



PROGRES 3

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Fields of scientific activities



Faculty of Economy
and Management



Faculty of Physical
Education and
Physiotherapy



Faculty of Civil
Engineering



Faculty of Electrical
Engineering, Automatic
Control and Informatics



Faculty of
Mechanical
Engineering



Faculty of Production
Engineering and Logistics



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Field 1

- Static and fatigue testing of innovative construction materials including composites
 - Fatigue testing of structural materials under multiaxial random loading.
 - Reliability and durability focused design.
 - FEM simulation including dynamic problems and elasto-plastic behavior of materials.
 - Spectral method in fatigue.

Field 2

- Innovative construction materials processing focused on machining processes
 - Testing of cutting insert and other technological equipment.
 - Wear of cutting insert.
 - Optimization of surface quality.
 - Simulation of cutting processes using FEM.
 - Analysis of the composition and structure of composite materials, microhardness.

Field 3

- Environmental assessment of innovative construction materials
 - Assessment of leaching of heavy metals from building materials containing hazardous waste.
 - The impact of heavy metals on durability of innovative construction material.
 - Application of mathematical/numerical methods to predict leaching from building materials.
 - Release of heavy metals from building materials exposed to external environmental factors (variables of pH, temperature changes, the impact of CO₂, chemically aggressive environments).
 - New techniques and research methods in environmental assessment of construction materials.

Field 4

- Application of waste and biomass in energy processes
 - Evaluation of parameters of waste, fuels from waste and biomass for use in energy processes.
 - Manufacturing fuels from waste.
 - Evaluation of influence on using waste, fuel from waste and biomass on combustion process and pollution size.
 - Evaluation of the impact of selected factors on the efficiency of obtaining biogas from municipal sewage sludge.
 - Environmental pollution studies with particular emphasis of chlorinated organic compounds and heavy metals.



Field 5

- Energy saving in car industry
 - Simplification of hybrid drive.
 - Modelling of 'typical driver'.
 - Testing and optimization of car engines.





We are ready to cooperate within

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