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Functional Programming

Academic Year: **(2022 / 2023)**   **Review date: 30-08-2022**

Department assigned to the subject: Computer Science and Engineering Department

Coordinating teacher: FERNANDEZ ARREGUI, SUSANA

Type: Compulsory ECTS Credits : 6.0

Year : 4 Semester : 1

REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

Programming (Course: 1/ Semester: 1)
Programming Techniques (Course: 1/ Semester: 2)

OBJECTIVES

To Acquire the learning outcomes and competencies specified in the "Memoria Verifica" of the title

DESCRIPTION OF CONTENTS: PROGRAMME

1.- Functional programming.
2.- Functions and expressions reductions.
3.- Functional programming and type system.
4.- Type classes.
5.- Higher order functions.
6.- Monadic programming.
7.- Curry-Howard isomorphism

LEARNING ACTIVITIES AND METHODOLOGY

AF1.THEORETICAL-PRACTICAL CLASSES. Knowledge and concepts students must acquire. Student receive course notes and will have basic reference texts to facilitatefollowing the classes and carrying out follow up work.Students partake in exercises to resolve practical problems and participatein workshops and an evaluation tests, all geared towards acquiring the necessary capabilities.Subjects with 6 ECTS are44 hours as a general rule/ 100% classroom instruction

AF2.TUTORING SESSIONS. Individualized attendance (individual tutoring) or in-group (group tutoring) for students with a teacher.Subjects with 6 credits have 4 hours of tutoring/ 100% on- site attendance.

AF3.STUDENT INDIVIDUAL WORK OR GROUP WORK.Subjects with 6 credits have 98 hours/0% on-site.

AF8.WORKSHOPS AND LABORATORY SESSIONS. Subjects with 3 credits have 4 hours with 100% on-site instruction. Subjects with 6 credits have 8 hours/100% on-site instruction.

MD1.THEORY CLASS. Classroom presentations by the teacher with IT and audiovisual support in which the subject`s main concepts are developed, while providing material and bibliography to complement student learning.

MD2.PRACTICAL CLASS. Resolution of practical cases and problem, posed by the teacher, and carried out individually or in a group.

MD3.TUTORING SESSIONS. Individualized attendance (individual tutoring sessions) or in-group (group tutoring sessions) for students with teacher as tutor. Subjects with 6 credits have 4 hours of tutoring/100% on-site.

MD6.LABORATORY PRACTICAL SESSIONS. Applied/experimental learning/teaching in workshops and laboratories under the tutor's supervision.

ASSESSMENT SYSTEM

SE1.FINAL EXAM. Global assessment of knowledge, skills and capacities acquired throughout the course.The percentage of the evaluation varies for each subject between 60% and 0%.

SE2.CONTINUOUS EVALUATION. Assesses papers, projects, class presentations, debates, exercises, internships and workshops throughout the course.The percentage of the evaluation varies for each subject between 40% and 100% of the final grade.

The minimum mark in the final exam to pass the subject is 4

% end-of-term-examination: 60

% of continuous assessment (assigments, laboratory, practicals…):   40

BASIC BIBLIOGRAPHY

- Graham Hutton Programming in Haskell (2nd edition), Cambridge University Press, 2016

- Richar Bird Introduction to Functional Programming using Haskell,   Second edition, Prentice-Hall, 1998

- Richard Bird and Philip Wadler Introduction to Functional Programming, Prentice-Hall , 1988

ADDITIONAL BIBLIOGRAPHY

- Bartosz Milewski Category Theory for Programmers, Edited by Igal Tabachnik.

- Miran Lipovaca Learn You a Haskell for Great Good!: A Beginner's Guide , No Starch Press, 2011