

## COURSE OUTLINE

### (1) GENERAL

<b>SCHOOL</b>	Social Sciences		
<b>ACADEMIC UNIT</b>	Cultural Technology and Communication		
<b>LEVEL OF STUDIES</b>	Undergraduate		
<b>COURSE CODE</b>	4 PLR 125	<b>SEMESTER</b>	5
<b>COURSE TITLE</b>	ARTIFICIAL INTELLIGENCE		
<b>INDEPENDENT TEACHING ACTIVITIES</b> <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>	<b>WEEKLY TEACHING HOURS</b>	<b>CREDITS</b>	
Lectures	2	3	
Laboratories	2	2	
<i>Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).</i>	4	5	
<b>COURSE TYPE</b> <i>general background, special background, specialised general knowledge, skills development</i>	Core Course/General Background		
<b>PREREQUISITE COURSES:</b>	None		
<b>LANGUAGE OF INSTRUCTION and EXAMINATIONS:</b>	Greek		
<b>IS THE COURSE OFFERED TO ERASMUS STUDENTS</b>	Yes		
<b>COURSE WEBSITE (URL)</b>	<a href="https://eclass.aegean.gr/courses/131194/">https://eclass.aegean.gr/courses/131194/</a>		

### (2) LEARNING OUTCOMES

<p><b>Learning outcomes</b></p> <p><i>The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.</i></p> <p><i>Consult Appendix A</i></p> <ul style="list-style-type: none"> <li>● <i>Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area</i></li> <li>● <i>Descriptors for Levels 6, 7 &amp; 8 of the European Qualifications Framework for Lifelong Learning and Appendix B</i></li> <li>● <i>Guidelines for writing Learning Outcomes</i></li> </ul>														
<p>The students will be in the position to:</p> <ul style="list-style-type: none"> <li>● work with different searching algorithms</li> <li>● comprehend the knowledge representation techniques using predicate logic and rule systems</li> <li>● get familiar with the concept of conversational AI and unbiased AI</li> <li>● design and develop expert systems for simple educational problems</li> <li>● implement programs in the PROLOG.</li> </ul>														
<p><b>General Competences</b></p> <p><i>Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?</i></p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;"><i>Search for, analysis and synthesis of data and information, with the use of the necessary technology</i></td> <td style="width: 50%; border: none;"><i>Project planning and management</i></td> </tr> <tr> <td style="border: none;"><i>Adapting to new situations</i></td> <td style="border: none;"><i>Respect for difference and multiculturalism</i></td> </tr> <tr> <td style="border: none;"><i>Decision-making</i></td> <td style="border: none;"><i>Respect for the natural environment</i></td> </tr> <tr> <td style="border: none;"><i>Working independently</i></td> <td style="border: none;"><i>Showing social, professional and ethical responsibility and sensitivity to gender issues</i></td> </tr> <tr> <td style="border: none;"><i>Team work</i></td> <td style="border: none;"><i>Criticism and self-criticism</i></td> </tr> <tr> <td style="border: none;"><i>Working in an international environment</i></td> <td style="border: none;"><i>Production of free, creative and inductive thinking</i></td> </tr> <tr> <td style="border: none;"><i>Working in an interdisciplinary environment</i></td> <td style="border: none;"><i>.....</i></td> </tr> </table>	<i>Search for, analysis and synthesis of data and information, with the use of the necessary technology</i>	<i>Project planning and management</i>	<i>Adapting to new situations</i>	<i>Respect for difference and multiculturalism</i>	<i>Decision-making</i>	<i>Respect for the natural environment</i>	<i>Working independently</i>	<i>Showing social, professional and ethical responsibility and sensitivity to gender issues</i>	<i>Team work</i>	<i>Criticism and self-criticism</i>	<i>Working in an international environment</i>	<i>Production of free, creative and inductive thinking</i>	<i>Working in an interdisciplinary environment</i>	<i>.....</i>
<i>Search for, analysis and synthesis of data and information, with the use of the necessary technology</i>	<i>Project planning and management</i>													
<i>Adapting to new situations</i>	<i>Respect for difference and multiculturalism</i>													
<i>Decision-making</i>	<i>Respect for the natural environment</i>													
<i>Working independently</i>	<i>Showing social, professional and ethical responsibility and sensitivity to gender issues</i>													
<i>Team work</i>	<i>Criticism and self-criticism</i>													
<i>Working in an international environment</i>	<i>Production of free, creative and inductive thinking</i>													
<i>Working in an interdisciplinary environment</i>	<i>.....</i>													

