

General information

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MATERIALS ENGINEERING

Programme title: University study programme in Materials Engineering

Duration: 3 years (6 semesters) with a total of 180 credit points (ECTS).

Professional title awarded upon graduation:

- diplomirani/a inženir/ka materialov (UN)
- dipl. inž. mater. (UN). (abbreviated title B. Eng. in Materials Engineering)

Study programme goals and general competences

Materials have always played an important role for mankind. Even historical eras have been named after some common materials prevailing at that particular time, e.g. Stone Age, Bronze Age and Iron Age. We cannot imagine our lives without materials: without concrete and steel, there would be no buildings or roads, without copper, there would be no electricity. Cars, for example, are composed of many different materials or combinations of these (metals, plastics, glass), let alone different functional materials used in electronics and sensors. With an optimal combination of materials used in equipment and structures, it is possible to achieve safe environment standards, solve environmental problems, regulate energy needs, buy technical products at a reasonable price and enjoy a comfortable life. No area of science has changed our lives so much as information technology. Yet, there would be no such development without modern materials, such as complex semi-conducting materials and optical fibres. New materials, e.g. nano-structured materials, carry a large potential that we cannot even foresee at this moment. Therefore, it goes without saying that research and development of materials will always be needed for technological development and a successful global economy.

Graduate competence profile

General competences+

- achievement of an adequate level of knowledge in chemistry, mathematics, physics, mechanics and information science comparable to similar European university standards;
- ability to use fundamental professional knowledge of interdisciplinary disciplines pertaining to materials engineering and complementary fields for understanding, planning and processing of the existing and new materials or processes;
- acquisition of such a standard of knowledge and competences to be able to proceed to further studies in second-cycle programmes;
- ability to analyse, synthesise and understand the correlations between technological solutions, the environment and society;
- ability to communicate with co-workers and actively participate in multidisciplinary groups;
- understanding the principles of management and business practice;
- developing professional and ethical awareness;

- ability of independent learning and understanding the need for lifelong learning
ability to independently perform less demanding tasks in R&D,
performing engineering and organisational tasks and solving well defined tasks in the area of engineering materials.

Employment possibilities+

With the knowledge and skills acquired through studies, professionals in materials science will be able to engage in various tasks related to materials research and development and technology of making materials and can seek employment in the following areas:

- researching physical and chemical properties and applying suitable analytical methods for understanding the properties of engineering and other materials.
- developing or improving materials for different applications.
- understanding problems of environmental impacts due to production, they will be able to apply strategies for direct use of raw materials, recycling and materials reuse;
- optimisation of manufacturing and use of materials from the aspect of materials life;
- processing of materials to be used in different products;
- conducting and control of materials on the industrial scale;
- analysing the atom structure of materials, materials characterisation, materials forming, optimisation of methods and development of technological processes or equipment.

All of the above refers to materials such as steel, plastics, ceramics and composites and nano-structured materials, which are now becoming a new propulsive field.