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| **Speciality:** | **Nanophysics and nanomaterials** |
| **Course of study:** | Physics |
| **Level of education:** | second-cycle (master's) studies |
| **Profile:** | General academic |
| **Speciality description:** | The proposed specialisation in nanophysics is an innovation in the physics faculty going against modern trends. Nanostructures, composite and mesoscopic materials give rise to technologies implemented in specialised industrial laboratories and have applications in electronics and optoelectronics. The aim of the created faculty is to educate young people in the field of technical physics with professional knowledge of solid state physics, modern materials with industrial applications and their structural, electronic, optical and magnetic properties. Hence the important role of educating physicists with a thorough technical and specialised background, ready to carry out implementation research projects. This will provide graduates with the opportunity to undertake professional careers in electronic and electro-technical companies associated with modern technology.Characteristics of studiesFull-time second-cycle studies in physics last 2 years (4 semesters). Classes within the specialisation start from the second semester of studies. They mainly deal with issues related to, among others, physics of semiconductor materials, physics of magnetic materials, interaction of radiation with matter, spectroscopic methods, nanophysics, physics of composite materials, numerical modelling of solids, microsensors. In addition to lectures and seminars, students also take laboratory classes where they are introduced to the basic methods of manufacturing and testing nanometre-sized materials. On the basis of an agreement concluded between the Jan Długosz University of Humanities and Sciences in Częstochowa and Le Mans University in France, students of this specialisation are enrolled at both universities, and at the end of their studies receive two diplomas - a Polish and a French one. Students complete internships in France, the first during the second semester of studies (2 months) and the second devoted to writing their master's thesis during the fourth year of studies (4 months). The language of communication is English. Students interested in future work in industry have the opportunity to realise stays abroad in renowned industrial laboratories. Students receive an Erasmus+ travel grant.Graduate profileGraduates of the nanophysics specialisation will have the ability to analyse research and design problems concerning devices of modern microelectronics. In addition, they will be familiarised with modern research methods of solid state physics enabling the testing of modern electronic materials. A unique characteristic of the graduate of this specialisation will be the ability to theoretically model the structures of composite materials and analyse their physical properties. The combination of theoretical and practical knowledge will allow graduates of this specialisation to work as part of a team of specialists working in research laboratories of industrial plants offering the use of modern technologies. Graduates of the specialisation are fluent in English and have experience of working in industry.Graduates of this specialisation can find employment:- as specialists in the study and modelling of nanostructures, composite and mesoscopic materials- as specialists related to the implementation of nanostructures in specialised industrial laboratories- in electronic and electrotechnical plants implementing modern industrial technologies.Graduates of this specialisation are potential candidates for doctoral studies in solid state physics. |
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