

ADMISSION TO DOCTORAL STUDIES

Session September 2026

Field of doctoral studies: Mechanical Engineering

Doctoral supervisor: Prof.dr.ing.Maria Luminita SCUTARU

TOPICS FOR THE ADMISSION TO DOCTORAL STUDIES

TOPIC 1: Optimization of Hybrid Composite Structures for Energy Absorption using Numerical Modeling and Experimental Validation

Contents / Main aspects to be considered

- Investigation of the impact behavior and energy absorption mechanisms of hybrid composite structures.
- Evaluation of the effects of material configuration and structural architecture on mechanical response.
- Numerical simulation of dynamic behavior using Finite Element Method (FEM) approaches.
- Experimental validation of the developed numerical models through impact testing.
- Optimization of structural parameters to improve impact resistance and achieve weight reduction.

Recommended bibliography:

1. Zenkert, D. - An Introduction to Sandwich Construction, Engineering Materials Advisory Services, 1995
2. Abrate, S. - Impact on Composite Structures, Cambridge University Press, 1998
3. Daniel, I.M., Ishai, O. - Engineering Mechanics of Composite Materials, Oxford University Press, 2006
4. Luo, H., et al. - Numerical and experimental investigation of composite sandwich structures under impact loading, Composite Structures, Elsevier, 2017

Prerequisites / Remarks:

- Solid background in solid mechanics, dynamics, and the stability of mechanical systems.
- Skills in modeling and analyzing the dynamic behavior of mechanically loaded structures, including the application of Finite Element Method (FEM) simulations.
- Practical knowledge of composite materials, with an emphasis on understanding their mechanical behavior and response under dynamic loading conditions.

Scientific Doctorate

Professional Doctorate

without tuition fee (state budget funded)

with tuition fee or with funding from other sources than the state budget

Doctoral supervisor,
Prof. dr. Ing. Maria Luminița SCUTARU

Coordinator of the field of doctoral studies,
Prof. dr. ing. Maria Luminița SCUTARU