Załącznik nr 2 do uchwały nr 8 Senatu ZUT z dnia 25 stycznia 2021 r.

Wydział Technologii i Inżynierii Chemicznej

Nazwa kierunku studiów: *Materials Science and Engineering*

Poziom kształcenia: studia pierwszego stopnia

Profil studiów: ogólnoakademicki

Dziedzina: nauk inżynieryjno - technicznych

Dyscyplina: inżynieria materiałowa (100%)

Tytuł zawodowy uzyskiwany przez absolwenta: inżynier

Opis zakładanych efektów uczenia się

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| --- | --- | --- | --- |
| Kod  | Efekty uczenia się programu studiów | Odniesienie do efektów uczenia się dla kwalifikacji na poziomie 6, 7 lub 8 PRK | Odniesienie do efektów uczenia się prowadzących do uzyskania kompetencji inżynierskich |
| Wiedza |
| MSE\_1A\_W01 | knows selected issues in the field of mathematical analysis and issues in the field of elements of logic, elements of algebra and linear algebra, mathematical statistics allowing to understand, describe and model physicochemical phenomena occuring in different materials | P6S\_WG P6S\_WK | P6S\_WG |
| MSE\_1A\_W02 | knows selected issues from physics, basic biology and chemistry necessary to describe the properties of materials and processes accompanying their production and processing | P6S\_WG | P6S\_WG |
| MSE\_1A\_W03 | knows selected issues concerning the structure of materials, thier synthesis, processing and structure-properties relationship | P6S\_WG P6S\_WK | P6S\_WG |
| MSE\_1A\_W04 | knows and understands the application potential of various materials | P6S\_WG P6S\_WK |  |
| MSE\_1A\_W05 | knows the principles of design, modelling, simulation and understands the principles of basic methods, research tools and techniques (including information technology) used to solve simple engineering tasks in materials engineering | P6S\_WG P6S\_WK |  |
| MSE\_1A\_W06 | knows the methods of structure characterization and properties evaluation of materials | P6S\_WG |  |
| MSE\_1A\_W07 | knows and understands the principles of functioning and operations of systems, apparatus and technological equipment with instrumentation, especially in the context of manufacturing and processing of materials | P6S\_WG | P6S\_WG |
| MSE\_1A\_W08 | knows and understands the basic concepts associated with quality management and regulations | P6S\_WG |  |
| MSE\_1A\_W09 | knows the principles of occupational health and safety and the rational use of materials | P6S\_WK |  |
| MSE\_1A\_W10 | knows and understands the fundamental dilemmas of modern civilization and the economic, legal and other conditions of various types of professional activities related to materials engineering, including basic concepts and principles of industrial property and copyright protection | P6S\_WK | P6S\_WG |
| MSE\_1A\_W11 | knows the general principles of creating and developing various forms of individual entrepreneurship | P6S\_WK |  |
| Umiejętności |
| MSE\_1A\_U01 | being able to use the acquired knowledge related to the engineering of materials to formulate and solve comples and unusual engineering tasks with respect to:- proper selection of sources and information, assessment, critical analysis and synthesis of this information,- selection and application of appropriate methods and tools, including advanced information and communication techniques | P6S\_UW | P6S\_UW |
| MSE\_1A\_U02 | being able to use the learned mathematical apparatus to describe and analyze experimental data, basic physicochemical and technical issues | P6S\_UW |  |
| MSE\_1A\_U03 | being able to use the principles and methods of chemistry, biology, physics and materials engineering in planning and conducting experiments, is able to interpret and elaborate the results and draw conclusions | P6S\_UW | P6S\_UW |
| MSE\_1A\_U04 | can speak a foreign language (English) at B2 European level The Common European Framework of Reference for Languages | P6S\_UW |  |
| MSE\_1A\_U05 | being able to use specialized computer software for designing, modelling and computer simulation of selected issues typical for the filed of study | P6S\_UW | P6S\_UW |
| MSE\_1A\_U06 | being able to perceive systemic and non-technical aspects, including environmental, economic and ethical aspects of implementing specific technical solutions, and knows the principles of accupational health and safety | P6S\_UW | P6S\_UW |
| MSE\_1A\_U07 | being able to reveal, characterize the structure and determine the basic properties of various materials | P6S\_UW | P6S\_UW |
| MSE\_1A\_U08 | being able to plan and execute processes of manufacturing of selected materials | P6S\_UK | P6S\_UW |
| MSE\_1A\_U09 | is able to critically analyze and elavuate existing technical solutions in the field of materials science and engineering | P6S\_UW |  |
| MSE\_1A\_U10 | is able to carry out an interdisciplinary design work | P6S\_UO |  |
| MSE\_1A\_U11 | can communicate using specialist terminology in the field of materials engineering and can take part in the debale - present, evaluate and discuss various opinions and positions | P6S\_UK P6S\_UW |  |
| MSE\_1A\_U12 | is able to plan and organize work, both individually and as a team, and interact with other people as part of a team (also of an interdisciplinary nature) | P6S\_UO |  |
| MSE\_1A\_U13 | is able to plan and implement his/her own life-long learning | P6S\_UU |  |
| Kompetencje społeczne |
| MSE\_1A\_K01 | is able to critically assess the knowledge and content received | P6S\_KK | P6S\_WK |
| MSE\_1A\_K02 | acknowledges the importance of knowledge in solving cognitive and practical problems and is able to consult with experts if it is difficult to solve the problem on its own | P6S\_KK | P6S\_WK |
| MSE\_1A\_K03 | is ready to fulfill social obligations, to co-organize activities for the social environment, to initiate activities for the public interest, thinking and acting in an entrepreneurial manner | P6S\_KO | P6S\_WK |
| MSE\_1A\_K04 | is ready to perform professional roles responsibility, including adherence to the rules of professional ethics and requiring this from others, and care for the achievements and traditions of the profession | P6S\_KR |  |
| MSE\_1A\_K05 | understands the application of human-factors in design and engineering of materials | P6S\_KR | P6S\_WK |