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

Email: malola.rmoreno@uah.es
Office: E-313
Phone: 91-885-66-07
Tutoring hours: Mon: 10-12
Wed: 16-18
https://atc1.aut.uah.es/~mdolores/

Schedule (GIT)

- Monday: 12-14 (Theory) OESTE A6
- Wednesday: 8 a 10, 10 a 12 & 12 a 14 (lab)
- LAB: Este4

- First 2 weeks (NO LABS)
- Theory: SUR A8
- Time: Wednesday 10-12

Schedule (GITT)

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

- First 2 weeks (NO LABS)
- Theory: Este L4
- Time: 17-19

General features

Degree	GIT
Code	380001
Course	3rd
	Compulsory
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
	Optional
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
- The student must submit the laboratory exercises (PL) on the date established in the calendar provided at the beginning of the course
- This is a **necessary condition for passing** the PRL

Continuous Assessment

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

Testing Lab (30%)

- Each lab assignment has a deadline:
- 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 1 exam of the lab → 30%
- NO PRESENTADO: no PLs or any exam

Lab: Uploading files

You have to upload 2 things in AulaVirtual (.zip):

- 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.

About me…

- Last 3 years (2021-2023): Research Applied Center of The Netherlands (TNO)
- Full Professor (2018)
- European PhD in Computer Sciences (Awarded)
- Postdoc
  - NASA Ames, USA
  - JPL-NASA, USA
- Research interest: AI & ML, Robotics

TFG offer

- Interested in AI?
  - LLMs
  - Machine Learning
  - Robotics

Questions???

Dra. Mª Dolores Rodríguez Moreno