can take the alternative evaluation system into account.
Students, who are exempt from the obligation to attend class, either because of the second or successive enrollments, or because they have express authorization from the Direction of the Degree, will be evaluated using the same evaluation system. 5% of class participation may be obtained by attending at least three tutorials with the teacher responsible for the course.
Evaluation extraordinary call:
Students who have not reached the minimum grade in the exam [1], having therefore failed in the ordinary call, may opt to retake the exam in the extraordinary call.
Students who have not reached the minimum grade in the average of class activities and practices ([2] and [3]), having therefore failed in the ordinary call, may opt for the resubmit assignments in the extraordinary call. Students who fail one or both parts in the extraordinary call will have to retake the course in its entirety (all parts) in the new ordinary call.
Plagiarism: Plagiarism, as well as the use of illegitimate means in the evaluation tests, will be sanctioned in accordance with the provisions of the Evaluation Regulations and the University's Coexistence Regulations.

BIBLIOGRAPHY AND OTHER RESOURCES

Basic

Power, D. J., & Heavin, C. Decision support, analytics, and business intelligence 2017

Additional

Aronson, J. E., Liang, T. P., & MacCarthy, R. V. Decision support systems and intelligent systems (Vol. 4) 2005