Computer science for finance

Academic Year: (2023 / 2024)   **Review date: 26/04/2023 20:54:26**

Department assigned to the subject: Computer Science and Engineering Department

Coordinating teacher: QUINTANA MONTERO, DAVID

Type: Electives ECTS Credits : 3.0

Year : 1 Semester : 1

REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

The course has no prerequisites

OBJECTIVES

Students will receive an introduction to programming using MATLAB technical computing environment as the main platform. They will be able to use the desktop environment and the basic command-line instructions. They will then develop the competency of developing their own programs using MATLAB. These will potentially include flow control elements, input and output control, charts and functions, among other components.

DESCRIPTION OF CONTENTS: PROGRAMME

1. Introduction to MATLAB

 - Desktop environment
 - Basic command-line instructions
 - Vector and matrices
 - Basic string manipulation

2. Introduction to programming

 - MATLAB scripts
 - Basic I/O
 - Basic functions

3 Flow control

 - Selection statements
 - Loop statements

4. MATLAB programming

 - Vectorization
 - User-defined functions
 - Program organization
 - Basic debugging

5. Structures

6. Plotting

 - 2D plot
 - 3D plot
 - Matrixes of plots

7. Resources

- Toolboxes
- Repositories

LEARNING ACTIVITIES AND METHODOLOGY

Traditional lectures combining slides and computer-based examples will be supplemented with class exercises. The latter will give the students the chance to put in practice the concepts explained by the professor with his assistance and the help of their classmates.

Students will receive weekly sets of programming exercises as homework. These sets will be mainly focused on the topics covered each week, but will also be cumulative. The answers will not be marked, but complete submission (either individual or in small groups) will be required to take the intermediate validation test on the topics related to the worksheet.

ASSESSMENT SYSTEM

% end-of-term-examination/test:	50
% of continuous assessment (assigments, laboratory, practicals…):	50

The grading system will consist of two elements:

- Three short validation tests based on weekly exercises
- A final exam

Each of these items will contribute 50% to the final mark

A minimum score of 4 points in the final exam and 5 in the final mark are required to pass.

Students that do not meet the minimum passing grade should retake the subject. If the resit is taken, the above grade criteria also apply.

BASIC BIBLIOGRAPHY

 - Stormy Attaway Matlab. A Practical Introduction to Programming and Problem Solving (4th Ed.), Elsevier, 2017

ADDITIONAL BIBLIOGRAPHY

 - Amos Gilat MATLAB: An Introduction with Applications, Wiley, 2014

 - Paolo Brandimarte Numerical Methods in Finance and Economics: A MATLAB-Based Introduction, Wiley-Interscience, 2006