

<b>STUDY MODULE DESCRIPTION FORM</b>		
Name of the module/subject <b>Some Issues in Modern Physic</b>		Code <b>1010634171010334071</b>
Field of study <b>Mechanical Engineering</b>	Profile of study (general academic, practical) <b>(brak)</b>	Year /Semester <b>4 / 7</b>
Elective path/specialty <b>Thermal Engineering</b>	Subject offered in: <b>Polish</b>	Course (compulsory, elective) <b>obligatory</b>
Cycle of study: <b>First-cycle studies</b>	Form of study (full-time, part-time) <b>part-time</b>	
No. of hours Lecture: <b>20</b> Classes: <b>10</b> Laboratory: <b>-</b> Project/seminars: <b>-</b>		No. of credits <b>3</b>
Status of the course in the study program (Basic, major, other) <b>(brak)</b>		(university-wide, from another field) <b>(brak)</b>
Education areas and fields of science and art		ECTS distribution (number and %)
<b>Responsible for subject / lecturer:</b>  dr Jarosław Ruczkowski email: jaroslaw.ruczkowski@put.poznan.pl tel. 665 3228 Faculty of Technical Physics ul. Nieszawska 13A 60-965 Poznań		
<b>Prerequisites in terms of knowledge, skills and social competencies:</b>		
1	<b>Knowledge</b>	Basic knowledge of physics and mathematics (to the extent specified by the program contents relevant to field of study)
2	<b>Skills</b>	The ability to solve basic problems of physics on the basis of their knowledge, the ability to obtain information from the indicated sources
3	<b>Social competencies</b>	Understanding of the need to broaden their knowledge and skills
<b>Assumptions and objectives of the course:</b> 1. Provide students with a basic knowledge of modern physics 2. Develop students' ability to see examples of the achievements of modern physics in terms of action and construction equipment used in the modern world 3. Developing students' ability to use and understand the sources of popular scientific and popular, describing the achievements of modern physics, and their applications		
<b>Study outcomes and reference to the educational results for a field of study</b>		
<b>Knowledge:</b> 1. Defines the basic concepts of quantum physics - [K1A_W02] 2. Formulates and explains the basic laws of quantum physics and give examples of their use in the description of phenomena in the world around - [K1A_W02] 3. Provides simple examples of the achievements of modern physics in the operation and construction of the equipment used in the modern world - [K1A_W02]		
<b>Skills:</b> 1. Can apply basic laws of quantum physics and simplified models to describe phenomena in the surrounding world and the operation of selected devices, in which the achievements of quantum physics are utilized - [-] 2. Can use and understand of the indicated sources of knowledge (basic bibliography) and to acquire knowledge from other sources - [K1A_U03]		
<b>Social competencies:</b> 1. Can independently develop and enhance their knowledge and skills - [K1A_K01 ]		
<b>Assessment methods of study outcomes</b>		
Control test.		

<b>Course description</b>		
1. Blackbody radiation 2. Quantum properties of radiation 3. Wave properties of matter 4. The probabilistic nature of quantum physics 5. Elements of nuclear physics 6. Lasers - The principle of operation and applications 7. Elements of solid state physics 8. Elements of nuclear physics and nuclear energy 9. Nuclear physics in medicine 10. Elements of particle physics		
<b>Basic bibliography:</b>		
<b>Additional bibliography:</b>		
<b>Result of average student's workload</b>		
Activity	Time (working hours)	
1. Participation in lectures	28	
2. Participation in consultations related to the implementation of the training	4	
3. Preparation for the control test	16	
4. Participation in the control test	2	
<b>Student's workload</b>		
Source of workload	hours	ECTS
Total workload	50	3
Contact hours	34	2
Practical activities	0	0