INSTITUTION	NATIONAL AND KAPODISTRIAN UNIVERSITY OF ATHENS					
SCHOOL	SCHOOL OF SCIENCE					
DEPARTMENT	INFORMATICS AND TELECOMMUNICATIONS					
COURSE LEVEL	GRADUATE					
COURSE TITLE	**Machine Translation**					
COURSE CODE	**C18**		**Semester**	**3**	**ECTS**	**6**
TEACHING HOURS per week	**THEORY**	**1**	**SEMINAR.**		**LABORATORY**	**2**
URL	https://eclass.uoa.gr/courses/DI531/					

COURSE CONTENT
This is a specialized course in Machine Translation and its recent developments. Students will be presented with the basic concept of Machine Translation and the main problems in creating a working system with appropriate performance.   A history of Machine Translation development will be presented, the recent developments in the field will be described, and the current key challenges will be shown. The most important paradigms will be discussed, including SMT (statistical machine translation), and NMT (Neural Machine Translation). Student involvement will include practical exercises including the development of an MT system from start (collection of training data) to finish (training and evaluation of the system).

STUDENT LEARNING OBJECTIVES
Upon successful completion of the course the student will be able to: • Describe the basic paradigms of machine translation. • Describe the components of a modern machine translation system. • Build a baseline neural machine translation system using existing open-source tools and resources. • Evaluate, both manually and using automatic evaluation methods, machine translation system output.

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 (Discussions, Announcements, Task assignments, Student groups) Email communication Live transmission of lectures Utilization of educational environments (e.g. Google Collab) Utilization of Specialized Software such as (indicatively) pytorch, Tensorflow

TEACHING ORGANIZATION *Describe in detail the way and methods of teaching:* *Enhanced Lectures,* *Online Lectures,* *Seminars,*	**Activity**	**Student Workload** *(hours)*
	Lectures	13
	Tutorial	0

<table>
<tr><td>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</td><td>

Laboratory	26
Teamwork in a case study	30
Small individual exercises	41
Independent Study	40
Total Course **(25 hours of workload per unit of credit)**	**150**

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<tr><td>**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.</td><td>Describe explicitly methods, evaluation tools and provided feedback.
The table below is supplemented accordingly.

Assessment methods	Number	Percentage
Final Project	1	60%
Interim Project reports	3	30%
Attendance & Participation	1	10%

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</table>

LITERATURE AND STUDY MATERIALS / READING LIST

- Koehn, P.   Statistical machine translation   Cambridge: Cambridge University Press, 2010
- Koehn, P.   Neural Machine Translation Cambridge University Press, 2020
- Poibeau, T. Machine Translation, The MIT Press Essential Knowledge series, 2017
- Jurafsky, Dan; Martin, James H.   Speech & language processing: An introduction to natural language processing, computational linguistics & speech recognition (2nd ed.): Pearson Education International/Prentice Hall, 2009
- Also, recent seminal papers that represent the most recent developments.