

- 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>	<b>écrit: 2 h</b>	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

**Objectifs:**

This course covers the foundations of concurrent systems and multiprocessor synchronization. Students who take this course will learn the basics of multicore programming, the new paradigm of computer science.

**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 (120 minutes), repeat exam is oral (30 minutes)

**Documentation:**

<http://ilias.unibe.ch>

**Pré-requis:**

Basic programming knowledge in Java

**Forme de l'enseignement:**

Lectures+labs