

1. GENERAL

SCHOOL	ENGINEERING		
DEPARTMENT	PRODUCT AND SYSTEMS DESIGN ENGINEERING		
LEVEL OF STUDIES	UNDER GRADUATE		
COURSE CODE	5103	SEMESTER	9th
COURSE TITLE	NATURAL LANGUAGE PROCESSING		
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/MRE2--		

2. LEARNING OUTCOMES

Learning outcomes
<p>The ability to chat with a computer has always been one of the dreams of human-computer interaction. Natural language processing (speech comprehension, voice synthesis, automatic translation) is a very important feature that greatly enhances the effectiveness of an interactive system that operates as an interface between a human and a device. The aim of this course is to present the basic principles on topics such as speech processing, syntactic and semantic analysis of speech, morphology of speech, automatic translation, voice synthesis from text as well as all related technologies.</p> <p>Upon successful completion of the course, the student should:</p> <ul style="list-style-type: none"> • Understand the basic principles of Natural Language Processing (NLP) • Describes the stages of FG Processing • Gives examples of NLP applications • Use open source libraries for NLP • Understand the specific features of designing and using NLP interaction
General Skills
Theoretical background in computational linguistics and its applications.

3. COURSE CONTENTS

- Introduction and historical background
- Regular expressions
- Computational phonology and text-to-speech conversion
- Syntax analysis
- Types of grammars
- Semantic analysis
- Pragmatological analysis
- Dialogue agents
- Areas of application of natural language processing

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 • Support of teaching process via the electronic platform e-class 										
TEACHING METHODS	<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;">50</td> </tr> <tr> <td>Homework</td> <td style="text-align: center;">50</td> </tr> <tr> <td>Non-directed study</td> <td style="text-align: center;">50</td> </tr> <tr> <td>Course total</td> <td style="text-align: center;">150</td> </tr> </tbody> </table>	<i>Activity</i>	<i>Semester workload</i>	Lectures	50	Homework	50	Non-directed study	50	Course total	150
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Lectures	50										
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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

- Πούλος Μ. (2015), Σημασιολογική Επεξεργασία της Πληροφορίας, Ελληνικά Ακαδημαϊκά Συγγράμματα και Βοηθήματα
- Bird Steven, Klein Ewan & Loper Edward (2009) Natural Language Processing with Python: Analyzing Text with the Natural Language Toolkit, O'Reilly Media, 2009, <http://www.nltk.org/book/>
- Jurafsky, Daniel & Martin, James. (2008). Speech and Language Processing: An Introduction to Natural Language Processing, Computational Linguistics, and Speech Recognition (2nd edition), Prentice Hall. (<https://web.stanford.edu/~jurafsky/slp3/>)