| Name of the module/subject Code 1010601221010414071 Field of study Profile of study (general academic, practical) Year /Semester (torak) 1 / 2 Elective path/specialty - Subject offered in: Polish Course (compulsory, elective) obligatory 1 / 2 Cycle of study: - Form of study (ful-time, part-time) volume, compulsory, elective) No. of credits Cycle of study: - Project/seminars: - 2 Status of the course in the study program (Basic, major, other) (university-wide, from another field) No. of credits Education areas and fields of science and art ECTS distribution (number and %) 2 100% Responsible for subject / lecturer: dr in2, Marek Nowicki email: marek.nowicki@putp.corran.pl tet. 61 665-32-33, 61 665-3236 Xeitiki Technicari information from the identified socurces Image: Sciences 1 Knowledge Knowledge of basic physics course in the first semester Image: Science Image: Science 2 Skills ability to solve basic problems of physics on the basis of their knowledge and ability to obtain information from the identified sources Image: Science Image: Science 3 Scicial competencies understanding of th | STUDY MODULE DESCRIPTION FORM | | | | |
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| | | d pomiaru wielkości fizycznyc | h [K1A_W02] | | |
| 1, the student will be able to analyze the concepts of modern physics and applied simplified models in solving the basic | Skills: | | | | |
| problems and tasks in the field of technical sciences - [K1A_U07] | | | d models in solving the basic | | |
| 2. the student will be able to benefit from an understanding of the identified sources of literature and retrieve information from databases, formulate and justify opinions - [K2A_U01] | | | | | |
| Social competencies: | | | | | |
| 1. the student will be able to see the possibilities and ways to keep up to date and complete knowledge of technical science - [K2A_K01] | | | | | |
| 2. the student will be able to actively engage in addressing the questions posed - [K2A_K01] | | e questions posed - [K2A_K0 | 11] | | |
| 3. student will be able to predict the impact of research methods and measurement of environment - [K2A_K06] | | | • | | |

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| Assessment methods of study outco | omes |
|--|---|
| Lecture: | |
| 1) assess the knowledge and skills to the written or oral exam based on the explanat | ions |
| selected topics in physics, | |
| 2) ongoing assessment of student activity in the classroom. | |
| Course description | |
| 1 Diffraction and interference of waves (examples not only for the light). | |
| 2 Blackbody radiation (Wien's law, Planck). Infrared -industrial application and operation | tion of thermal imaging devices. |
| 3 Compton effect, photoelectric effect. | |
| 4 The hypothesis of de Broglie waves and matter. Wave-particle duality. | |
| 5 The wave function and its interpretation. Schrödinger equation. The uncertainty priv | nciple |
| Heisenberg. | |
| 6 The postulates of Bohr's orbits allowed. Line spectrum of the hydrogen atom. | |
| 7 Quantum numbers, Pauli exclusion principle. Periodic table of elements. | |
| 8 Spectroscopy (overview and scientific and technical possibilities offered). | |
| 9 Structure of atomic nuclei. | |
| 10th Natural radioactivity (the story of the discovery, ranks right decay). | |
| 11th Artificial radioactivity, decay reactions and synthesis. | |
| 12th Nuclear weapons (the story of the creation, use and current status). | |
| 13th Nuclear energy (power operation, security technology, economics, problems). | |
| 4th Outline of the Theory of Relativity, relativistic effects. | |
| 15th Non-medical use of radioactivity (leak testing, research diffusion | |
| study of wear, radiation preservation of food). | |
| 16th Laser (the idea of action, use the technique) | |
| 17th Physics in modern medicine (prom. X-ray, CT, MRI, PET, ultrasound, laser, | |
| radiation, brachytherapy all the basics of natural persons). | |
| 18th solid state physics elements (guides, semiconductors, insulators, thermal condu all with reference to engineering applications such as | ctivity, Hall effect, thermoelectric effect |
| energy production spacecraft, sensors and heads halotronowe elements | |
| Peltier, diode and transistor) | |
| 19th Modern storage media (optical drives, hard drives, flash memory including | |
| the impact of physics on their development such as GMR, blue laser). | |
| 20th Superconductivity (theory, history, current and potential applications of the tech | nique). |
| 21st Construction of the solar system, the basic aspects of space flight. | |
| 22 Modern microscopy (electron, SPM). | |
| Basic bibliography: | |
| D. Halliday, R. Resnick, J. Walker, Podstawy fizyki | |
| 2. R. Eisberg i R. Resnick, Fizyka kwantowa atomów, cząsteczek, ciał stałych, jąder | i cząstek elementarnych |
| Additional bibliography: | |
| 1. R. Feynman, Feynmana wykłady z fizyki, | |
| Result of average student's worklo | ad |
| Activity | Time (workin hours) |
| 1. participation in lectures | 30 |
| 2. participation in laboratory exercises | 15 |
| | |

- 4. preparation of laboratory reports
- 5. participation in consultations related to the implementation of the training
- 6. Exam preparation
- 7. the presence of the exam

| Student's workload | | | |
|----------------------|-------|------|--|
| Source of workload | hours | ECTS | |
| Total workload | 107 | 2 | |
| Contact hours | 53 | 1 | |
| Practical activities | 51 | 1 | |