Course Presentation

Advanced Programming – Programación Avanzada

GIT (Ob 380001) & GITT (Op. 350041)

Dra. Mª Dolores Rodríguez Moreno

Teachers and Tutoring hours

Dra. María Dolores Rodríguez Moreno

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Wed: 16-18
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Schedule (GIT)

- Monday: 12-14 (Theory) OESTE A6
- Wednesday: 10 a 12 & 12 a 14 (lab)
- LAB: Este5

- First 2 weeks (NO LABS)
- Theory: ESTE A6
- Time: 10-12

Schedule (GITT)

- Monday: 15-17 (Theory) ESTE A8
- LAB: Monday Este 17-19
- Este L4

- First 2 weeks (NO LABS)
- Theory: ESTE A8
- Time: 17-19

About me…

- Last 3 years: Research Applied Center of The Netherlands (TNO)
- Full Professor (2018)
- Postdoc
  - NASA Ames, USA
  - JPL-NASA, USA
- European PhD in Computer Sciences (Awarded)
- Physics
- Research interest
  - AI & ML
  - Robotics

General features

Degree	GIT
Code	380001
Course	3rd
Semester	First
Credits	6 ECTS
Web	Aula Virtual http://uah.blackboard.com All documentation and dates available

General features

Degree	GITT
Code	350041
Course	4th
Semester	First
Credits	6 ECTS
Web	Aula Virtual http://uah.blackboard.com All documentation and dates available

Objectives

General Objective

Learn the logic of object-oriented programming (OOP)

Specific Objectives

- Classes and Objects
- Operator Overloading
- Inheritance
- Polymorphism
- File I/O (Input/Output) Streams
- Using and Creating Object Libraries (Modules and Packages)

Contents

Part	Topics
1. OOP	• Principles and Logics
2. Classes	• Constructors, Methods, attributes, access control • Lists, tuples, sets, dictionaries…
3. Data structures in Python	• Implementation of special mths
4. Derived Classes	• Single and multiple inheritance
5. Exceptions	• Error handling
6. File (I/O)	• Reading /writing files • DataBase

Course Scheduling

- Time distribution of the course:

Methodology

- Theory classes
- Problems solved
- Flipped Learning supported by LLMs

Lab Practice Regulations

- The **submission schedule** will be specified for each practice in the course schedule. The statement of each practice will be available on the Aula Virtual (uah.blackboard.com). Practices will be carried out according to the planned schedule; this means that holidays/exams will not alter the calendar
- **Late Submission Penalty**: failure to meet the submission deadline for the practices will result in a 50% penalty on the grade
- **Missed Deadline Consequence**: Failure to meet the final submission deadline (1 week after the submission deadline) will result in a grade of 0 points

Continuous Assessment

Instruments Rating	% Mark
1. Final Exam - PEF	40%
2. Testing Lab (2) - PL	30%
3. Partial Exam - PEI	30%

Testing Lab (30%)

- Each lab assignment has a deadline:
  - 1 day after the deadline → Penalty: 50%
  - When overpass the deadline of the next lab assignment → 0 points
- You can do it in pairs
- The **lab exam** defines the **lab mark**
- The evaluation of each practical case includes the practice to be carried out and the theory related to it
- There will be 2 exams of the lab (15% each exam) → 30%

Lab: Uploading files

You have to upload 2 things in AulaVirtual:

- The code
- A readme document:
  - You pose at least 5 questions about the practical assignment using an LLM sw. Discuss if correct or not. Then, check if you were correct.
  - 2 questions in pairs (or alone) with a different way of asking the problem: angry, happy, more explanation… and check if the answer is different or not

Single Assessment: Final exam

- Consist of a single test on both theoretical and practical content, which will account for 100% of the course grade
- Students eligible to take this exam are those who have been granted the right to be evaluated through a final exam. The exam may be conducted either orally and/or in writing
- To pass the final exam, students must submit any practical work that has not yet been evaluated on the day of the final exam
- The evaluation of each practical case includes the practical work itself and the related theory.

Extraordinay Assessment

- Students who have not passed the course in the regular exam session may opt for an extraordinary session, which will consist of a single test on both theoretical and practical content, accounting for 100% of the course grade
- This exam may be conducted either orally and/or in writing.
- To pass this final exam, students must submit their practical work before the day of the final exam
- The evaluation of each practical case includes both the practical work itself and the related theory.

Regulation

- Notifications by the e-learning platform
- Contact by e-mail
- Respect and courtesy
- Plagiarism will not be tolerated

Bibliography

- Python Official Documentation: https://www.python.org/about/gettingstarted/
- Object Oriented Programming with Python for Beginners: Mastering the Foundations of OOP. From Principles to Practice. 2 in 1 Guide. Autor: SAM CAMPBELL
- Lenguajes de programación. Diseño e Implementación. Terence W.Pratt. Marvin V. Zelkowitz. Prentice Hall.

Questions???

Dra. Mª Dolores Rodríguez Moreno