32INSTITUTION	NATIONAL AND KAPODISTRIAN UNIVERSITY OF ATHENS					
SCHOOL	SCHOOL OF SCIENCE					
DEPARTMENT	INFORMATICS AND TELECOMMUNICATIONS					
COURSE LEVEL	GRADUATE					
COURSE TITLE	**Computational Linguistics and Natural Language Processsing and Processing and Management of Linguistic Resources**					
COURSE CODE	**C30**		**Semester**	**Spring**	**ECTS**	**6**
TEACHING HOURS per week	**THEORY**	**2**	**SEMINAR.**		**LABORATORY**	**1**
URL	https://eclass.uoa.gr/courses/DI525/					

COURSE CONTENT

Most of the course is taught by Dr. Haris Papageorgiou. The lectures given by Dr. Stella Markantonatou are marked explicitly.

The following subjects will be discussed:

1. Regular Expressions, Text Normalization and Edit Distance
2. Classification και Feedforward neural networks
3. Distributional Semantics & Vector Spaces – Embeddings
4. Language Models and Recurrent neural networks
5. Contextual Representations & Text Generation
6. Sequence Labeling, Named Entity Recognition/Extraction & Dependency Parsing
7. Argumentation Mining
8. Semantic Role Labeling, Argument Structure & Event Representations
9. Opinion Mining & Sentiment Analysis
10. Question Answering systems

SEMANTIC AND SYNTACTIC RESOURCES (S. Markantonatou)

1. WordNet, FrameNet
2. BabelNet, Controlled vocabularies and terminological resources: AAT, Langual
3. Treebanks: UPenn, AMR, PARSEME SHARED TASK

STUDENT LEARNING OBJECTIVES

Teaching-Learning Goals-Expected Learning Outcomes

- Students will be familiar with

  -the basic NLP methods, resources and tools

  -the most wide-spread methods of content building in knowledge bases

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

- Take advantage of important resources that have been developed for NLP purposes
- Adapt and develop new NLP methodologies aiming at innovative applications

TEACHING AND LEARNING METHODS - ASSESSMENT	
TEACHING METHOD	In Class (Face to Face)
USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES	Learning process supported by the e-class platform (Teaching material, Announcements, Task assignments, Student groups) Email communication Live transmission of lectures Utilization of Specialized Software
TEACHING ORGANIZATION *Describe in detail the way and methods of teaching:* *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.* *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*	**Activity** / ***Student Workload*** *(hours)* Lectures: 26 Laboratory: 13 MicroProject: 31 Teamwork in a case study: 40 Independent Study: 40 ***Total Course (25 hours of workload per unit of credit)***: ***150***
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.*	Describe explicitly methods, evaluation tools and provided feedback. The table below is supplemented accordingly. **Assessment methods** / ***Number*** / ***Percentage*** MicroProject: 1: 37% Teamwork (case studies): 4: 60% Participation: 3%

LITERATURE AND STUDY MATERIALS / READING LIST

- Dan Jurafsky and James H. Martin. 2020-2021 Speech and Language Processing (3rd ed. draft)
- Jacob Eisenstein.2019 Natural Language Processing
- Bender, Emily M. and Alex Lascarides. 2019. Linguistic Fundamentals for Natural Language Processing II: 100 Essentials from Semantics and Pragmatics. Synthesis Lectures on Human Language Technologies. Morgan & Claypool Publishers
- Yoav Goldberg.2017 A Primer on Neural Network Models for Natural Language Processing

SEMANTIC AND SYNTACTIC RESOURCES
WORDNET
Five papers (first four papers)
https://wordnetcode.princeton.edu/5papers.pdf

Jurafsky and Martin 19
https://web.stanford.edu/~jurafsky/slp3/19.pdf
https://www.aclweb.org/anthology/2020.mmw-1.3.pdf

FrameNet
https://framenet.icsi.berkeley.edu/fndrupal/CJFFNintroPPT
Fillmore Frame Semantics
https://d1wqtxts1xzle7.cloudfront.net/56172451/cognitive-linguistics-basics-readings-dirk-geeraerts.pdf?1522158117=&response-content-disposition=inline%3B+filename%3DCognitive_linguistics_basics_readings_di.pdf&Expires=1609069358&Signature=dqp7HLp8S7~MaJhNiUwiz-m2qmOSy6M2s71740by-9TFv1RBn4J4xg66uFZFuHIIsUo4cFmcT-JMr9bxtqo1FYuuqv1GGleD~Zs3kMS47Qy5rQaPXQnHv3q~EC190nJhLWc73ag~PcHKHQt9HKyiTaJ-rwzF1WqAnG0aW6acVhQu34MBJKyykhADgdlxS58ChNRDO4l5fsWoepjKf7dv7TaqAD1v2kh-tZYJHwslwibu3TOUxa9kQiz886TIPGUN--CFqPHVhn4Ez9LTuB4A42nct4EyLkkB7dSFuoxCSvXT1-4~swu0U-CaXbXyomDzoH1eEU1HdAM-GJcW8NTLBg__&Key-Pair-Id=APKAJLOHF5GGSLRBV4ZA#page=382
Framenet and WordNet as complementary resources
https://www.aclweb.org/anthology/W09-3021.pdf

FScore definition
https://deepai.org/machine-learning-glossary-and-terms/f-score
BabelNet
Reference BabelNet paper (up to page 235, first 19 pages)
http://wwwusers.di.uniroma1.it/~navigli/pubs/AIJ_2012_Navigli_Ponzetto.pdf

THESAURI
Stella G. Dextre Clarke. 2001.Thesaural Relationships. In Carol A. Bean and Rebecca Green (Eds) *Relationships in the organization of knowledge*. 2001 Springer Science+Business Media Dordrecht, 37-52
Controlled vocabularies
http://www.getty.edu/research/publications/electronic_publications/intro_controlled_vocab/
AAT and its company
https://www.getty.edu/research/tools/vocabularies/lod/index.html
Langual
https://www.langual.org/download/Presentation/LangualpresentationS202015-10-04.pdf

UPENN
Classical reference
https://www.researchgate.net/profile/Mitchell_Marcus/publication/2873803_The_Penn_Treebank_An_overview/links/00b49538272b5cb5b9000000/The-Penn-Treebank-An-overview.pdf
AMR
https://amr.isi.edu/a.pdf
PARSEME SHARED TASK
file:///C:/Users/marks/AppData/Local/Temp/204-3-1319-1-10-20181105.pdf