


**KAPITAŁ LUDZKI**  
 NARODOWA STRATEGIA SPÓJNOŚCI

 Projekt współfinansowany przez  
 Unię Europejską w ramach  
 Europejskiego Funduszu  
 Społecznego

**UNIA EUROPEJSKA**  
 EUROPEJSKI  
 FUNDUSZ SPOŁECZNY


<b>Course title</b>		<b>ECTS code</b>	
Physics		7.2.0537	
<b>Name of unit administrating study</b>			
Faculty of Mathematics, Physics and Informatics			
<b>Studies</b>			
<b>faculty</b>	<b>field of study</b>	<b>type</b>	<b>pierwszego stopnia</b>
Wydział Chemii	Ochrona środowiska	<b>form</b>	stacjonarne
		<b>specjalty</b>	Podstawowa
		<b>specialization</b>	Podstawowa
<b>Teaching staff</b>			
prof. dr hab. Janina Heldt; dr hab. Aleksander Kubicki; dr Marta Miotke-Wasilczyk; prof. dr hab. Stanisław Pogorzelski; mgr Patryk Kamiński; mgr Natalia Górecka; prof. UG, dr hab. Sebastian Mahlik; dr hab. Janusz Szurkowski; prof. UG, dr hab. Ryszard Drozdowski; Karolina Baranowska; mgr Marek Eggen; dr hab. Marek Józefowicz; dr Justyna Barzowska			
<b>Forms of classes, the realization and number of hours</b>		<b>ECTS credits</b>	
<b>Forms of classes</b>		7	
Auditorium classes, Lecture		classes - 45 h	
<b>The realization of activities</b>		tutorial classes – 30 h	
classroom instruction		student's own work – 100 h	
<b>Number of hours</b>		Total: 175 h - 2 ECTS	
Lecture: 30 hours, Auditorium classes: 15 hours			
<b>The academic cycle</b>			
2022/2023 winter semester			
<b>Type of course</b>		<b>Language of instruction</b>	
obligatory		polish	
<b>Teaching methods</b>		<b>Form and method of assessment and basic criteria for evaluation or examination requirements</b>	
- discussion		<b>Final evaluation</b>	
- multimedia-based lecture		- Graded credit	
- problem solving		- Examination	
- seminar lecture		<b>Assessment methods</b>	
		written exam (long written answer/problem solving)	
		<b>The basic criteria for evaluation</b>	
		The basic criteria for evaluation or exam requirements	
		Activity during classes and mastering the content covered by the lecture subject program provided.	
<b>Method of verifying required learning outcomes</b>			
<b>Required courses and introductory requirements</b>			
A. Formal requirements			
B. Prerequisites			
<b>Aims of education</b>			
Aims of education			
Understanding the basics of physics on a wider level than in high school using maths higher than at school. The known laws of physics are then to be the foundation for further subjects in the field of study. The student is to acquire the ability to analyze and explain observed phenomena and processes in chemistry from the physics point of view.			
<b>Course contents</b>			
Course contents			
Tools of physics and its relationship with other sciences. Interactions in nature.			
Basics of kinematics: description of the motion of a point mass, types of motion, reference systems, relativity of motion.			

Basics of dynamics: definition of force, principles of Newton's dynamics.  
 The law of universal gravitation.  
 Work, energy, power. Principles of behavior in mechanics.  
 Basics of rigid-body mechanics.  
 Oscillatory and wave motion: harmonic oscillator, mechanical waves and wave phenomena.

1. Basic information from mechanics (kinematics and dynamics)
2. Electromagnetic waves and their application
3. Molecular structure of bodies
4. Hydrodynamics and hydrostatics
5. Thermodynamics
6. Acoustics and optics
7. Basis of modern physics

### Bibliography of literature

Bibliography of literature  
 Literature required to pass the course  
 D. Halliday, R. Resnick, J. Walker, „Postawy fizyki” (t. 1-5), Wydawn. Naukowe PWN, Warszawa, 2003 (dodruki 2005-2017).  
 J. Orear, „Fizyka” (t. 1 i 2), Wyd. Naukowo-Techniczne, Warszawa, 2004 (i późniejsze dodruki).  
 B. Jaworski, A. Dietlaf, (t.3 L. Miłkowska) – „Kurs fizyki” (t. 1-3), PWN 1984.  
 Extracurricular readings

### The learning outcomes (for the field of study and specialization)

#### Knowledge

#### Skills

#### Social competence

### Contact

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