

**Modules:**

physics700 **Elective Advanced Lectures**  
 physics710 **Experimental Physics**  
 physics720 **Applied Physics**

**Course:**

## Physics of Surfaces and Nanostructures (E/A)

**Course No.:**

Category	Type	Language	Teaching hours	CP	Semester
Elective	Lecture	English	2	3	WT

**Requirements:****Preparation:**

Basic knowledge of solid state physics

**Form of Testing and Examination:**

Oral examination

**Length of Course:**

1 semester

**Aims of the Course:**

Understanding of fundamental concepts in surface and nanostructure science  
 Knowledge of basic fields and important applications

**Contents of the Course:**

The lecture introduces to modern topics of surface and nanostructure physics. Basic concepts are illustrated with examples and the link to technical applications is emphasized. Topics covered are

- surface structure and defects,
- adsorption and heterogeneous catalysis,
- surface thermodynamics and energetics
- surface electronic structure and quantum dots,
- magnetism at surfaces
- epitaxy and thin film processes,
- oxide films
- ion beam processes at surfaces,
- clusters,
- graphene

**Recommended Literature:**

Michely: Skriptum (available during the course)

H. Ibach: Physics of Surfaces and Interfaces (Springer, Berlin 2006)

K. Oura et al: Surface Science - an introduction (Springer, Berlin 2003)

M. Prutton: Introduction to Surface Physics (Oxford University Press, 1994)

H. Lüth: Solid Surfaces, Interfaces and Thin Films, (Springer, Berlin 2001)

M. Henzler/ W. Göpel: Oberflächenphysik des Festkörpers (Teubner, Stuttgart 1994)