

## ADMISSION TO DOCTORAL STUDIES

Session September 2024

Field of doctoral studies: Mechanical Engineering

Doctoral supervisor: SZÁVA Ioan

### TOPICS FOR THE ADMISSION TO DOCTORAL STUDIES

**TOPIC 1:** *Theoretical and experimental study of the multi-layer mould's optimisation, obtained by 3D printing technology, using Dimensional Analysis*

**Main aspects to be considered:**

- **state of arts;**
- **evaluation by analytical methods;**
- **evaluation by numerical methods;**
- **evaluation by Dimensional Analysis;**
- experimental results;
- dimensional models validation;
- conclusions and further goals

**Recommended bibliography:**

1. Baker, W. et al., *Similarity Methods in Engineering Dynamics*, Elsevier, Amsterdam, 1991.
2. Barenblatt, G.I., *Dimensional Analysis*, Gordon and Breach, New York, 1987.
3. Deutsch, I., *Rezistența Materialelor*, Ed. Did. și Pedag. București, 1979.
4. Doebelin, O.,E. *Measurement systems – Application and design*. McGraw – Hill Publishing Company. New York, 1990.
5. D.R. Mocanu, ș.a. *Analiza experimentală a tensiunilor*.Vol.I și II. Editura Tehnică, 1977.
6. Ch. Rohrbach, *Handbuch für Experimentelle Spanungsanalyse*.VDI-Verlag GmbH, Düsseldorf, 1989.
7. Sedov, I.L., *Similarity and Dimensional Methods in Mechanics*, MIR Publisher, Moscow, 1982.
8. Száva, I. și col., *Metode experimentale în dinamica structurilor mecanice*, Vol.I. și II., Ed Universității Transilvania din Braşov, 2000.
9. Szirtes, Th., *Applied Dimensional Analysis and Modelling*, McGraw-Hill, Toronto, 1998.

**Prerequisites / Remarks: basic knowlegdes on numerical methods, experimental methods and Dimensional Analysis**

**YES: Scientific Doctorate (full-time only)**

**No: Professional Doctorate – in the fields of Music and Science of sport and physical education (full-time or part-time)**

**YES: without tuition fee (state budget funded)**

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

**TOPIC 2:** *suggested title*

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

**Recommended bibliography:**

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

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

**Professional Doctorate – in the fields of Music and Science of sport and physical education (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. SZÁVA Ioan

Coordinator of the field of doctoral studies,

Prof. Dr. Habil. Mat. Eng. VLASE Sorin Signature

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