Computer applications in finance

Academic Year: (2022 / 2023) **Review date: 23-05-2022**

Department assigned to the subject: Computer Science and Engineering Department

Coordinating teacher: FERNANDEZ REBOLLO, FERNANDO

Type: Electives ECTS Credits : 6.0

Year : 4 Semester :

OBJECTIVES

- Knowledge of the benefits of using computer applications in finance
- Identifying a problem of prediction, classification and optimization in finance field
- Learning how to prepare the financial information for computer processing
- Understanding the different metrics for evaluating models
- Knowledge of different computational techniques for prediction, classification and optimization
- Being able to relate the type of problem with the type of technique
- Applying computational techniques for solving problems in the financial field
- Having skills of using computational tools in the financial area
- Having the ability to evaluate the results obtained through computer applications
- Being able to properly propose the different phases for the resolution of a problem using the techniques discussed
- Having the Ability to assess the advantages and disadvantages of using each technique to a specific problem

DESCRIPTION OF CONTENTS: PROGRAMME

- Introduction to programming in the financial field
- Preparation of financial information for computer processing
- Metrics for evaluating models
- Computational techniques for classifying in finance
- Computational techniques for predicting financial time series
- Computational techniques for financial optimization
- Computational techniques for clustering

LEARNING ACTIVITIES AND METHODOLOGY

This course comprises practical classes in computer rooms.
Lectures will include theoretical content so that students can acquire knowledge about the different computational techniques applicable in the context of finance.
The practical classes will be a set of tutorials, so students can acquire practical skills solving concrete problems in the field of study.
Throughout the semester students will do some tests to evaluate the course contents.
Therefore, 6 ECTS credits of this course is distributed with the next load of work for the student:
2. Practical classes: 2.4 ECTS credits
3. Performing tests: 0.5 credits
4. Individual student work: 3.1 ECTS credits

ASSESSMENT SYSTEM

Continuous assessment allows students to earn in advance the 70% the final grade.
Continuous assessment tests evaluate the extent to which the student develops the different skills.

Continuous assessment tests and their respective percentage weights are:
- Practical test (10%) assess comprehension of the computational techniques.
- Practical assessments, (30%) to be conducted throughout the semester, which will assess the skills the student has acquired in the use of computer applications for solving problems.
- Final Project: A long practice for evaluating the acquired knowledge.
- Final Exam (30%): An overall assessment of all competencies. Minimum grade: 3.5

% end-of-term-examination:	30
% of continuous assessment (assigments, laboratory, practicals…):	70

BASIC BIBLIOGRAPHY

- Boris Kovalerchuck & Evgenii Vityaev Data Mining in Finance, Kluwer Academic Publishers, 2000
- Luis Torgo Data Mining with R: Learning with Case Studies, Second Edition, CRC Press, 2017

ADDITIONAL BIBLIOGRAPHY

- Suran Goonatilake & Philip Treleaven Intelligent Systems for Finance and Business, John Wiley & Sons, 1995