

TRAINING PROGRAM IN DISCIPLINE: Materials Engineering

1. Basic information

Domain: Engineering and Technology

Discipline: Materials Engineering

Degree awarded: PhD in Materials Engineering

2. Training demand

PhD training in the field of Materials Engineering prepare graduates for an employment in scientific laboratories, research and development establishments, universities – and technical universities in particular – as well as in management positions in the industry. The aim of the studies comprises an introduction of candidate to the newest scientific achievements and research results in the area chosen as the subject of her/his PhD thesis. Currently, there is a substantial demand for such graduates, well prepared for teaching and conducting research at technical universities. At these universities, a “generation gap” is observed among their employees and the graduate school should fill that gap.

Within the frames of the PhD level graduate school, candidates acquire specialized knowledge in the field of Materials Engineering, broaden their cognitive capabilities and collect experiences necessary in research work. Simultaneously, they acquire teaching and organizational experiences and develop scientific contacts through participation in seminars and conferences, both domestic and external.

After finishing the training and a completion of the PhD thesis, a candidate is equipped with a broadly specialized knowledge, an ability to perform scientific collaboration with domestic laboratories, university teaching experience and analytical abilities necessary in research work. Those candidates who do not plan scientific career shall utilize their cognitive abilities as well as teaching and organizational experiences, gained in the frames of the graduate school, in the course of their further professional employment.

3. Detailed entry requirements

Persons applying for an admission to the IDS in the area of Materials Engineering must possess MS qualifications acquired in one of the following areas: materials engineering, mechanical engineering, chemistry, biology, physics, mechanics and machinery construction, physics and chemistry of textile science and design as well as biology. In particular cases candidates possessing MS qualifications in the area of medical sciences may also apply for admission.

4. Teaching methods

Lectures, exercises, laboratories, projects, scientific seminars, distance education.

5. Graduate's profile

A Materials Engineering IDS graduate knows and understands the world's scientific and creative achievements in the field of Materials Engineering and the resulting practical implications in materials

engineering applications. One is able to undertake an analysis and a creative synthesis of scientific achievements in order to identify and solve research problems as well as those related to innovative and creative activity. One is able to enrich the mentioned achievements, plan personal development and inspire others to do so, exchange experience and ideas within polish and international environment and what is more is ready to make an independent research in order to expand scientific and creative achievements, face the professional and public challenges taking into account ethics and responsibility for its results and also to form a way of a proper behavior.

A strategic aim of the teaching programme is to prepare highly qualified personnel for scientific and innovative industry needs to work in advisory and project units, trading companies of engineering materials and its research equipment and also in laboratories related to quality control and certification of engineering materials. It is possible thanks to innovative and interdisciplinary scientific research and their application in a personnel preparation programme in compliance with “knowledge-based community” model. In particular, the aim of the training programme is to prepare a specialist who knows and understands the achievements of his field of interest at the level which allows him to revise current paradigms, but also understands the fundamental dilemmas of the present civilization; economical, juridical and other important in the field of research activity. Besides, the aim is to prepare a graduate student to use his broad knowledge to identify, formulate and solve complex problems or execute research tasks. Likewise, the aim is to create an awareness of the need of disseminating research results, initiating debates, participating in science discourses, using foreign language at the level allowing to take part in an international scientific and professional environment, as well as planning and pursuing an individual and group research or creative undertakes, also in an international environment.

Graduate understands a need of developing his qualifications by taking part in trainings, courses and also doing own scientific research preserving all ethical standards and is ready to solve problems related to Materials Engineering, knowing the present state of art.

6. Training plan

First year (Semester 1 and 2)		
No	Subcategory	Subject
1	E	Entrepreneurship
2	CC1	World trends in Materials Engineering
3	CC2	Research Methods of Materials Science
4	CC3	Surface Engineering
5	CC4	Construction materials I
6	CC5	Construction materials II
Second year (Semester 3 and 4)		
No	Subcategory	Subject
1	CC6	Composite technologies
2	CC7	Numerical Analysis for Engineering
3	CC8	Strength of Materials