



ADMISSION TO DOCTORAL STUDIES

Session September 2026

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 intumescent layers' in-deep heat insulation behaviour, applied on the steel structural elements against fire

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:

basic knowledge on numerical methods, experimental methods and Dimensional Analysis

Scientific Doctorate

Professional Doctorate

without tuition fee (state budget funded)

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

TOPIC 2: Theoretical and experimental study of the load-bearing capacity of some thin-walled structural elements unprotected, respectively fire-protected with intumescent paint

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 Brașov, 2000.
9. Szirtes, Th., *Applied Dimensional Analysis and Modelling*, McGraw-Hill, Toronto, 1998.

Prerequisites:

basic knowledge on numerical methods, experimental methods and Dimensional Analysis

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TOPIC 3: Theoretical and experimental study of the mechanical characteristics of some orthotropic materials, used in engineering

Main aspects to be considered:

- state of arts;
- evaluation by analytical methods;
- evaluation by numerical methods;
- evaluation by modern optical methods;

- experimental results;
- the proposed (analytic and numeric) model's validation by experimental measurements;
- conclusions and further goals

Recommended bibliography:

1. Deutsch, I., *Rezistența Materialelor*, Ed. Did. și Pedag. București, 1979.
2. Doebelin, O.,E. *Measurement systems – Application and design*. McGraw – Hill Publishing Company. New York, 1990.
3. D.R. Mocanu, ș.a. *Analiza experimentală a tensiunilor*.Vol.I și II. Editura Tehnică, 1977.
4. Ch. Rohrbach, *Handbuch für Experimentelle Spanungsanalyse*.VDI-Verlag GmbH, Düsseldorf, 1989.
5. Száva, I. și col., *Metode experimentale în dinamica structurilor mecanice*, Vol.I. și II., Ed Universității Transilvania din Brașov, 2000.

Prerequisites:

basic knowledge on numerical methods and experimental methods

Scientific Doctorate

Professional Doctorate

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Doctoral supervisor,

Prof. dr. **SZÁVA Ioan**

Coordinator of the field of doctoral studies,

Prof. dr. ing. Maria Luminița SCUTARU