

## ADMISSION TO DOCTORAL STUDIES

Session September 2025

Field of doctoral studies: Mechanical engineering

Doctoral supervisor: Prof. Liviu COSTIUC, PhD

### TOPICS FOR THE ADMISSION TO DOCTORAL STUDIES

**TOPIC 1:** *suggested title: Study of thermal installation systems for energy recovery*

**Contents / Main aspects to be considered** - *to be adapted/ completed/ deleted*

- Steady-state or dynamic analytical models for thermal installations
- Modeling and simulation of non-stationary systems
- Finite element analysis for thermal systems

**Recommended bibliography:**

1. Çengel, Y., Boles, M. Thermodynamics. An engineering approach. SI, ed.9, McGraw-Hill, 2019. ISBN: 978-9813157873
2. Heat and Mass Transfer: Fundamentals & Applications 6th edition, Autori: Yunus A. Çengel, Afshin J. Ghajar, 2019, ISBN: 978-0073398198
3. Belea, C., Teoria sistemelor. Sisteme neliniare, Ed. Didactica si Pedagogica, Bucuresti, 1985
4. Ionescu V., Teoria sistemelor. Sisteme liniare, Ed. Didactica si Pedagogica, Bucuresti, 1985

**Prerequisites / Remarks:** *to be adapted/ completed/ deleted*

- Knowledge of fundamental notions and calculation methods in Thermodynamics and Heat Transfer, Transfer Phenomena
- Knowledge of basic notions in modelling and simulation of systems in non-stationary regime

■ **Scientific Doctorate (full-time only)**

■ **Professional Doctorate (full-time or part-time)**

■ **without tuition fee (state budget funded)**

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

**TOPIC 2:** *suggested title: Research and thermal optimization with lightweight structures for passive energy houses and buildings*

**Contents / Main aspects to be considered** - *to be adapted/ completed/ deleted*

- Finite element analysis
- Testing for mechanical and thermal properties of structures and materials used

**Recommended bibliography:**

1. Çengel, Y., Boles, M. Thermodynamics. An engineering approach. SI, ed.9, McGraw-Hill, 2019. ISBN: 978-9813157873
2. Heat and Mass Transfer: Fundamentals & Applications 6th edition, Autori: Yunus A. Çengel, Afshin J. Ghajar, ISBN: 978-0073398198

**Prerequisites / Remarks:** *to be adapted/ completed/ deleted*

Knowledge of fundamental concepts and calculation methods in Mechanics, Strength of Materials and Heat and Mass Transfer

↗ ■ **Scientific Doctorate (full-time only)**

↗ ■ **Professional Doctorate (full-time or part-time)**

■ **without tuition fee (state budget funded)**

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

Doctoral supervisor,

Prof. Dr. Liviu COSTIUC

Signature

Coordinator of the field of doctoral studies,

Prof. Dr. Maria Luminița SCUTARU

Signature