

- Faculté des sciences
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Operating Systems (3IN1031)

Filières concernées	Nombre d'heures	Validation	Crédits ECTS
Bachelor en mathématiques	Cours: 2 ph Exercice: 2 ph	écrit: 2 h	6
Bachelor en sciences et sport (mathématiques)	Cours: 2 ph Exercice: 2 ph	écrit: 2 h	6
Bachelor en systèmes naturels	Cours: 2 ph Exercice: 2 ph	écrit: 2 h	6
Master en informatique	Cours: 2 ph Exercice: 2 ph	écrit: 2 h	6
Pilier principal B A - mathématiques	Cours: 2 ph Exercice: 2 ph	écrit: 2 h	6

ph=période hebdomadaire, pg=période globale, j=jour, dj=demi-jour, h=heure, min=minute

Période d'enseignement:

- Semestre Printemps

Equipe enseignante:

Lectures: Dr. Etienne Riviere.
Assistant(s): Raziel C. Gomez

Objectifs:

The objective of this course is to introduce the fundamental mechanisms of operating systems. The focus will be on understanding the design or modern operating systems, and its influence on computer performance and usability.

The course uses a combination of reading, interactive lectures and exercises to understand the organization of a computer system and the management of processes, memory and files. It also covers synchronization and scheduling as representative systems problems. We use examples from a variety of operating systems (Mac OS, Linux, Windows, UNIX) in class but the practical sessions use the Java programming language. Only a moderate technical background is required, corresponding to the computer programming classes offered in the first year at UNINE, or equivalent.

This course is a sound basis for any CS-oriented curricula. It also very well suited for non-CS majors wishing to understand the fundamentals of modern computer systems and explore some classical design and tradeoffs that can be found in many other branches of computer science and programming, including large-scale systems and Cloud computing.

Contenu:

This course covers the fundamentals of operating systems and their underlying principles: process management and time sharing (including synchronization and scheduling), memory management, storage management. Exercises are based on simulations or simplified computer systems environments and help mastering the concepts presented during the lectures.

Forme de l'évaluation:

The evaluation is based equally on the final exam (50% of the grade) and on the grades of the project assignments (50%). The project assignments are mandatory and are due on fixed dates announced during the first lecture. Upon failure at the exam, the grade for the assignments will be kept when the student passes the exam another time (note that it is not possible to secure a 4 by passing only the exam due to the 50%/50% rule). Weekly quizzes are provided for self-evaluation of students' progress. These quizzes are corrected but are not graded.

Documentation:

Operating System Concepts with Java
Abraham Silberschatz, Peter B. Galvin, Greg Gagne (Wiley)

The book is mandatory for the course but students do not have to buy it. Books from the library will be available to borrow from the library for the

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entire semester.

Pré-requis:

- no prior knowledge of operating systems concepts required
- no prior knowledge of UNIX required
- general knowledge of the Java programming language. Students without any knowledge of Java but knowledge of another object-oriented language should not have any problem taking the course, but it is recommended that they contact the instructor, who will provide pointers to documentation/online resources for a self-taught course.

Forme de l'enseignement:

Every week: lecture (1h45), practical (2h), weekly quiz corrected upon submission, practicals in the form of several mini-projects of 1 to 4 weeks.