

| Degree programme     | Type | Course |
|----------------------|------|--------|
| Computer Engineering | OB   | 1      |

## Contact lecturer

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## Group languages

You can consult this information at the [end](#) of the document.

## Prerequisites

This is a first year and first semester subject, therefore, there are no prerequisites required.

## Objectives

The objective of this course is to provide students with an overview of a computer system, showing the different levels involved in system software and the tools used to develop and maintain applications. An introduction to scripting languages using Bash and Python will be provided.

## Learning outcomes

- CM21 (Build IT projects that use different technological infrastructures in accordance with the principles of quality, reliability, IT security and cost.) Build IT projects that use different technological infrastructures in accordance with the principles of quality, reliability, IT security and cost.
- KM24 (Explain the basic principles of computer structure, operating systems, IT networks, the Internet and storage systems.) Explain the basic principles of computer structure, operating systems, IT networks, the Internet and storage systems.
- KM28 (Identify programming techniques and tools for the development of IT applications, providing an overview of the system.) Identify programming techniques and tools for the development of IT

- applications, providing an overview of the system.
- SM28 (Analyse technological infrastructures in any field of computer engineering to assess their economic, social and environmental impact aimed at implementing and continuously improving them to ensure their reliability, safety and quality.) Analyse technological infrastructures in any field of computer engineering to assess their economic, social and environmental impact aimed at implementing and continuously improving them to ensure their reliability, safety and quality.
- SM30 (Apply knowledge of operating systems, distributed systems, computer networks and the Internet to develop IT systems, services and applications.) Apply knowledge of operating systems, distributed systems, computer networks and the Internet to develop IT systems, services and applications.

## Contents

Topic 1.- Introduction to Computer Systems (SW, OS, HW, virtualization)

Topic 2.- Scripting programming (bash, Python)

Topic 3.- Tools for developing and debugging programs (repositories, debugging tools, IDEs)

Topic 4.- OS fundamentals.

## Learning activities and methodology

| Title                                                                      | Hours | ECTS | Learning outcomes      |
|----------------------------------------------------------------------------|-------|------|------------------------|
| Practices                                                                  | 12    | 0.48 | CM21, KM28, SM30       |
| Study of the subject, preparation and completion of problems and practices | 98    | 3.92 | CM21, KM24, KM28, SM30 |
| Problems                                                                   | 12    | 0.48 | KM24, KM28             |
| Theory                                                                     | 22    | 0.88 | KM24, SM28, SM30       |

The subject is planned to be carried out in person. If, for reasons unrelated to the subject's programming, the teaching methodology had to be changed, teaching would be carried out tele-presentially, that is, in synchronous remote sessions following the schedule established by the degree coordination.

All sessions of this subject will be conducted in a *hands-on* format, therefore, students must come to class with their personal portable equipment.

- Theory: The theory part of the subject combines sessions where the theoretical concepts of the subject will be introduced with hands-on sessions when the syllabus allows it. The detailed content of each of the sessions will be detailed in the subject planning that will be published on the first day of class on the Virtual Campus.
- Problems: The problem part consists of analyzing and solving exercises in the classroom. The sessions dedicated to this teaching typology, as well as the content of each session, will be detailed in the subject planning that will be published on the first day of class on the Virtual Campus.
- Practices: The practice activity consists of the group resolution of a practical project that will include different theoretical concepts introduced and worked on in the theory and problem sessions. The sessions dedicated to practices and their content will be published on the subject's Virtual Campus.

Annotation: within the schedule set by the centre or degree programme, 15 minutes of one class will be reserved for students to evaluate their lecturers and their courses or modules through questionnaires.

