

COURSE OUTLINE

1. GENERAL

SCHOOL	BUSINESS AND ECONOMICS		
DEPARTMENT	BUSINESS ADMINISTRATION		
DIVISION	BUSINESS ADMINISTRATION		
LEVEL OF STUDY	UNDERGRADUATE		
COURSE UNIT CODE	1107617	SEMESTER OF STUDY	6
COURSE TITLE	Decision Support Systems		
COURSEWORK BREAKDOWN		TEACHING WEEKLY HOURS	ECTS Credits
Lectures and Workshops-Project Work		5	5
COURSE UNIT TYPE	SPECIALISATION		
PREREQUISITES :	-		
LANGUAGE OF INSTRUCTION/EXAMS:	GREEK		
COURSE DELIVERED TO ERASMUS STUDENTS	Yes (in English)		
MODULE WEB PAGE (URL)	http://moodle.teipir.gr/course/view.php?id=108		

2. LEARNING OUTCOMES

Learning Outcomes

This course is designed to introduce the student to the principles, techniques and tools for modelling and solving decision making problems. The course highlighted and documented, by using the necessary rigor and instructive examples, all the major modern techniques and methodologies used at international level, incorporating certainty or uncertainty, such as ELECTRE and PROMETHEE methods, multicriteria value/utility theory . It provides insight into methods of quantitative and qualitative analysis for the effective handling of "real world" decision problems. Also it explains the principles of the theory of multicriteria analysis and its role in the Decision Support process. The course aims to equip students with a comprehensive understanding of the scientific approach to decision making, to understand the role of science in exercise effective management, but also the art of applying the theory in practice.

At the end of the course including lectures, assignments and practical exercises using original software packages decision support (DSS), students will be able to analyse a decision problem in terms of design alternatives, selection criteria and probabilistic situations, to choose the appropriate model for solving the problem and the corresponding DSS for support and documentation of the final selection.

Upon successful completion of this course the student will be able to:

- Understand the process of modelling a problem and the process of making a decision based on one or more criteria
- Combine decision-making methods in the presence of conditions leading to known or/and

- unknown (probabilistic) outcome and how to use these methods
- Apply the decision-making techniques in group decision making
- Exploit the use of specific software to actively support multicriteria decision making to operational problems
- Define the process of applying innovative approaches and relevant knowledge to investigate problems , evaluate alternative actions, and making suggestions
- Design and support the development of user-friendly and comprehensive Decision Support Systems

General Skills

- Search, analysis and synthesis of data and information with the use of new technologies
- Decision-making
- Individual Work
- Teamwork

3. COURSE CONTENTS

- Introduction and overview of Decision Models
- Decision problems anatomy
- General Modelling Methodology
- Introductory Examples of Modelling
- The notion of preference
- Consistent family of criteria
- Criteria weights elicitation
- Simple Models of Discrete Decision
- Lexicographical Method
- Value Functions
- ELECTRE Multicriteria Methods
- PROMETHEE Methods
- Aggregation-disaggregation approach
- UTA Methods and MINORA System
- Decision Making under uncertainty
- Group Decision-making processes
- Principles of Decision Support Systems - Design - Development Process - Subsystems
- Database Management Systems
- Artificial Intelligence & Expert Systems
- Knowledge-based Decision Support Systems
- Group Decision Support Systems

4. TEACHING METHODS - ASSESSMENT

MODE OF DELIVERY	In-Class
USE OF INFORMATION AND COMMUNICATION TECHNOLOGY	<p>Use of ICT in Teaching: Spreadsheets software MS Office Excel, MINORA System, MUSA System. Support of the learning process through the e-class platform (Moodle).</p> <p>#</p> <p>Use of ICT in Communication: Communication with students is supported through the use of email. Use of the PUAS e-learning platform.</p>

TEACHING METHODS	<i>Method description</i>	<i>Semester Workload</i>
	Lectures	39
	Class Work/WorkShops	26
	Preparation of Individual Project	20
	Independent and Directed Learning	40
	Total	125
ASSESSMENT METHODS	<p>Language Assessment: Greek</p> <p>Final Examination (70%) (Summative Evaluation) includes:</p> <ul style="list-style-type: none"> - Modelling and solving "real world" decision problems <ul style="list-style-type: none"> • <u>Evaluation Objective:</u> The examination of understanding on how modelling and solving decision problems. • <u>Evaluation Criteria:</u> Proper implementation methodologies and practices in problems modelling, , the degree of the analysis of the proposed model, the presentation of the proposed solution.. - Open questions on various issues - approaches in Decision Support Systems. <ul style="list-style-type: none"> • <u>Evaluation Objective:</u> The examination of knowledge concerning the fundamentals of the course. • <u>Evaluation Criteria:</u> Accuracy, completeness, clarity and critical approach of responses <p>Individual Project (30 %). Modelling and solving two "real world" decision problems.</p> <ul style="list-style-type: none"> ▪ <u>Evaluation Objective:</u> The examination of skills developed by students in dealing with methods and tools for modelling and solving decision problems with multiple criteria. ▪ <u>Evaluation Criteria:</u> The degree of understanding of the modelling process, the perception of the actual dimensions of a decision problem, the ability to effectively apply methods of modelling and problem solving, the ability to use problem-solving tools, the written report, the content, the design and presentation thereof. 	

5. RESOURCES

Recommended Books:

1. Siskos Y., (2008), Decision Models, New Technologies Publications (in Greek)
2. Matsatsinis N. (2010), Decision Support Systems, New Technologies Publications (in Greek)
3. Siskos Y. (200), Decision Models, New Technologies Publications, 2nd Edition. (in Greek)
4. Figueira J., S. Greco and M. Ehrgott (2005) Multiple Criteria Decision Analysis: State of the Art Surveys, Springer.
5. Boy B.,(1985) Methods Multicriteres d'Aide a la decision Economica
6. G. Prastakos (2000), Management Science: operational decisions in the Information Society, Stamoulis, 2000 (in Greek)

Journal Article Resources:

1. European Journal of Operational Research – Elsevier
2. OPERATIONAL RESEARCH An International Journal - Springer
3. Operations Research – INFORMS
4. Management Science – INFORMS
5. Computers & Operations Research - Elsevier
6. EURO Journal on Decision Processes - Springer