



field of study
**MATERIALS SCIENCE
AND ENGINEERING**

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Studies in English (3,5 years) bachelor's
study tuition fees: 4850 PLN / semester.

Materials science and engineering (MSE) is an interdisciplinary field focused on the design, fabrication, and characterization of new materials, including polymers, ceramics, metals, and composites. Novel, advanced materials play key roles in diverse applications, including energy capture and storage devices, sustainable and advanced packaging materials, biomaterials, and more. As a result, by applying fundamental science in the pursuit of beneficial engineering solutions, MSE has a major societal impact.

Materials science engineers are involved in all aspects of materials development, ranging from the synthesis of new materials to advanced processing, such as 3D printing or photolithography, or characterization, such as spectroscopy, atomic force microscopy, or mechanical testing. By enabling the manufacture of new materials that meet specific technical requirements, they facilitate the development of new products and the improvement of existing technologies.

Material science engineers trained at the **Faculty of Chemical Technology and Engineering** acquire fundamental knowledge in underlying physical, chemical, and biological phenomena, as well as mathematics and technical skills. As a graduate, you will be able to design and characterize materials at various length scales, ranging from the atomic and molecular and nanoscopic level to that of macroscopic, complex systems, including various devices.

Your studies will be conducted in modern, well-equipped laboratories and use the latest simulation and design software and programs (Aspen, AutoCad, Solidworks, Matlab, etc.). You will receive not only theoretical preparation, but also hands-on engagement and experimental work with a range of materials, including as metals, ceramics, polymers, and (nano)composites. Finally, you may be engaged in various on-going research projects into novel materials, such as for advanced packaging, energy storage, drug delivery, medical devices and more.

WHERE CAN A GRADUATE WORK?

As a Material Science and Engineering graduate you may find attractive professional careers in Poland and abroad. Because materials are at the forefront of all technological developments, you can find employment in a range of existing sectors, including aerospace, automotive, energy, pharmaceuticals, and telecommunications. Novel, advanced materials play key roles in addressing the major societal problems of today, including pandemics, aging populations, and climate change. As a result, there will be growing demand for engineers trained in MSE. MSE careers typically involve work in interdisciplinary teams developing, modifying, testing, or evaluating materials. This can be from the standpoint of research and development, quality control, or determining the causes of product. Materials science engineers may also be called upon to provide consulting or technical advice regarding the suitability of an existing material for an application. Importantly, if you decide that you do not want to work in MSE, you can easily find employment in other areas, because the MSE curriculum is inherently multidisciplinary and the fundamental concepts, as well as the acquired skills, including teamwork, problem solving, advanced analysis, are readily transferable to other fields. Your skills in engineering analysis and problem solving will work in various aspects of diverse research and development projects. Further, you can find employment in areas such as in oversight, technical documentation, or intellectual property.

Our University, ZUT is new—established in 2009—but the MSE program traces its roots to the Szczecin University of Technology (Politechnika Szczecińska), established in 1946. In this way, the MSE program offers a unique combination of tradition plus modernity, as exemplified by the cutting-edge Center for Nanotechnology which opened in 2013. Importantly, as the University has grown and evolved, we have not lost sight of maintaining an emphasis on quality and not quantity. Your class sizes will be small, typically less than 15 students, enabling you to receive individual attention, tailored to your needs. Recently ZUT was ranked 3rd in MSE and 16th overall by EngiRank in „New Europe” Engineering Programs and—importantly—it placed 11th in terms of overall Quality of Teaching. Further, in the recent “Perspectives” ranking of all Polish Universities, ZUT finished first in the Innovation category, reflecting our strengths in combining creativity and engineering. It should be no surprised that we have extensive collaborations with regional industrial partners, enabling visits, internships, and networking/job opportunities. A few examples include Bridgestone, Grupa Azoty, Betonstal, Habia Cable, DGS, Ferrosan Medical Devices, and more.



Wydział
Technologii i Inżynierii
Chemicznej

Szczecin may be far from Warsaw, in the corner of Poland, but it has an international airport and is less than 150 km from Berlin, Germany. Szczecin is a small city, so it's easy to get around and quite affordable, but it has extensive big-city amenities, including Philharmonic, extensive green spaces, and a recently renovated riverfront. Once you graduate, Szczecin and the surrounding region offer excellent economic diversity and competitiveness, including a range of industries from biotechnology and biomedicine to information and communications technology (ICT) and the maritime industry. There are two EU Special Economic Zones, the Green Chemistry Cluster, and Technopark Pomerania—in addition to the many individual companies already mentioned, so there will be many career opportunities available for you.

Subjects that are taught include:

Structure of Solids, Materials Processing, Surface Science and Interfacial Phenomena, Mechanics of Materials, Introduction to Experimental Materials Science: Nanomaterials Emphasis OR Biomaterials Emphasis, Chemical and Biochemical Engineering, Smart- and Nanomaterials, Introduction to Biomaterials: Drug Delivery and Biosensing and more.

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