

1. GENERAL

SCHOOL	ENGINEERING		
DEPARTMENT	PRODUCT AND SYSTEMS DESIGN ENGINEERING		
LEVEL OF STUDIES	UNDER GRADUATE		
COURSE CODE	4103	SEMESTER	7th
COURSE TITLE	FUZZY LOGIC SYSTEMS		
INDEPENDENT TEACHING ACTIVITIES <i>if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits</i>	WEEKLY TEACHING HOURS	CREDITS	
Lectures	3	6	
Laboratory			
<i>Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).</i>			
COURSE TYPE <i>general background, special background, specialised general knowledge, skills development</i>	Specialised general knowledge		
PREREQUISITE COURSES:			
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK/ENGLISH		
COURSE DELIVERED TO ERASMUS STUDENTS	YES		
MODULE WEB PAGE (URL)	https://eclass.uowm.gr/courses/MRE268		

2. LEARNING OUTCOMES

Learning outcomes
<p>The course deals with the following topics: Transition from crisp sets to fuzzy sets. Union, section and complement of obscure sets. Fuzzy numbers and arithmetic operations with them. Fuzzy relationships of equivalence, compatibility, ranking. Vague logic. Information and uncertainty, principles of uncertainty. Fuzzy systems, systems control based on fuzzy logic.</p> <p>Upon successful completion of the course, the student should be able to:</p> <ul style="list-style-type: none"> • Describe the philosophy, the basic concepts and the principles of Fuzzy Logic. • Understand the grounds of fuzzy set theory and how to apply the logic of fuzzy sets.
General Skills
<p>This course aims to give students the necessary theoretical background for the analysis of algorithms, basic knowledge for the development of algorithms, as well as expertise for object-oriented implementation of algorithms.</p>

3. COURSE CONTENTS

- Introduction to Fuzzy Logic
- Algebra of fuzzy sets
- Fuzzy Arithmetic
- Geometry of Fuzzy Sets
- Applications of Fuzzy Logic in Technology (Fuzzy Systems, fuzzy control methodology)

4. TEACHING METHODS - ASSESSMENT

MODE OF DELIVERY	1. THEORY In class, face to face										
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY	<ul style="list-style-type: none"> ● Use of appropriate software ● Video and slide presentations via projector ● Support of teaching process via the electronic platform e-class 										
TEACHING METHODS	<table border="1"> <thead> <tr> <th style="background-color: #cccccc;"><i>Activity</i></th> <th style="background-color: #cccccc;"><i>Semester workload</i></th> </tr> </thead> <tbody> <tr> <td>Lectures</td> <td>50</td> </tr> <tr> <td>Homework</td> <td>50</td> </tr> <tr> <td>Non-directed study</td> <td>50</td> </tr> <tr> <td>Course total</td> <td>150</td> </tr> </tbody> </table>	<i>Activity</i>	<i>Semester workload</i>	Lectures	50	Homework	50	Non-directed study	50	Course total	150
<i>Activity</i>	<i>Semester workload</i>										
Lectures	50										
Homework	50										
Non-directed study	50										
Course total	150										
ASSESSMENT METHODS	<ol style="list-style-type: none"> 1. (60%) Final written exam which includes: <ol style="list-style-type: none"> i. Short-answer questions ii. Multiple choice questions iii. Problem solving 2. (40%) Homework 										

5. ATTACHED

- *Suggested bibliography:*

- **ΕΙΣΑΓΩΓΗ ΣΤΗΝ ΑΣΑΦΗ ΛΟΓΙΚΗ (Fuzzy Logic), Γιάννης Α. Θεοδώρου, Εκδόσεις Τζιόλα, (ISBN: 978-60-418-218-3), Θεσσαλονίκη 2010.**
- **An Introduction to Fuzzy Logic Applications in Intelligent Systems, Lotfi Zadeh, R. Yager, Kluwer academic Publishers, 1993.**