



GENERAL INFORMATION

Data of the subject	
Subject name	Foundations of Information Systems
Subject code	DTC-IMAT-215
Mainprogram	N/A [GiMAT 26]
Involved programs	Grado en Ingeniería Matemática e Inteligencia Artificial [Second year]
Level	Reglada Grado Europeo
Quarter	Semestral
Credits	6,0 ECTS
Type	Obligatoria (Grado)
Department	Department of Telematics and Computer Sciencies
Coordinator	Pablo Sánchez Pérez
Schedule	Morning schedule
Office hours	To be arranged directly with the professor.

Teacher Information	
Teacher	
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DESCRIPTION OF THE SUBJECT

Contextualization of the subject

Prerequisites

Python programming.

Basic computer skills.

Course contents

Contents

The course is divided into 5 main blocks: general introduction to the subject, introduction to the GNU/Linux operating system and environments, process management, memory management and I/O management and file systems.

Block 1. General introduction

General introduction

Introduction to the basic architecture of a computer.

Introduction to operating systems. Basic features of current operating systems.

Block 2. Introduction to the GNU-Linux operating system and environments.

Introduction to the GNU-Linux operating system and environments.

GNU-Linux operating system.

Virtual Machines.

Python dependencies.

Design and implementation of applications based on Linux operating system services.

Block 3: Process management

Process management

Process management. Processes and threads. Characteristics and implementation in Python.

Scheduling.

Introduction to concurrent programming, mutual exclusion, semaphores.

Block 4. Memory management

Memory management

Memory management: requirements and partitioning.

Memory allocation schemes.



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Virtual memory.

Block 5. Input/output management, file management, and file systems

Input/output management, file management, and file systems

Introduction to input/output management.

Files management.

File systems.

EVALUATION AND CRITERIA

The use of AI to produce full assignments or substantial parts thereof, without proper citation of the source or tool used, or without explicit permission in the assignment instructions, will be considered plagiarism and therefore subject to the University's General Regulations.

Evaluation activities	Evaluation criteria	Weight
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Intersemester exam: 20% Final exam: 50%	Intersemester exam (20%): an exam that may include both practical and theoretical exercises aimed at assessing understanding of the course concepts related to Block 1 (General Introduction), Block 2 (Introduction to the GNU-Linux Operating System and Environments), and whatever time allows of Block 3 (Process Management). Final exam (50%): an exam that may include both practical and theoretical exercises, expanding on the content of the midterm exam to include the rest of the course syllabus. NO AI: The assessment is completed entirely without AI assistance in a controlled environment, ensuring that students rely solely on their existing knowledge, understanding, and skills. You must not use AI at any point during the assessment. You must demonstrate your core skills and knowledge. Any student who uses it will receive a Fail (0) on that test and a disciplinary procedure will be initiated in accordance with the University's General Regulations.	70 %
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Assignment/Project/Case Study (individual or group) (15%):	Assignment/Project/Case Study (individual or group) (15%): In addition to functionality, the design used in the project, the cleanliness and style of the code, and the application of the course syllabus will be evaluated. AI COLLABORATION (only free URLS) AI may be used to help complete the task, including idea generation, drafting, feedback, and refinement. Students should critically evaluate and modify the AI suggested outputs, demonstrating their understanding. You may use AI to assist with specific tasks such as drafting text, refining and evaluating your work. You must critically evaluate and modify any AI-generated content you use. In any case, content generated with the assistance of AI must be subject to critical evaluation by the student. The final result must, at all times, be the work of the student alone. Inappropriate use of AI tools may affect the overall evaluation of submitted assignments. Likewise, faculty members reserve the right to question and evaluate students about specific aspects of their work to verify their understanding; the outcome of these consultations may also influence the final evaluation of the corresponding assignments. Students must clearly document in their submissions the specific tasks for which they have used AI tools. This does not exempt the student from responsibility for the submitted content, nor from the possibility of being questioned about it.	15 %
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Laboratory practical work and hands-on sessions using software (15%):	Laboratory practical work and hands-on sessions using software (15%): The lab assignments will be oriented to learn more in depth the concepts explored in the theory classes by solving exercises. In addition to functionality, the style of code used in the lab assignments and the quality of the reports requested will also be assessed. AI COLLABORATION (only free URLS) AI may be used to help complete the task, including idea generation, drafting, feedback, and refinement. Students should critically evaluate and modify the AI suggested outputs, demonstrating their understanding. You may use AI to assist with specific tasks such as drafting text, refining and evaluating your work. You must critically evaluate and modify any AI-generated content you use. In any case, content generated with the assistance of AI must be subject to critical evaluation by the student. The final result must, at all times, be the work of the student alone. Inappropriate use of AI tools may affect the overall evaluation of submitted assignments. Likewise, faculty members reserve the right to question and evaluate students about specific aspects of their work to verify their understanding; the outcome of these consultations may also influence the final evaluation of the corresponding assignments. Students must clearly document in their submissions the specific tasks for which they have used AI tools. This does not exempt the student from responsibility for the submitted content, nor from the possibility of being questioned about it.	15 %
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Grading

