

# MSE-649 Crystal growth by epitaxy

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Cursus	Sem.	Type
Materials Science and Engineering		Opt.

Language of teaching	English
Credits	2
Session	_
Exam	Multiple
Workload	60h
Hours	28
Lecture	14
Exercises	12
Practical	2
work	
Number of positions	

## **Frequency**

Every year

#### Remark

Will not be given during this academic year

## **Summary**

This is an interactive course explaining the main physical and chemical concepts to understand epitaxy of crystalline thin films and what determines the morphology, composition and structure of a material grown per epitaxy both in the bulk and as nanostructure.

## Content

This is an interactive course explaining:

- The main physical and chemical concepts to understand epitaxy of crystalline thin films.
- 2. What determines the morphology, composition and structure of a material grown per epitaxy. In the main body of the course contains the main scientific concepts that explain high quality epitaxy. We will also describe the main techniques used by industry and scientific laboratories for the epitaxial growth of materials and devices. Finally, the translation of the epitaxy of macroscopic crystals will be translated to the growth of nanostructures and novel materials.

### Keywords

molecular beam epitaxy, thermodynamic diagrams, surface reconstruction

### **Learning Prerequisites**

Required courses

thermodynamics

#### **Assessment methods**

oral/written

# Resources

## **Moodle Link**

• https://go.epfl.ch/MSE-649

