

**Modules:**

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

**Course:**

## Semiconductor Physics and Nanoscience (E/A)

**Course No.:**

| Category | Type    | Language | Teaching hours | CP | Semester |
|----------|---------|----------|----------------|----|----------|
| Elective | Lecture | English  | 2              | 3  | ST       |

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

Basic knowledge in condensed matter physics

**Form of Testing and Examination:**

No examination

**Length of Course:**

1 semester

**Aims of the Course:**

Understanding of theoretical and experimental concepts of semiconductor physics, nanotechnology as well as aspects of future information technology.

Knowledge of basic fields and important applications of information technology.

**Contents of the Course:**

Semiconducting material and nanostructures represent the backbone of modern electronics and information technology. At the same time they are fundamental to the research of problems of modern solid state physics, information technology and biophysics. This lecture will provide an introduction to semiconductor physics and its applications.

Topics covered are

introduction to semiconductor physics, crystalline structure, band structure, electronic and optical properties,

heterostructures, junction and interfaces,

basic semiconductor device concepts,

up to date techniques and strategies of information technology ranging from nowadays preparation technologies and nanoscience to concepts of molecular electronic and bioelectronics.

**Recommended Literature:**

Skriptum (available during the course)

Bergmann/Schäfer, Experimentalphysik (Band 6: Festkörper)

Ibach/Lüth, Festkörperphysik