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| **WSB University Branch/Department of Jaworzno**  |
| **Field of study: INFORMATION TECHNOLOGY**  |
| **Subject: Physics**  |
| **Educational profile: practical**  |
| **Level of education: undergraduate studies**  |
| **Number of hours per semester**  | 1  | 2  | 3  | 4  |
| I  | II  | III  | IV  | V  | VI  | VII  |
| **Full-time studies** (w/w/lab/pr/e)\*  |   | **16w / 16lab**  |   |   |  |   |   |
| **Part-time studies** (w/æw/lab/pr/e)  |   | **12w / 12lab**  |   |   |  |   |   |
| **LANGUAGE OF** **INSTRUCTION**  | Polish  |
| **LECTURER**  | D. Eng. Dawid Aleksander, Prof. AWSB, Dr Jerzy Stasz,  |
| **FORM OF ACTIVITIES**  | Lecture, laboratory, consultation  |
| **SUBJECT** **OBJECTIVES**   | Obtain knowledge in physics to understand, among other things, the operation of tools used in computer science.  |
| **Reference to learning outcomes**  | **Description of learning outcomes**  | **Means of verification of the effect**  |
| **Directional effect**  | **PRK**  |
| **NEWS**  |
| INF1\_W201   | P6S\_WG, P6S\_WG\_INZ  | The student has the knowledge in mathematics and physics necessary to formulate and solve typical tasks in the field computer science Students will be familiar with the principles a practice of measurement and how to proces measurement results Students will be able to operate the physical apparatus and process the results using appropriate software.   | Written examination in the form of **P6S** open questions to test knowledge of and open problem questions to test understanding of physical concepts. The student passes a preliminary nd colloquium; takes measurements s independently; elaborates on the results of the measurements. The elaboration is checked.   |
| **SKILLS**  |
| INF\_U05 P6S\_UW Students will be able to plan and carry out Student describes natural INF\_U06 experiments, including measurements and phenomena correctly (written INF\_U15 computer simulations, interpret the results colloquium) and discussion. INF\_U10 obtained and draw conclusions when Student carries out measurements identifying and formulating specifications for and elaboration of results engineering tasks and solving them: independently, culminating in a - use analytical, simulation and experimental credit report methods, Students will be familiar with the principles and practice of measurement and how to process measurement results. He learns the basic truth that all measurements and technical data are subject to measurement uncertainty.  |
| **SOCIAL COMPETENCES**  |

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|  INF\_K401  |  P6S\_KK  | The student is ready to critically evaluate his/her knowledge and perceived content concerning the achievements of computer science , recognise the importance of knowledge in solving cognitive and practical problems and to consult experts when having difficulties in solving a problem independently. Students will be able to assess the conformity of quoted opinions , e.g. political, economic with basic physical principles.  | Discussions in lectures and laboratory. Group interaction in the development of issues  |
| **Student workload (in teaching hours 1h =45 minutes)\*\***  |
| **Stationary Part-time** attendance at lectures = 16 attendance at lectures = 12 participation in exercises = 16 participation in exercises = 12 preparation for exercise = 30 preparation for exercise = 32 lecture preparation = 20 lecture preparation = 26 exam preparation = 10 exam preparation = 10 implementation of project tasks = implementation of project tasks = e-learning = e-learning = Pass/examination = 4 Pass/examination = 4 other (consultation) = 4 other (consultation) = 4 **TOTAL: 100h TOTAL: 100h** **Number of ECTS credits: 4 Number of ECTS credits: 4** **including in practical classes: 2 including in practical classes: 2**  |
| **PREREQUISITES**  | Knowledge of physics at secondary school level and mathematics at tertiary level  |
| **SUBJECT** **CONTENT** (broken down into face-to-face and elearning classes)  | Content delivered in face-to-face and e-learning formats: Physical quantities and their measurements Mechanics Thermodynamics and molecular physics Condensed phase Electricity Electromagnetism Vibrations and mechanical waves Geometrical and wave optics Special theory of relativity Wave-corpuscular duality of matter Models of atomic and solid state structure Nuclear physics  |
| **LITERATURE** **COMPULSORY**  | * W.Bogusz, F. Krok, J. Garbacz, Podstawy fizyki, Oficyna Wydawnicza Politechniki Warszawskiej, 2023
* J. Massalski, Fizyka dla inżynierów, cz. I i II, Wydawnictwo Naukowe PWN, Warszawa 2018
* J. Stasz, Physical laboratory, WSB Dąbrowa Górnicza 2018
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| **LITERATURE** **SUPPLEMENTARY** (including min. 2 items in English; book publications or articles)  | * <http://ocw.mit.edu/courses/physics/>
* <http://hyperphysics.phy-astr.gsu.edu/hbase/hframe.html>
* <https://openstax.pl/pl/>
* D. Halliday, R. Resnick, J. Walker, Fundamentals of Physics, PWN, W-wa 2003
* J. Stasz, Fizyka -repetytorium , PWN Wydawnictwo Szkolne, W-Wa 2010
* J. Stasz, Collection of physics assignments for students of Computer Science. WSB Dąbrowa Górnica 2011
 |
| **SCHOLARLY** **PUBLICATIONS BY**  | • D. Aleksander, Molecular dynamics (MD) in homocysteine nanosystems - computer simulation, [in:] Raczyński Przemysław Czesław, Dawid Aleksander Slawomir, Gburski Zygmunt Edmund,  |
| **INSTRUCTORS** **RELATED TO THE** **TOPICS OF THE** **MODULE**  | BIOMOLECULAR ENGINEERING, 2007, vol. 24, no. 5, pp.577-581. • D. Aleksander, Computer simulation of the dynamics of homocysteine molecules surrounding a carbon nanotube, [in:] Raczyński Przemysław Czesław, Dawid Aleksander Sławomir, Dendzik Zbigniew Andrzej [et al], In: Perspectives of nanoscience and nanotechnology Acta Materialia Gold Medal Workshop ; selected, peer reviewed papers from the European Materials Research Society, fall meeting, Warsaw University of Technology, 17th - 21st September, 2007, 2008, Stafa-Zurich, Trans Tech Publ., p.147-152  |
| **TEACHING** **METHODS**  | Lecture: presentations of physical phenomena Laboratory: Independent taking of measurements and their elaboration.  |
| **LEARNING AIDS**  | * J. Stasz, Zajęcia wyrównawcze, WSB Dąbrowa Górnicza 2013
* Technical manuals of instruments used in the laboratory
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| **PROJECT** (insofar as it is carried out as part of a course module)  | Not applicable  |
| **FORM AND** **CONDITIONS OF** **PASSING**  | Lecture: written exam with mark for class activity Laboratory: credit for preliminary colloquium; credit for reports from designated   |