

TRAINING PROGRAM IN DISCIPLINE: Mechanical Engineering

1. Basic information

Domain: Engineering and Technology

Discipline: Mechanical Engineering

Degree awarded: PhD in Mechanical Engineering

2. Training demand

The doctoral training in the discipline of mechanical engineering prepares a highly qualified specialist to work in industry, research units, R&D units and at technological universities. The educational aim of this programme is to introduce gradually the applicant into research works. Within the doctoral school, candidates broaden considerably their general and specialist knowledge, which allows them to conduct individually investigations as well as research and engineering projects in the field of mechanical engineering. Doctoral candidates gather also didactic and organizational experience, establish scientific contacts through participation in trainings, lectures, conferences and seminars. With the extended scope of knowledge and skills gained, doctoral candidates are able to carry out research activities and projects and to implement novel solutions into industrial practice.

3. Detailed entry requirements

According to the legal regulations in force, the formal requirement to be fulfilled by a candidate is to be a graduate of the second cycle studies and to have a scientific title of Master of Science or to be a beneficiary of the Diamond Grant within the Ministry for Science and Higher Education programme. It is preferable to be a graduate of a technological university in widely understood mechanical engineering, which, however, does not exclude graduates of programmes of study related to mathematics, applied physics or information technology at technological universities or universities. A candidate should demonstrate a capability of individual work, acquisition and application of knowledge from various disciplines, and show predispositions for objective analysis and evaluation of the collected observations and results of investigations.

4. Teaching methods

Research trainings, lectures, tutorials, lab classes, projects, scientific seminars

5. Graduate's profile

Graduate in Mechanical Engineering demonstrates extensive knowledge in fundamental and applied sciences related to mechanical engineering and acquired skills allowing for solving interdisciplinary problems. One is prepared to implement modern methods, technical solutions and technologies while designing mechanical systems. The graduate is able to use advanced analytical, computational and experimental techniques in the field of mechanical engineering. He/she is prepared to participate in computer-aided projects. Graduates are capable of acquiring and widening their knowledge on the basis of literature in the range required

during work and can analyze critically the solutions proposed, indicate crucial limitations of the issues being solved and solve creatively the problems involved. The graduate can apply the knowledge acquired to solve selected scientific and technical problems, plan and analyze the results of experimental investigations. The extended scope of knowledge and the skills acquired enable him/her to conduct research and project activities and implement novel solutions into industrial applications. On graduating from the doctoral school and having written a PhD dissertation, the candidate demonstrates broad specialist knowledge, an ability to participate in scientific cooperation with other centers in Poland and abroad. The graduate attends a series of trainings and participates in workshops devoted to self-presentation techniques, application for research grants, management and communication in a team, application of IT tools, patenting and implementation procedures. The graduate shows research skills indispensable in further scientific work as well as research and implementation activities. The potential labor market for the graduate covers technological universities, companies active in the field of construction and technology of machine building, designing, industrial technologies, as well as R&D departments and design offices in manufacturing companies. The technical solutions graduates arrive at individually can be employed in their own innovation and implementation start-ups or technical support companies.

6. Training plan

First year (Semester 1 and 2)		
No	Subcategory	Subject
1	E	Entrepreneurship
1	CC1	Mathematical Methods of Mechanics
2	CC2	Numerical Methods in Mechanics
3	CC3	Advanced Manufacturing
4	CC4	Mechanics of Solids and Structures
5	CC5	Metrology and Control in Mechanical Engineering
6	CC6	Fluid Mechanics