1. GENERAL

SCHOOL	ENGINEERING		
DEPARTMENT	PRODUCT AND SYSTEMS DESIGN ENGINEERING		
LEVEL OF STUDIES	UNDER GRADUATE		
COURSE CODE	**4106**	**SEMESTER**	**8th**
COURSE TITLE	**ARTIFICIAL INTELLIGENCE**		

INDEPENDENT TEACHING ACTIVITIES *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*	**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures	**3**	**6**
Laboratory		
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialised general knowledge, skills development*	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/MRE265

2. LEARNING OUTCOMES

Learning outcomes

Artificial Intelligence is the field of computer science that deals with the design of intelligent computer systems, i.e., systems that exhibit features related to intelligence in human behavior. The course introduces the structure of intelligent agents and examines problem solving with search methods (uninformed or blind search as well as informed search), the search for solutions to constraint satisfaction problems and the search for successful actions in rivalry problems (e.g., games between two opponents). Also, the methods of representation of knowledge and reasoning are presented, where the propositional logic, the first-order predicate calculus, inference in the first-order calculus and the concept of semantic networks are introduced. The problem of action planning is studied, and an introduction to probabilistic reasoning is also made examining the Bayesian networks and Markov chains.

Upon successful completion of the course, the student should be able to:

- Model problems as AI problems and select/use appropriate search algorithms to solve them.
- Represent knowledge by using methods of Logic and draw conclusions from it.
- Model and solve action planning/scheduling problems.

- Model probabilistic decision problems by using Bayes networks.

General Skills

This course aims to introduce the student to basic methodologies of representation and processing of knowledge and how he can use them in problems related to intelligent behavior, such as finding solutions to combinatorial problems, knowledge representation and inference and also autonomous planning of actions.

3. COURSE CONTENTS

- Problem Representation – Search Trees
- Problem Solving Techniques based on Blind (Uninformed) Search
- Problem Solving Techniques based on Informed Search
- Constraint Satisfaction Problems
- Adversarial Search
- Propositional Logic
- First-Order Predicate Calculus
- Reasoning in First First-Order Logic
- Knowledge Representation
- Automated Planning
- Probabilistic Reasoning
- Decision making

4. TEACHING METHODS - ASSESSMENT

MODE OFDELIVERY	1. THEORY In class, face to face
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY	● Use of appropriate software ● Video and slide presentations via projector ● Support of teaching process via the electronic platform e-class
TEACHING METHODS	
ASSESSMENT METHODS	1. (60%) Final written exam which includes: i. Short-answer questions ii. Multiple choice questions iii. Problem solving 2. (40%) Homework

Activity	*Semester workload*
Lectures	50
Homework	50
Non-directed study	50
Course total	**150**

5. ATTACHED

- Suggested bibliography:

- **Ι.Βλαχάβας, Π.Κεφαλάς, Ν.Βασιλειάδης,Φ.Κόκκορας, Η.Σακελλαρίου, 2011, Τεχνητή Νοημοσύνη (4η Έκδοση), Εκδότης: ΠΑΝΕΠΙΣΤΗΜΙΟ ΜΑΚΕΔΟΝΙΑΣ, ISBN: 978-6185196448**

- **Stuart J. Russell and Peter Norvig, 2005, Τεχνητή Νοημοσύνη: Μία Σύγχρονη Προσέγγιση (2η Αμερικάνικη Έκδοση), Κλειδάριθμος, ISBN: 978-9602098738**

- **Stuart J. Russell and Peter Norvig, 2020, Artificial Intelligence: A Modern Approach (4th Edition), Pearson, ISBN: 978-0134610993**