There are two evaluation calls: the ordinary call in December/January and the extraordinary call in June.



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Grade of the subject

The grade for the subject in the academic course will be computed as follows:

- 50% for the final examination (EX_F)
- 20% for the midterm examination (INTER)
- 15% for the project (PROY)
- 15% for the lab assignments (PRACT)

The final grade for both the ordinary and extraordinary examination periods will be:

$$\text{FINAL_GRADE} = 0.15 \times \text{PRACT} + 0.15 \times \text{PROY} + \text{MAX}(0.7 \times \text{EX_F}, 0.2 \times \text{INTER} + 0.5 \times \text{EX_F})$$

In other words, the maximum will be selected between considering only the final examination (70% of the grade) and combining 20% of the midterm examination with 50% of the final examination. The grade obtained in the midterm examination will be retained for the extraordinary examination period of the same academic year. To pass the course in either examination period, all the following conditions must be met simultaneously:

- **FINAL_GRADE ≥ 5**
- **EX_F ≥ 5 .** If EX_F is ≥ 5 in the ordinary examination period, the final examination grade will be retained for the extraordinary examination period. Otherwise, the student must retake the examination during the extraordinary examination period.
- **PRACT ≥ 5 .** If PRACT is ≥ 5 in the ordinary examination period, the practical assignment grade will be retained for the extraordinary examination period. Otherwise, the teaching staff will determine the activities required to make up the practical assignments, which may consist of repeating practical assignments, completing new activities, or a combination of both.
- **PROY ≥ 5 .** If PROY is ≥ 5 in the ordinary examination period, the project grade will be retained for the extraordinary examination period. Otherwise, the student must complete the project recovery activity determined by the teaching staff.
- If any of these requirements is not met, the final grade for the examination period being assessed will be the lowest of the grades obtained in the final examination (EX_F), the practical assignments (PRACT), or the project (PROY).

WORK PLAN AND SCHEDULE

Activities	Date of realization	Delivery date
Reading and study of the theoretical contents, notes and code provided by the teacher.	After and before each class	
Final Project	Approximately 1 month before the end of the course.	Last week of classes
Exams realisation	October, December/January, and June	
Lab assignments realisation	Before, during and after the lab class	After it is published on Moodle (to be determined by the professors)
Block 1. General introduction	At the beginning of the course	Between 1 week and 1 and a half weeks approximately



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Block 2. Introduction to the GNU-Linux operating system and environments.	After Block 1.	Approximately 3 weeks
Block 3. Process management	After Block 2.	Between 4 and 4 and a half weeks approximately
Block 4. Memory management	After Block 3.	Between 2 and 2.5 weeks, approximately.
Block 5. Input/output management, file management, and file systems	After finishing Block 4.	Approximately 1 week

BIBLIOGRAPHY AND RESOURCES

Basic References

Moodle (teacher's manuals and slides).

Contact the teacher for specific books to further learning.