KAPITAŁ LUDZKI
NARODOWA STRATEGIA SPÓJNOŚCI

Projekt współfinansowany przez Unię Europejską w ramach Europejskiego Funduszu Społecznego

UNIA EUROPEJSKA
EUROPEJSKI FUNDUSZ SPOŁECZNY

Course title	ECTS code
Physics Lab	13.2.0407

Name of unit administrating study

Faculty of Mathematics, Physics and Informatics

Studies

faculty	field of study		
Faculty of Mathematics, Physics and Informatics	Physics	type	second tier studies (MA)
		form	full-time
		specialty	physics
		specialization	all

Teaching staff

mgr Agata Lazarowska; dr Sebastian Mahlik; dr Sebastian Mahlik; dr Justyna Barzowska; prof. UG, dr hab. Jerzy Kwela; dr Justyna Strankowska

Forms of classes, the realization and number of hours

Forms of classes

Ćw. laboratoryjne (to translate)

The realization of activities

lectures in the classroom

Number of hours

Ćw. laboratoryjne (to translate): 75 hours

ECTS credits

6

2021/2022 summer semester

Type of course

obligatory

Language of instruction

polish

Teaching methods

Wykonywanie doświadczeń (to translate)

Form and method of assessment and basic criteria for eveluation or examination requirements

Final evaluation

Zaliczenie na ocenę (to translate)

Assessment methods

ustalenie oceny zaliczeniowej na podstawie ocen cząstkowych otrzymywanych w trakcie trwania semestru (to translate)

The basic criteria for evaluation

Sposób weryfikacji założonych efektów kształcenia (DO TŁUMACZENIA)

Required courses and introductory requirements

A. Formal requirements

B. Prerequisites

Aims of education

Experimental verification of physical phenomena discussed in lectures on the basics of physics, quantum mechanics and electrodynamics, solid-state physics, atomic and particle physics, laser physics, quantum information.
Understand fundamental physical phenomena occurring in nature and the essence of quantum phenomena.
Use acquired descriptions of phenomena, processes, research methodology, and formalisms for specific experimental tasks performed in a physics laboratory.
To acquaint the student with modern equipment and measuring devices - their construction, principles of operation, and operation.
Perform computer-aided experiments using the latest software, including Lab View.
Learning how to conduct physical experiments, properly analyze the obtained results correctly, and measure errors and interpret the obtained results.

Course contents

Bibliography of literature

Literature:
Comprehensive instructions for all experiments.
J. Sobelman – „ Atomic Spectra and Radiative Transitions”, Springer, 1979.

K. Hermbecker – Handbook „Physics X – Ray Experiments”, Phywe – Serie of Publication, 2010.
Peres – “Quantum Theory: Concepts and Methods”, Kluwer Academic Publishers, 1993.
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H. Abramczyk – “Introduction to Laser Spectroscopy”, Elsevier Science, Amsterdam 2005.
H. Paul – “Introduction Quantum Optics from Light Quanta to Teleportation”, Cambridge University Press, Cambridge 2004.
Handbook ”Laboratory Experiments Physics”,Phywe System GmbH&Co. K.G.
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J. A. Weil, J.R. Bolton – “Electron Paramagnetic Resonance: Elementary Theory and Practical Applications”, Wiley, New York 2001.
J. H. Moore, Ch. C. Davies, M.A. Coplan – “Building Scientific Apparatus”, Westview Press, 2003.
J. Laminie, A. Dicks– “Fuel Cell Systems Explained”, Wiley, 2003.
K. Joon– ” Fuel Cells– a 21stCentury Power System”, “Journal of Power Sources”, 1998, 71.
L. Andrèn – “Solar Installations. Practical Applications for the Built Environment”, James& James Science Publishers, London 2003.
L. Mandel, E. Wolf – “Optical Coherence and Quantum Optics”, Cambridge 1995.
M. Born, E. Wolf – “Principles of Optics”, Cambridge University Press, Cambridge 1999.
M. M. Kash, G.C. Shilds – “Using the Franck-Hertz Experiment to Illustrate Quantization”, J. Chem. Educ. 71, 466, 1994.
W. J. Croft – “Under the Microscope. A Brief History of Microscopy”, Hackensack & London: World Scientific, 2006.
W. S.C. Chang – “Principles of Lasers and Optics”, Cambridge University Press, 2005
“Renewable Energy – Sources for Fuels and Electricity”, Island Press, Washington 1993.
“Solid State Physics. Pt. B, Electrical, Magnetic, and Optical Properties” ed. by K. Lark-Horovitz and Vivian A. Johnson, London : Academic Press, New York 1959.
A. Lucas, PH. Lambin, R. Mairesse and M. Mathot–“Revealing the Backbone Structure of β – DNA from Laser Optical Simulations of its X – Ray Diffraction Diagram”, 1997.
J. Camm – “Dynamic Electrocardiography”, Eimsford:Blacwell/Futura, 2004.
Lipson, S.G. Lipson, H. Lipson – “Optical Physics”, Cambridge University Press, 2011.
D. A. Rand – “Clean Energy”, Springer, 2005.
D. M. Pozar – “Microwave Engineering”, John Willey & Sons Inc., NY 1998.
J. Laminie, A. Dicks– “Fuel Cell Systems Explained”, Wiley, 2003.
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M. A.Green–“Solar Cells–Operating Principles, Technology and System Applications”, Ed. Univ. of New South Wales, 1992.

	Knowledge
	Skills
	Social competence

Contact

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