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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): Dr. Pierre Sutra

Objectifs:

The objective of this course is to introduce some of the fundamental mechanisms of operating systems. The focus will be on to understanding the design choices that led to their construction, and their influence on computer performance and usability. The course uses a combination of lectures and exercises to understand the organization of a computer system, the management of processes, memory and files, and also covers synchronization and scheduling as representative systems problem. We use examples from a variety of operating system (Mac OS, Linux, Windows, UNIX) in class but the practical sessions only use the Java programming language. Only a small technical background is required, corresponding to the computer programming classes offered in the first year.

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.

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 on the final exam (50% of the grade) and the grades of the project assignments (50%). The project assignments are mandatory and are due on fixed dates announced at 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 individually but are not graded.

Documentation:

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

Students are not required to buy the book. Several books are available to borrow or consult at the library.

Pré-requis:

- no prior knowledge of operating systems concepts required
- no prior knowledge of UNIX required

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- general knowledge of the Java programming language (e.g., PROG2 or equivalent). Students without no knowledge of Java should contact the instructor or TA, who will provide assistance in a self-taught course.

Forme de l'enseignement:

Every week: lecture (1h45), practical (2h), weekly quiz corrected upon submission to TA, practicals are several mini-projects.