

Title Quantum Mechanics (Mechanika kwantowa)	Code 1010401241010420697
Field TECHNICAL PHYSICS	Year / Semester 2 / 4
Specialty -	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:

The students should obtain knowledge of fundamentals of quantum mechanics

Contents of the course (course description):

The wave function. Formalism of quantum mechanics (state vectors, outer products, operators, and measurements). Time-independent Schrodinger equation. Quantum mechanics in three dimensions (Schrodinger equation in 3D). Angular Momentum Commutators, Angular Momentum Eigenvalues, Angular Momentum Eigenvectors. Identical particles. Spin in a magnetic field. Magnetic resonance. Central force motion. Use of angular momentum. The Coulomb problem. Hydrogen atom fine structure. Two-particle systems - The helium atom. Time-independent perturbation theory. The variational principle. Multielectron Atoms--Optical Excitations. Multielectron Atoms - Atoms Periodic Table, Nuclear Spin, Hyperfine Structure. Nuclear Moments and Nuclear Magnetic Resonance.

Introductory courses and the required pre-knowledge:

Basic knowledge of physics and mathematics

Courses form and teaching methods:

Lectures and classes

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

Written exam and tests.

Basic Bibliography:

1. R.Eisberg, R.Resnick, Fizyka kwantowa, PWN Warszawa 1983
2. P. A. Tipler, R.A. Llewellyn, Fizyka współczesna, PWN 2012
3. G.K. Woodgate, Struktura atomu, PWN Warszawa 1974
4. S.N. Levine, Fizyka kwantowa w elektronice, PWN 1968

Additional Bibliography:

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