- Search for, analysis and synthesis of data and information, with the use of the necessary technology
- Adapting to new situations
- Decision-making
- Working independently
- Team work
- Project planning and management
- Production of free, creative and inductive thinking
- Working in an interdisciplinary environment

**(3) SYLLABUS**

The course objective is to analyze a number of subjects, which constitute the very core of Artificial Intelligence. These subjects are summarized as follows: (1) problem resolving using searching algorithms, (2) introductory issues that concern the intelligent agents, (3) propositional and categorical logic, (4) knowledge representation and rule based systems, (5) basic structure of expert systems.

The course is structured as follows:

1. Introduction in Artificial Intelligence
2. Problem description and solution in State Space
3. Problem description and solution using the Induction method
4. Propositional logic
5. Categorical logic
6. Depth first search algorithm
7. Breadth first search algorithm
8. Informative search
9. Knowledge representation-knowledge based rule systems
10. Expert systems
11. Conversational AI
12. Unbiased AI
13. Summary and identification of the key points

#### (4) TEACHING and LEARNING METHODS - EVALUATION

<p style="text-align: center;"><b>DELIVERY</b> <i>Face-to-face, Distance learning, etc.</i></p>	Face-to-face																									
<p style="text-align: center;"><b>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY</b> <i>Use of ICT in teaching, laboratory education, communication with students</i></p>	Use of PROLOG software and open source software (such as Python and Anaconda) for laboratory education.																									
<p style="text-align: center;"><b>TEACHING METHODS</b> <i>The manner and methods of teaching are described in detail. Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.</i></p> <p><i>The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS</i></p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;"><i>Activity</i></th> <th style="text-align: center;"><i>Semester workload</i></th> </tr> </thead> <tbody> <tr> <td>Lectures</td> <td style="text-align: center;">13 *2 hours =26 hours</td> </tr> <tr> <td>Lectures' study</td> <td style="text-align: center;">13*5 hours = 65 hours</td> </tr> <tr> <td>Laboratory Practice</td> <td style="text-align: center;">13*2 = 26 hours</td> </tr> <tr> <td>Laboratory Preparation and semester assignment</td> <td style="text-align: center;">33 hours</td> </tr> <tr> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> </tr> <tr> <td>Course total</td> <td style="text-align: center;"><b>150 hours</b></td> </tr> </tbody> </table>		<i>Activity</i>	<i>Semester workload</i>	Lectures	13 *2 hours =26 hours	Lectures' study	13*5 hours = 65 hours	Laboratory Practice	13*2 = 26 hours	Laboratory Preparation and semester assignment	33 hours													Course total	<b>150 hours</b>
<i>Activity</i>	<i>Semester workload</i>																									
Lectures	13 *2 hours =26 hours																									
Lectures' study	13*5 hours = 65 hours																									
Laboratory Practice	13*2 = 26 hours																									
Laboratory Preparation and semester assignment	33 hours																									
Course total	<b>150 hours</b>																									
<p style="text-align: center;"><b>STUDENT PERFORMANCE EVALUATION</b> <i>Description of the evaluation procedure</i></p> <p><i>Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other</i></p> <p><i>Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</i></p>	<p>The final examination is the main tool to evaluate student's performance. In this exam the student gets involved in solving complex programming problems.</p> <p>During semester, each student is also invited to carry out optional homework tests. If the student accepts the invitation, these tests will be positively considered in student's final evaluation.</p> <p>The evaluation criteria are clearly announced during the first lecture and in the e-class web site.</p>																									

#### (5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

- S. Russell, and P. Norvig, "Τεχνητή Νοημοσύνη", PrenticeHall, 2003 (Ελληνική Έκδοση: Κλειδάριθμος)
- Ι. Βλαχάβας, Π. Κεφαλάς, Ν. Βασιλειάδης, Φ. Κόκκορας, Η. Σακελλαρίου, "Τεχνητή Νοημοσύνη", Εκδόσεις Πανεπιστημίου Μακεδονίας, 2011.