# COURSE OUTLINE

## GENERAL

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|---|---|
| **SCHOOL** | Sciences and Engineering |
| **ACADEMIC UNIT** | Computer Science |
| **LEVEL OF STUDIES** | 1st Cycle |
| **COURSE CODE** | MATH-326 |

| | | **SEMESTER** | Fall, Spring |
|---|---|---|---|
| **COURSE CODE** | MATH-326 | **SEMESTER** | Fall, Spring |

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|---|---|
| **COURSE TITLE** | Linear Models I |

| **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** |
|---|---|---|
| | 2.5 | 6 |
| | | |
| | | |
| *Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).* | | |

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| **COURSE TYPE** *general background, special background, specialised general knowledge, skills development* | Special Background |
| **PREREQUISITE COURSES:** | MATH-225, MATH-280 |
| **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:

- Develop the simple linear regression model.
- Execute inferences in regression analysis.
- Develop valid designs of linear models.
- Develop the skills to apply regression diagnostics.
- Employ techniques, skills and modern statistical tools required to solve real-life problems in Regression Analysis.

**General Competences**

*Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and*

Analysis and synthesis of data with the use of the necessary technology, adapting to new situations, decision-making, working independently, working in an interdisciplinary environment, analytical, critical and quantitative thinking, synthesis of ideas.

**SYLLABUS**

- The simple linear regression model.
- The normal error regression model.
- Inferences in regression models.
- The analysis of variance approach to regression models.
- Regression diagnostics.
- Matrix approach to simple linear regression analysis.

**TEACHING and LEARNING METHODS - EVALUATION**

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| **DELIVERY**<br>*Face-to-face, Distance learning, etc.* | Face-to-face |
| **USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY**<br>*Use of ICT in teaching, laboratory education, communication with students* | *Use of ICT in teaching / Χρήση ΤΠΕ*<br>*Communication with students / Επικοινωνία με Φοιτητές* |
| **TEACHING METHODS**<br>*The manner and methods of teaching are described in detail.*<br>*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.*<br><br>*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><td>***Activity***</td><td>***Semester workload***</td></tr><tr><td>Lectures</td><td>35</td></tr><tr><td>Homework Assignments</td><td>53</td></tr><tr><td>Exam Preparation</td><td>60</td></tr><tr><td>Final Exam</td><td>2</td></tr><tr><td></td><td></td></tr><tr><td>Course total</td><td>***150***</td></tr></table> |
| **STUDENT PERFORMANCE EVALUATION**<br>*Description of the evaluation procedure* | - Final Examination |

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| *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*<br><br>*Specifically-defined evaluation criteria are given, and if and where they are accessible to students.* | - Midterm Examinations<br>- Assignments<br>- Participation |

**ATTACHED BIBLIOGRAPHY**

**Required Textbooks / Readings:**

| Title | Author(s) | Publisher | Year | ISBN |
|---|---|---|---|---|
| M. Kutner, C. Nachtsheim, J. Neter, W. Li | Applied Linear Statistical Models | McGraw-Hill/Irwin | 2004 | 978-0073108742 |

**Recommended Textbooks / Readings:**

| Title | Author(s) | Publisher | Year | ISBN |
|---|---|---|---|---|
| B.L. Bowerman, R. O'Connell | Linear Statistical Models: An Applied Approach | Duxbury Press | 2000 | 978-0534380182 |
| J. Fox | Applied Regression Analysis and Generalized Linear Models | Sage Publications | 2016 | 978-1452205663 |