

- Faculté des sciences
- [www.unine.ch/sciences](http://www.unine.ch/sciences)

**Concurrency: Multi-core Programming and Data Processing (3IN2052)**

Filières concernées	Nombre d'heures	Validation	Crédits ECTS
<b>Master en informatique</b>	<b>Cours: 2 ph Exercice: 2 ph</b>	Voir ci-dessous	5

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

**Période d'enseignement:**

- Semestre Printemps

**Equipe enseignante**

Prof. Pascal Felber

**Contenu**

The main topics covered in the course include foundations of concurrency: concurrent objects and consistency, foundations of shared memory, the relative power of synchronization operations, universality of consensus; and practical algorithms: mutual exclusion, spin locks and contention, lock-free and wait-free algorithms, concurrent data structures (linked lists, skip lists, queues, stacks, hash tables), scheduling and work distribution, barriers, transactional memory. The course will be complemented by practical, hands-on exercises on multi-core computers.

**Forme de l'évaluation**

Written (90 minutes)

**Modalités de rattrapage**

Oral (30 minutes)

**Documentation**

<http://ilias.unibe.ch>

**Pré-requis**

Basic programming knowledge in Java

**Forme de l'enseignement**

Lectures + labs

**Objectifs d'apprentissage**

Au terme de la formation l'étudiant-e doit être capable de :

- Design concurrent algorithms
- Reproduce experiments
- Solve algorithmic problems
- Develop multi-core programs

**Compétences transférables**

- Conceptualise algorithms
- Demonstrate solutions
- Formulate problems