Oriented Programming objects

UA.DETI.POO

2021/2022

OOP Curricular Unit

- Scientific area
  - – Programming Science and Technology
- Weekly schooling: – 2 hours

  of theoretical-practical classes – 2

  hours of practical classes
- ECTS credits: 6
- Code: 40385

Goals

v **Decompose** small and medium problems dimension in computational solutions according to the object-oriented paradigm. v **Build** Java language programs extensively using OOP features: Encapsulation, Polymorphism, and Inheritance. v Use **data structures and algorithms** available in the Java language.

v Write robust and efficient **software .**

summary program

- Introduction to JAVA:
  - primitive types, input/output, data types, operations, instructions, vectors
- Flow control: – decision and cycles
- Introduction to OOP:
  - classes, objects
- Encapsulation:
  - attributes and methods; method name overlap; constructors and destructor; static attributes and functions.
- Inheritance:
  - base and derived classes; heritage; reset and method overlap.
- Polymorphism: – generalization versus specialization; dynamic link; abstract classes.

summary program

v Interfaces, programming for the interface. v Parametric types, enumerated v Java Collections:

– use of data structures and algorithms, functions lambda.

v Data input and output:

– Java IO, NIO, streams.

Bibliography

- FM Martins, **Java 8 - OOP + Constructions Functional,** FCA, 2017
- The **Java Tutorials**
  - http://docs.oracle.com/javase/tutorial/
- J. Blosh, **Effective Java,** 2nd edition, Addison Wesley, 2008.
- B. Eckel, **Thinking in Java,** 4th ed, Prentice-Hall, 2006

web resources

- **elearning.ua.pt**
  - TP slides
  - Practical Guides
  - Information and results
  - Submissions of assignments
- **Online courses**
  - https://www.w3schools.com/java/
  - https://www.learnjavaonline.org
  - https://www.tutorialspoint.com/java/
  - https://docs.oracle.com/javase/tutorial/

Evaluation

v The evaluation of the discipline will be discreet, without final evaluation. v

Components: – (T)

Theoretical-Practical Assessment **[ATP1: 20%]**

- Date: 05/18/2022; 4:30 pm to 5:00 pm

– (T) Theoretical-Practical Assessment **[ATP2: 20%]**

- Date: 06/22/2022; 4:30 pm to 5:00 pm

– (P) Practical Exam **[AP: 45%]** •
Date: 06/22/2022; 17:10-19:00

– (P) Continuous practical assessment **[AC: 15%]**

- Performance in carrying out individual work

v The minimum grade for each of the components (T and P) is 7 values.

Rating (cont'd)

- In the ordinary regime, **classes (TP and P) are mandatory attendance.**
  - They will have to attend at least 70% of the TPs and 80% of the Ps, under penalty of failing (art. 18 of the REUA).
    - not being able to take any exam of the discipline during the current academic year.
- Operating model of practical classes
  - In classes they will have to use a **personal laptop** with the software required for each module.
  - **Attendance,** prior **preparation ,** discussion during the class, **handing** in all the scripts.
  - **Weekly and individual delivery** of works

ECTS

- Education (T/TP/P): 0/2/2 - ECTS: 6

- The number of ECTS credits indicates the expected number of hours they must study for this subject.
  - 1 ECTS = 25-30 hours of study.
  - 6 ECTS = 150-180 hours of study.
- In a semester with 15 weeks they must study at least 10 hours a week.
- These hours include: face-to-face classes, reading books, solving exercises, studying for tests and exams, etc.

Teachers TPs and attendance

- Sérgio Matos, TP3 and TP4, *conductor* (aleixomatos@ua.pt)
- Osvaldo Pacheco, TP1 (orp@ua.pt)
- Luís Seabra Lopes, TP2 (lsl@ua.pt)

- General service - DETI / IEETA

- TOs will operate on Tuesdays at 6:30 pm.

Good studies and good semester!