## Assessment

## Continuous assessment activities

| Title                     | Weight | Hours | ECTS | Learning outcomes      |
|---------------------------|--------|-------|------|------------------------|
| Theory/Problems Control 2 | 35     | 2     | 0.08 | KM24, KM28, SM28, SM30 |
| Practices                 | 30     | 2     | 0.08 | CM21, KM28, SM30       |
| Theory/Problems Control 1 | 35     | 2     | 0.08 | KM24, KM28, SM30       |

### a) Scheduled evaluation activities

- Theory/Problems Test 1: 35% of the final grade;
- Theory/Problems Test 2: 35% of the final grade;
- Practices: 30% of the final grade;

To pass the course, the weighted average of the three assessment activities must be at least 5. This rule will apply as long as the following conditions are met:

- The grade obtained in Test 1 and Test 2 is at least 3.5 in each, and the average between both tests is at least 5.
- The practices grade is at least 5.

Regarding tests, re-assessments, and any other assessable activity, no student will be allowed to enter the classroom 5 minutes after the start of the test/activity.

If the student does not pass the course, the numerical grade on the transcript will be the lower of 4.5 and the weighted average of the grades.

### b) Scheduling of Assessment Activities

The schedule of assessment activities will be announced on the first day of the course and will be published on the Virtual Campus. These dates may be subject to scheduling changes to accommodate potential incidents; these changes will always be reported on the Virtual Campus, as it is understood to be the usual mechanism for exchanging information between faculty and students. In case of being unable to attend either of the two scheduled assessments for the subject due to force majeure, students are reminded of the existence of a protocol for requesting rescheduling of assessment activities.

### c) Retake Process:

Students who, despite completing the continuous assessment, have not achieved the minimum required to pass the course will have the option of retaking the entire Theory/Problems section in a single exam. The maximum grade that can be achieved on this exam is 7; therefore, this will be the maximum grade that can be achieved on the Theory/Problems section by retaking the exam. Taking the retaken exam to improve your grade in the subject is not permitted if you have already passed the Theory/Problems section. The practical part, due to its nature, cannot be retaken.

### d) Grade Review Procedure

For each assessment activity, a review location, date, and time will be indicated so that students can review the activity with the faculty. If the student does not attend this review, the activity will not be reviewed later.

#### e) Grades

- Matriculation with Honors: A student may obtain a Matricula with Honors grade provided the final grade for the course is 9 or higher, taking into account the maximum percentage of Matriculas with Honors that can be awarded according to UAB regulations.
- Given that the assessment methodology is continuous, the submission of any assessable evidence (problem exercises, tests, practicals, etc.) is interpreted as an express intention to take the course and, therefore, to receive a grade other than Not Assessable (NA). A grade of NA can only be obtained by not submitting any assessable evidence throughout the entire course.
- The final grade for a subject will be rounded to the nearest whole number when it is one-tenth of a value that would result in a change to a higher qualitative grade.

#### f) Student Irregularities, Cheating, and Plagiarism

Without prejudice to other disciplinary measures deemed appropriate, and in accordance with current academic regulations, any irregularities committed by a student that may lead to a grade variation in an assessable activity will be graded with a zero (0). Assessment activities graded in this manner and by this procedure will not be recoverable. If it is necessary to pass any of these assessment activities to pass the course, the course will be immediately failed, with no opportunity to recover it in the same academic year. These irregularities include, among others:

- copying all or part of an assignment, report, or any other assessment activity;
- allowing copying;
- submitting group work not fully completed by group members (applied to all members, not just those who have not worked);
- unauthorized use of AI (e.g., Copilot, ChatGPT, or equivalent) to complete any assessable activity;
- Presenting materials prepared by a third party as one's own, even if they are translations or adaptations, and generally works with elements that are not original and exclusive to the student;
- Having communication devices (such as mobile phones, smart watches, camera pens, etc.) accessible during individual theoretical and practical assessment tests (exams);
- Talking with classmates during individual theoretical and practical assessment tests (exams);
- Copying or attempting to copy from other students during theoretical and practical assessment tests (exams);
- Using or attempting to use material related to the subject during theoretical and practical assessment tests (exams), when these have not been explicitly permitted.

