COURSE OUTLINE

(1) GENERAL

SCHOOL	Engineering				
DEPARTMENT	Electrical and Computer Engineering				
LEVEL OF STUDY	Undergraduate				
COURSE UNIT CODE	7.021	SEMEST	SEMESTER OF STUDY 7 th		
COURSE TITLE	Logic Programming				
COURSEWORK BRE	REAKDOWN		TEACHING WEEKLY HOURS		ECTS Credits
Lectures and Exercises		5		4	
				_	
TOTAL		5		4	
COURSE UNIT TYPE	Special Background				
PREREQUISITES	None				
LANGUAGE OF	Greek				
INSTRUCTION/EXAMS					
COURSE DELIVERED TO ERASMUS	No				
STUDENTS					
WEB PAGE (URL)	https://eclass.hmu.gr/courses/TP314/				

(2) LEARNING OUTCOMES

Learning Outcomes

Upon successful completion of the course the student will acquire the following scientific knowledge, skills and abilities of the appropriate level.

Familiarity with the basic principles of Computational Logic. Understanding Logic programming and its applications. Familiarity with the use of logic as a programming language. Understanding the Prolog programming language.

Acquisition of the ability to represent problems in logic and solve them. Familiarity with the development of applications following the Logic Programming approach. Acquisition of programming skills in Prolog for solving practical problems.

General Skills

The course aims to acquire, by the graduate, the following general skills:

- Search, analysis and synthesis of data and information, using the necessary technologies.
- Adaptation to new situations.
- Autonomous work.
- Teamwork.
- Work in an interdisciplinary environment.
- Production of new research ideas.
- Promoting free, creative and inductive thinking.
- Application of knowledge in practice.

(3) SYLLABUS

- Formulas and their truth, logical equivalences and transformations of formulas into regular forms in propositional calculus. Semantic consistency, deriving conclusions and resolution in propositional calculus.
- Syntactic components of predicate calculus. Interpretation of sentences, semantic consistency, logical equivalences, transformations of formulas into regular forms and deriving conclusions in predicate calculus.
- Substitution. Unification.
- The resolution in predicate calculus. SLD-Resolution and SLD trees.
- Definite logic programs.
- Negation in logic programming.
- Normal logic programs.
- General logic programs.
- Basic components of a Prolog program. Unification, Equality. Input and output predicates.
- Recursion. Lists. Arithmetic in Prolog. Call mode of a predicate. Structure construction in the head and in the body of clauses.
- Search Tree, backtracking and Cut (!). Negation in Prolog. Control flow in Prolog programs.
- User-defined operators.
- Embedded predicates: (Input from a file and output to a file. Metalogical predicates. Predicates that collect all solutions of a goal. Program update predicates. Other embedded predicates.).
- Data Structures in Prolog. Programming techniques.
- Applications of Logic Programming.

(4) TEACHING METHODS - ASSESSMENT

MODE OF DELIVERY	In-Class Face-to-Face		
WIODE OF BELIVERY	in class race to race		
USE OF INFORMATION AND	Use of ICT in lectures.		
COMMUNICATION TECHNOLOGY	Use of ICT in labs.		
	Use of ICT in communicating with students through the		
	electronic platform e-class.		
TEACHING ORGANISATION	Method description /		
	Activity	Semester Workload	
	Lectures	52	
	Lab	13	
	Independent study	55	
	Total Contact Hours	120	
ASSESSMENT METHODS	Language of Assessment: Gre	ek	
ASSESSMENT METHODS	Language of Assessment: Gre	ek	
ASSESSMENT METHODS	Language of Assessment: Gre Evaluation methods:	ek	
ASSESSMENT METHODS	Evaluation methods:		
ASSESSMENT METHODS			
ASSESSMENT METHODS	Evaluation methods: 1.Written final exam (70%		
ASSESSMENT METHODS	Evaluation methods: 1.Written final exam (70%) • problem solving.	5)	
ASSESSMENT METHODS	Evaluation methods: 1.Written final exam (70% • problem solving. 2.Mid-term exam 30%.	5)	
ASSESSMENT METHODS	Evaluation methods: 1.Written final exam (70% • problem solving. 2.Mid-term exam 30%. 3.Written examination extended answers.	with questions requiring	
ASSESSMENT METHODS	Evaluation methods: 1.Written final exam (70% • problem solving. 2.Mid-term exam 30%. 3.Written examination	with questions requiring	
ASSESSMENT METHODS	Evaluation methods: 1.Written final exam (70% • problem solving. 2.Mid-term exam 30%. 3.Written examination extended answers. 4. Evaluation of written la 5. Written teamwork.	with questions requiring boratory exercises.	
ASSESSMENT METHODS	Evaluation methods: 1.Written final exam (70% • problem solving. 2.Mid-term exam 30%. 3.Written examination extended answers. 4. Evaluation of written la 5. Written teamwork. 6. Written individual assig	with questions requiring boratory exercises.	
ASSESSMENT METHODS	Evaluation methods: 1.Written final exam (70% • problem solving. 2.Mid-term exam 30%. 3.Written examination extended answers. 4. Evaluation of written la 5. Written teamwork.	with questions requiring boratory exercises.	

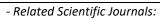
(5) RECOMMENDED BIBLIOGRAPHY

In Greek

- 1. M. Marakakis, Prolog: Programming in Logic for Artificial Intelligence, New Technologies Publications, 2nd edition, 2019, ISBN: 978-960-578-055-5.
- 2. H. Sakellariou, N. Vasiliadis, P. Kefalas, D. Stamatis, Techniques of Logic Programming, The Language Prolog, Greek Academic Textbooks and Aids, www.kallipos.gr, Hellenic Academic Libraries Association, 2015, ISBN: 978-960-603-246-2.
- 3. G. Mitakidis, From Logic to Logic Programming, Kardamitsa Publications, 1992, ISBN: 960-7262-59-X.

In English

- 1. I. Bratko, Prolog Programming for Artificial Intelligence, Pearson Education Canada, 4th edition, 2011, ISBN 13: 9780321417466.
- 2. U. Nilsson and J. Maluszynski, Logic, Programming and Prolog, Second edition, John Wiley & Sons, 1995, ISBN: 0 471 95996 0.



- 1. Theory and Practice of Logic Programming, Cambridge University Press.
- 2. ACM Transactions on Computational Logic, ACM.
- 3. New generation computing, Springer.