

MECHANICAL ENGINEERING (specialisation Modelling and Simulation in Mechanics) – studies in English

Second-cycle (**Master's degree**)

DURATION: 3 semesters

LANGUAGE: English

PACE: full time

APPLICATION DEADLINE: July 31st

INTAKE (classes start in): October

TUITION FEE: 1,200 EUR / per semester *

STUDY FORMAT: on-campus

* plus additional non-refundable 85 PLN (approx. 21 EUR) recruitment fee

INTRODUCTION:

The program in Modelling and Simulation in Mechanical Engineering equips students with comprehensive knowledge and skills in mechanics, machine construction, and the design, manufacture, and operation of machines and production systems. Specializations in automotive, thermal engineering, and power systems offer a foundation in power tool and vehicle construction, energy efficiency, and system design. Graduates are well-prepared for research, design, and management roles in the mechanical engineering field.

ADMISSIONS:

- A Bachelor's degree in mechanical engineering, industrial engineering, or a closely related field, with a strong foundation in mechanics, thermodynamics, and machine design
- Strong analytical skills, with the ability to apply theoretical knowledge to practical engineering challenges
- A keen interest in the development and innovation of mechanical systems, as well as a commitment to pursuing advanced research or industry-focused roles

PROGRAM OUTCOME:

- Competence in the design, development, and operation of mechanical systems and machines, with a focus on energy efficiency, reliability, and sustainability
- Ability to apply advanced modelling and simulation techniques to real-world mechanical engineering problems
- Knowledge of modern manufacturing technologies, including automation, digitalization, and advanced materials
- Skills in the management and development of production processes in the mechanical engineering industry

Curriculum

Year I

Semester 1

- Foreign language (english/german)
- Intellectual property in technique and science
- Labour market / Process mapping
- Thermodynamics and kinetics of combustion / Combustion
- Analytical mechanics
- Metrology of dynamic processes
- Quality engineering
- Polymer processing / Plastic recycling
- Polymer testing
- Training on safe and hygienic working conditions

Semester 2

- Project introducing to scientific research
- Project management
- Turbulence for CFD
- Advanced fluid mechanics
- Selected problems of machine dynamics modelling
- Mechanics of materials and strength analysis of construction elements
- Kinematics, vibrations and stability of mechanical systems

Year II

Semester 3

- Integrated CAE systems
- Welding technology
- Computational fluid dynamics
- Diploma seminar
- Diploma thesis
- Project planning and execution in the industry