COURSE OUTLINE

GENERAL

SCHOOL	Sciences and Engineering		
ACADEMIC UNIT	Computer Science		
LEVEL OF STUDIES	1st Cycle		
COURSE CODE	COMP-248	**SEMESTER**	Spring
COURSE TITLE	Project in Data Science		

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**
	1	6
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*	skills development
PREREQUISITE COURSES:	COMP-240, MATH-225
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	English
IS THE COURSE OFFERED TO ERASMUS STUDENTS	
COURSE WEBSITE (URL)	

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*

After completion of the course students are expected to be able to:

- Formulate a proposal outlining a project's objectives, data sources and tasks to attack from the various stages of the Data Science process.
- Collect and curate data following FAIR principles.
- Combine programming and math skills with domain knowledge in the context of a project to see the successful completion of the project goals.
- Acquire domain expertise in a specific domain.
- Understand the structure and challenges of data science projects.
- Apply data analysis tools in a real-world data analysis project.

- Implement reproducible data analysis using version control and open-source software.
- Evaluate the validity, reliability, and ethical implications of results.
- Communicate findings through a research report, a concise video demonstration, and a live presentation.
- Reflect on project decisions in a maintained research diary, evidencing adaptive problem-solving.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology	*Project planning and management*
Adapting to new situations	*Respect for difference and multiculturalism*
Decision-making	*Respect for the natural environment*
Working independently	*Showing social, professional and ethical responsibility and sensitivity to gender issues*
Team work	*Criticism and self-criticism*
Working in an international environment	*Production of free, creative and inductive thinking*
Working in an interdisciplinary environment	*……*
Production of new research ideas	*Others…*
	…….

Search for, analysis and synthesis of data and information, with the use of the necessary technology
Adapting to new situations
Decision-making
Working independently
Team work
Working in an interdisciplinary environment
Project planning and management
Production of free, creative and inductive thinking

SYLLABUS

- Design and implement a solution to validate a hypothesis and tackle a real-world problem using Data Science tools.
- Content depending on selected topic.

TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	*Use of ICT in teaching / Χρήση ΤΠΕ* *Communication with students / Επικοινωνία με Φοιτητές*
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*	<table><tr><th>***Activity***</th><th>***Semester workload***</th></tr><tr><td>Lectures</td><td>12</td></tr><tr><td>Preparation</td><td>30</td></tr><tr><td>Coursework</td><td>108</td></tr><tr><td>Course total</td><td>***150***</td></tr></table>
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.*	Project Diary, Milestones, Implementation, Report

ATTACHED BIBLIOGRAPHY

Required Textbooks / Readings:

Topic-specific research papers and texts, along with research/development project management and software engineering texts.

Recommended Textbooks / Readings:

Title	Author(s)	Publisher	Year	ISBN
Data Science Projects with Python: A case study approach to gaining valuable insights from real data with machine learning, 2nd Edition	Stephen Klosterman	Packt Publishing	2021	978-1-80056-448-0
Doing Data Science	Cathy O'Neil and Rachel Schutt	O'Reilly Media	2014	978-1-449-35865-5