MSE-479

Introduction to nanomaterials

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Cursus	Sem.	Type
Biomedical technologies minor	H	Opt.
Chimiste	MA1, MA3	Opt.

Language of teaching	English
Credits	2
Session	Winter
Semester	Fall
Exam	Oral
Workload	60h
Weeks	14
Hours	**2 weekly**
Courses	2 weekly
Number of positions	

Summary

The course gives an introdution to nanostructured materials and their applications. This course is adressed to students with limited knowledge in materials science, therefore the properties of bulk material will be shortly explained and for important properties the "nanoeffect" will be disscued.

Content

1. Introduction into nanomaterials
2. Properties of nanomaterials :
- Electric, optic
- Magnetic
- Thermodynamic
- Mechanic
3. Preparation and synthesis of nanomaterials :
- Chemical and physical methods
- Self assembly
4. Applications

Keywords

nanotechnology, nanomaterials, nano

Learning Prerequisites

Recommended courses

Basic knowledge in chemistry, physics, thermodynamics

Learning Outcomes

By the end of the course, the student must be able to:

- Assess / Evaluate the difference between bulk and nanosiced materials
- Explain typical synthesis method fro nanomaterials
- Assess / Evaluate existing potential application of nanomaterial
- Explain the physical, chemical and thermodynamic behaviour of nanoparticles

Transversal skills

- Make an oral presentation.

Teaching methods

Lectures and presentations from students

Expected student activities

An oral presentation regarding a subject given at the beginnin of the semester

Supervision

Office hours	No
Assistants	No
Forum	No

Resources

Notes/Handbook

http://ltp.epfl.ch/files/content/sites/ltp/files/shared/Teaching/Master/03-IntroductionToNanomaterials/LectureSupportAll.pd