COURSE OUTLINE

(1) GENERAL

SCHOOL	Of Social Science
ACADEMIC UNIT	Department of Economics
LEVEL OF STUDIES	Undergraduate

COURSE CODE	OIK…	**SEMESTER**	Autumn

COURSE TITLE	Statistical and machine learning

INDEPENDENT TEACHING ACTIVITIES *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*	WEEKLY TEACHING HOURS	CREDITS
	3	5
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialised general knowledge, skills development*	Specialised
PREREQUISITE COURSES:	Statistics, mathematics, computers
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	English
IS THE COURSE OFFERED TO ERASMUS STUDENTS	YES
COURSE WEBSITE (URL)	

(2) LEARNING OUTCOMES

Learning outcomes
The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A
- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

- Upon successful completion of the course the student will be able to:
- Understand the basic concepts of machine learning.
- Choose the suitable method in real problems.
- Select important variables using statistical and machine learning algorithms.
- Apply nonlinear methods to real-world problems.
- Assess the predictive performance of algorithms.
- Assess and interpret empirical studies.

- Use of machine learning tools in real data/problems.
- Working autonomous.
- Decision making.

(3) SYLLABUS

Indicatively, the following material will be covered:

- Association measures for continuous and discrete variables.
- Linear regression.
- Generalised linear regression.
- Non linear regression.
- Logistic regression.
- Poisson regression.
- Variable selection algorithms.
- k—NN algorithm.
- Random forest algorithm.
- Predictive performance evaluation.
- Dimensionality reduction algorithms.
- Iluustration of the algorithms using R.

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Distance learning
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Teaching material, announcements and communication via eclass.

TEACHING METHODS *The manner and methods of teaching are described in detail.* *Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.* *The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS*		
	Activity	*Semester workload*
	Lectures	39
	Personal study	86
	Course total	*125*

STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	Written final exam.

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

Lecture notes.

- Related academic journals: