

Cracow University of Technology

Faculty of Materials Engineering and Physics

Candidate's Profile:

The person eligible to apply for admission to the CUT Doctoral School in the scientific discipline of materials engineering must have

1. a Master's degree in one of the primary study programmes: mathematics, physics, chemistry, biology, computer and information sciences and biotechnology
2. the degree of Master in Engineering in the whole range of technical study programmes.

In exceptional situations, the Dean – Head of the Scientific Council in the discipline of Materials Engineering may agree to admit a candidate who has graduated in a Master's degree study programme other than the above, following their successful passing of an examination verifying the learning outcomes obtained in the study programme of Materials Engineering. The examination is administered, upon the motion of the candidate, by the Doctoral School Examination Board in the Materials Engineering study programme two weeks prior to the entrance examination to the Cracow University of Technology Doctoral School.

Conditions of the entrance examination:

1. Examination in the form of a test composed of 40 single-choice questions – date of the examination according to the time schedule of the Cracow University of Technology Doctoral School recruitment process;
2. Candidate interview (on *inter alia* the individual research plan) – only those persons will be admitted who have obtained no less than 50% of the total possible score in the examination – date of the interview according to the time schedule of the Cracow University of Technology Doctoral School recruitment process;

Problem areas for the entrance examination:

1. Structural make-up of engineering materials (structure of the atom, atomic bonds, fundamentals of crystallography, types of polymerisation).
2. Characteristics of primary groups of engineering materials, including their chemical composition, structural make-up, physical and mechanical properties, principles of classification and scope of application. Fundamental knowledge of composites.
3. Fundamental knowledge of strength of materials and mechanics in the scope of elasticity, including the basic definitions and methods of solving simple problems. Fundamentals of rheology.
4. Structural phenomena occurring in materials subjected to the operation of mechanical and thermal energy, e.g. diffusion, phase transformations,

crystallisation and recrystallisation, mechanisms of elastic and plastic deformations, fatigue or decohesion.

5. Characteristics of technological processes of materials manufacture and transformation.
6. Fundamentals of methodology of research into materials and criteria of engineering materials selection for technical applications.