

Title Physics of Metals and Semiconductors (Fiz.met. i półprzew.)	Code 1010402211010430667
Field TECHNICAL PHYSICS	Year / Semester 1 / 1
Specjalty -	Course core
Hours Lectures: 2 Classes: 2 Laboratory: - Projects / seminars: -	Number of credits 4
	Language polish

Lecturer:

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Status of the course in the study program:

Core course of the study for Technical Physics, Faculty of Technical Physics.

Assumptions and objectives of the course:

Introduction of listeners with the elements of theories describing metals and semiconductors is the Aim of the object. Also practical aspects of utilization of the theory of the describing properties of these materials are within the lecture. The introduction with the theory is also the aim of the lecture the describing work of basic semiconductor arrangements and her utilization in technical applications.

Contents of the course (course description):

Basic description of the crystallography. Characteristic feature of metals and semiconductors. Electron Drude's theory and her limitation. Sommerfeld's theory, schedule Fermi-Dirac and his consequences. The description of electron states in the solid states, the thread structure of electron states. Planting electron states. The tremblings of the crystalline net, electron transportation (hole) in the crystal. Review of semiconductor materials, the method of receiving semiconductor materials. He joins in semiconductors, heterostructure, transistors, semiconductor lasers. Quantum effects in semiconductor devices.

Introductory courses and the required pre-knowledge:

Basic knowledge from Solid State Physics and Quantum mechanics.

Courses form and teaching methods:

Lecture helped multimedia introductions, classes.

Form and terms of complete the course - requirements and assessment methods:

Written and oral examination.

Basic Bibliography:

1. H. Ibach, H. Lüth, Fizyka ciała stałego, Wydawnictwo Naukowe PWN, 1996
2. W. A. Harrison, Teoria ciała stałego, PWN 1976
3. J.M. Ziman, Wstęp do fizyki ciała stałego, PWN, Warszawa 1977

Additional Bibliography:

1. K. Sierański, M. Kubisa, J. Szatkowski, J. Misiewicz ? Półprzewodniki i struktury półprzewodnikowe,
2. Oficyna Wydawnicza Politechniki Wrocławskiej, 2002
3. P.Y. Yu, M. Cardona, Fundamentals of Semiconductors, Springer, 2001
4. I.M. Cydlikowski, Elektry i dziury w półprzewodnikach, PWN, 1976
5. Ch. Kittel, Wstęp do fizyki ciała stałego, PWN, 1999
6. N. W. Ashcroft, N. D. Mermin, Fizyka Ciała Stałego, PWN 1986
7. L. Sosnowski - Wstęp do Fizyki Ciała Stałego cz. I, Wydawnictwa Uniwersytetu Warszawskiego, 1977
8. L. Sosnowski - Wstęp do Fizyki Ciała Stałego cz. II, Wydawnictwa Uniwersytetu Warszawskiego, 1984