

MICRO-706 **Microfluidics for lab-on-a-chip**

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Cursus	Sem.	Type
Microsystems and Microelectronics		Obl.

Language of teaching	English
Credits	1
Session	
Exam	Term paper
Workload	30h
Hours	14
Courses	14
Number of positions	32

Frequency

Every 2 years

Remark

-Wednesday May 20th from 14h to 18h -Wednesday May 27th from 9h to 13h -Friday May 29th from 13h30 to 17h
 -Tuesday June 2nd from 14h to 18h

Summary

The course covers the entire field of lab-on-a-chip technology, including microfluidic principles and various microfabrication approaches, and presenting concrete examples of devices for (bio)analysis, cell biology, tissue regeneration and microreactors.

Content

This course will be given online over 4 half days as follows:

- Wednesday May 20th from 14h to 18h
- Wednesday May 27th from 9h to 13h
- Friday May 29th from 13h30 to 17h
- Tuesday June 2nd from 14h to 18h

- Introduction to microfluidics and lab-on-a-chip technology – origins - scaling laws – applications
- Microfluidic principles: flow actuation; pumps; mixers; valves; etc.
- Introduction to fabrication techniques for the production of microfluidic devices, using “cleanroom materials” such as silicon and glass, as well as polymer materials.
- Surface modification: surface passivation; and immobilization of active and/or recognition elements
- (Bio)molecule analysis: sample preparation; molecular separation; integrated devices for biomolecule analysis
- Microreactors
- Microfluidics for cell biology: engineering device for experimentation on cells; tissue regeneration and organ-on-a-chip platforms

Keywords

Microfluidics, Lab-on-a-Chip, Bioanalysis, Microfabrication, Organ-on-a-Chip