For this subject, the use of Artificial Intelligence (AI) technologies is permitted exclusively for support tasks, such as bibliographic or information searches, proofreading, or translations. Students must clearly identify which parts were generated with this technology, specify the tools used, and include a critical reflection on how they influenced the process and the final result of the activity. Lack of transparency in the use of AI will be considered academic dishonesty and may result in a partial or total penalty on the activity grade, or greater sanctions in serious cases.

The numerical grade of the transcript will be the lower value between 3.0 and the weighted average of the grades in the event that the student has committed irregularities in an assessment act (and therefore passing by compensation will not be possible).

In summary: cheating, allowing cheating, or plagiarizing (or attempting to cheat) in any of the assessment activities is equivalent to a FAIL, which cannot be compensated and will not allow validation of parts of the course in subsequent years.

#### g) Assessment of repeating students

No separate assessment is planned for repeating students.

## h) Single assessment

This course does not include the single assessment system.

## Bibliography

- Subject material: Virtual Campus
- Essential Linux Toolkit. eBook disponible en [https://www.tradepub.com/free/w\\_howt04/prgm.cgi?a=1](https://www.tradepub.com/free/w_howt04/prgm.cgi?a=1)
- Linux BASH programming Cookbook. System Code Geeks. eBook disponible en [https://tecmintradedpub.com/free/w\\_syst05/](https://tecmintradedpub.com/free/w_syst05/)
- Documentació oficial de Python, <https://www.python.org/doc/>
- Pro Git. Scott Chacon, Ben Straub. Apress 2014. eBook disponible a <https://git-scm.com/book/es/v2>
- Ubuntu Desktop Guide. Disponible a <https://help.ubuntu.com/stable/ubuntu-help/index.html.en>
- Open Nebula documentation, <https://openebula.io/docs/>

## Software

- VirtualBox ([virtualbox.org](https://www.virtualbox.org/))
- Ubuntu ([ubuntu.com](https://ubuntu.com/))
- Python (<https://www.python.org/>)
- Git (<https://git-scm.com/>)
- Software GNU (<https://www.gnu.org/>)

## Course groups and languages

The information provided is provisional until November 30. After this date, you will be able to consult the language of each group through this [link](#). To access the information, you will need to enter the course CODE

| Type of teaching              | Group | Language | Semester       | Shift         |
|-------------------------------|-------|----------|----------------|---------------|
| (PAUL) Classroom practices    | 411   | Catalan  | first semester | morning-mixed |
| (PLAB) Practical laboratories | 411   | Catalan  | first semester | morning-mixed |
| (PAUL) Classroom practices    | 412   | Catalan  | first semester | morning-mixed |
| (PLAB) Practical laboratories | 412   | Catalan  | first semester | morning-mixed |
| (PLAB) Practical laboratories | 413   | Catalan  | first semester | morning-mixed |
| (PLAB) Practical laboratories | 414   | Catalan  | first semester | morning-mixed |
| (PLAB) Practical laboratories | 415   | Catalan  | first semester | morning-mixed |
| (PLAB) Practical laboratories | 416   | Catalan  | first semester | morning-mixed |
| (PLAB) Practical laboratories | 417   | Catalan  | first semester | morning-mixed |
| (PLAB) Practical laboratories | 418   | Catalan  | first semester | morning-mixed |
| (PLAB) Practical laboratories | 419   | Catalan  | first semester | afternoon     |
| (PLAB) Practical              | 420   | Spanish  | first          | afternoon     |

| laboratories                  |     |         | semester       |               |
|-------------------------------|-----|---------|----------------|---------------|
| (PAUL) Classroom practices    | 431 | Catalan | first semester | morning-mixed |
| (PAUL) Classroom practices    | 432 | Catalan | first semester | morning-mixed |
| (PAUL) Classroom practices    | 451 | Catalan | first semester | afternoon     |
| (PAUL) Classroom practices    | 511 | Catalan | first semester | afternoon     |
| (PLAB) Practical laboratories | 511 | Spanish | first semester | afternoon     |
| (PLAB) Practical laboratories | 512 | Catalan | first semester | afternoon     |