

INSTITUTION	NATIONAL AND KAPODISTRIAN UNIVERSITY OF ATHENS																			
SCHOOL	SCHOOL OF SCIENCE																			
DEPARTMENT	INFORMATICS AND TELECOMMUNICATIONS																			
COURSE LEVEL	UNDERGRADUATE																			
COURSE TITLE	Logic Programming																			
COURSE CODE	ΥΣ05	Semester	6	ECTS	6															
TEACHING HOURS per week	THEORY	3	SEMINAR.	1	LABORATORY															
COURSE TYPE	Select one of the following and delete the rest Electives (ΠΜ) <table border="1" style="margin-left: 20px;"> <tr> <td>K</td> <td>E1</td> <td>E2</td> <td>E3</td> <td>E4</td> <td>E5</td> <td>E6</td> </tr> <tr> <td>A</td> <td></td> <td>B</td> <td>E</td> <td></td> <td></td> <td></td> </tr> </table>						K	E1	E2	E3	E4	E5	E6	A		B	E			
K	E1	E2	E3	E4	E5	E6														
A		B	E																	
URL	https://eclass.uoa.gr/courses/D51/																			
EXPECTED PRIOR KNOWLEDGE/ PREREQUISITES AND PREPARATION:	Recommended K08 – Data Structures																			
TEACHING AND EXAMINATIONS LANGUAGE:	GREEK																			
THE COURSE IS OFFERED TO ERASMUS STUDENTS	NO																			

COURSE CONTENT
<p>Procedural and declarative programming. Logic programming as an instance of declarative programming. The Prolog programming language. Syntax of programs. Lists. Operators. Arithmetic. Control of backtracking. Negation in Prolog. Built-in predicates. Handling of data structures. Applications of Prolog in search problems, symbolic processing, natural language understanding and meta-programming. Expert systems and logic programming. Theory of logic programming. Interpretations and models. Model theoretic semantics. Fixpoint semantics. Unification. SLD-resolution. Operational semantics. Constraint logic programming. Implementation techniques of logic programming systems. Parallel logic programming. Logic programming for knowledge representation. Knowledge representation – methodologies and implementations using Prolog. Knowledge-based systems – the expert systems case. Deductive databases – the Datalog case. Logic programming and theWorld WideWeb.</p>

STUDENT LEARNING OBJECTIVES

Expected Learning Outcomes

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

- Program in prolog using logic programming principles
- Program in constraint programming environments
- Explain what a specific logic program does
- Present the theory of logic programming
- Present the main ideas of the logic programming implementations
- Explain the behavior of a specific program in constraint logic programming
- Present the principles of knowledge representation and how logic programming can be used to represent knowledge

TEACHING AND LEARNING METHODS - ASSESSMENT

TEACHING METHOD	In Class (Face to Face)								
USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES	Learning process supported by web site page where all course material is uploaded as well as the course of the lectures Mailing list, Announcements, Task assignments, Email communication Ability to track recorded lectures								
TEACHING ORGANIZATION <i>Describe in detail the way and methods of teaching:</i> Enhanced Lectures, Online Lectures, Seminars, Tutorial, Laboratory, Laboratory Exercise, Study & analysis of literature, Practice (Positioning), Interactive teaching, Developing a project, Individual / group work Telework (reference to tools) etc. <i>Details of the student's study hours for each learning activity and hours of non-guided study are shown to ensure that the total workload at the semester corresponds to the ECTS</i>	During the lectures, slides are used as well as program code which is explained and executed to illustrate the theory. Any time during the semester, students can express any questions or views about the theory or the assignments into the course's mailing list. <table border="1"> <thead> <tr> <th>Activity</th> <th>Student Workload (hours)</th> </tr> </thead> <tbody> <tr> <td>Lectures + Tutorials</td> <td>52</td> </tr> <tr> <td>Individual exercises + Independent Study</td> <td>98</td> </tr> <tr> <td>Total Course</td> <td>150</td> </tr> </tbody> </table>	Activity	Student Workload (hours)	Lectures + Tutorials	52	Individual exercises + Independent Study	98	Total Course	150
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ASSESSMENT OF STUDENTS

Description of the assessment process

Assessment Methods, Formative or Concluding, Multiple Choice Test, Quick Response Questions, Test Development Questions, Problem Solving, Written Work, Report / Report, Oral Examination, Public Presentation, Laboratory Work, Other / Other

Fully defined evaluation criteria are mentioned and if and where they are accessible to students.

The requirements of the course consist of a written exam plus a sequence of practical work assignments submitted in the course of the semester. A pass mark should be reached in the written examination, in any case.

Assessment methods	Number	Percentage
Written examination	1	60%
Exercises	7	40%

LITERATURE AND STUDY MATERIALS / READING LIST

Panagiotis Stamatopoulos, Isambo Karali, "Logic Programming: Lecture Notes", 2011.

Panagiotis Stamatopoulos, "Logic and Functional Programming", Hellenic Academic Libraries Link, 2016.

<http://hdl.handle.net/11419/3587>.