

Información del Plan Docente

Academic Year	2017/18
Faculty / School	100 - Facultad de Ciencias
Degree	453 - Degree in Mathematics
ECTS	6.0
Year	4
Semester	First semester
Subject Type	Optional
Module	---

1.General information**1.1.Introduction****1.2.Recommendations to take this course****1.3.Context and importance of this course in the degree****1.4.Activities and key dates****2.Learning goals****2.1.Learning goals****2.2.Importance of learning goals****3.Aims of the course and competences****3.1.Aims of the course****3.2.Competences****4.Assessment (1st and 2nd call)****4.1.Assessment tasks (description of tasks, marking system and assessment criteria)****5.Methodology, learning tasks, syllabus and resources****5.1.Methodological overview**

Presentation of theoretical concepts in lectures.
Problem solving, both individually and collaboratively, practices with computer.

5.2.Learning tasks

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Presentation of the theoretical and technological concepts in lectures (2 hours / week)
Resolution and implementation problems in practice sessions tutored computer (2 hours / week)
Personnel work, particularly related to the tests (1) and (2) outlined in section Evaluation.

5.3.Syllabus

1. The object-oriented paradigm (OOP). The Java Virtual Machine: compiling and executing programs.
2. Review of elements of structured programming in the Java language: predefined types; variables and constants; operators and expressions; usual mathematical functions (the Math class). Structured statements: sequential, conditional and iterative. Defining and invoking class methods. Method signatures: overloading methods.
3. Introducing OOP. Objects, classes and references (the null reference). The life cycle of Java objects: the new operator and constructor methods, accessing members and message passing, the Java garbage collector. Array objects.
4. Defining classes. Instance and class members. Writing constructor methods. Access levels: the public interface of a class. Namespaces: Java packages.
5. An introduction to UML class diagrams. Class associations and associative classes. Roles and navigation.
6. Inheritance: concept and types, method overriding. Class hierarchy: the Java Object class. Polymorphism: virtual methods. Modeling (generalization and specialization): abstract classes and methods.
7. The Java type system: Java interfaces. Generic programming in Java. The Java collections framework.
8. Exceptions: rising, handling and specification.
9. Persistence: binary and text streams. Object persistence: the Serializable interface. Access to remote resources: File and URL classes.
10. Event-driven programming: the Java event model. GUIs programming: containers, menus and basic controls.

5.4.Course planning and calendar

Schedule sessions and presentation of works
See the "Activities and key dates of the subject".

5.5.Bibliography and recommended resources

- Eckel, Bruce. Piensa en Java / Bruce Eckel ; traducción, Jorge González Barturen ; revisión técnica, Javier Parra Fuente, Ricardo Lozano Quesada ; coordinación general y revisión técnica, Luis Joyanes Aguilar . - 2ª ed. Madrid [etc.] : Prentice Hall, D.L. 2002
- Muñoz Caro, Camelia. Introducción a la programación con orientación a objetos / Camelia Muñoz Caro, Alfonso Niño Ramos, Aurora Vizcaíno Barceló . - [1ª ed.], reimp. Madrid : Pearson Educación, 2007
- Arnow, David M.. Introducción a la programación con Java : Un enfoque orientado a objetos / David M. Arnow, Gerald Weiss Madrid, [etc.] : Addison Wesley, cop. 2001
- Rumbaugh, James. El lenguaje unificado de modelado UML : manual de referencia / James Rumbaugh, Ivar



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Jacobson, Grady Booch ; traducción Héctor castán Rodríguez, àscar Sanjuán Martínez , Mariano de la Fuente Alarcón ; coordinación general y revisión técnica Luis Joyanes Aguilar . - 2ª ed. Madrid [etc.] : Pearson Educación, D. L. 2007