



ADMISSION TO DOCTORAL STUDIES

Session September 2024

Field of doctoral studies: Mechanical Engineering

Doctoral supervisor: Prof. dr. ing. Sorin Vlase

TOPICS FOR THE ADMISSION TO DOCTORAL STUDIES

TOPIC 1: Contributions to the study of structures for electric vehicles
Content / Main aspects to be considered <i>- finite element analysis of stress and deformation states in vehicle structures</i> <i>- mechanical testing of the structures and materials used</i>
Recommended bibliography: 1. Vlase S. Mecanica. Dinamica, Ed. Infomarket, 2004. 2. Vlase, S., Teodorescu, H., Purcărea, R., Modrea, A. - Mecanica materialelor compozite armate cu fibre, Ed. Infomarket, 2008. ISBN 978-973-8204-98-0.
Prerequisites / Remarks: <i>- knowledge of calculation methods from Mechanics and Theory of elasticity;</i>
<input checked="" type="checkbox"/> Scientific Doctorate (full-time only) <input type="checkbox"/> Professional Doctorate – in the fields of Music and Science of sport and physical education (full-time or part-time)
<input checked="" type="checkbox"/> without tuition fee (state budget funded) <input type="checkbox"/> with tuition fee or with funding from other sources than the state budget

TOPIC 2: Vibrations in the structures of electric vehicles
Content / Main aspects to be considered <i>- finite element analysis of stress and deformation states in vehicle structures</i> <i>- mechanical vibrations</i>
Recommended bibliography: 1. Vlase S. Mecanica. Dinamica, Ed. Infomarket, 2004. 2. Vlase, S., Teodorescu, H., Purcărea, R., Modrea, A. - Mecanica materialelor compozite armate cu fibre, Ed. Infomarket, 2008. ISBN 978-973-8204-98-0.
Prerequisites / Remarks: <i>- knowledge of calculation methods from Mechanics and Theory of elasticity;</i>
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TOPIC 3: *Light structures for electric vehicles*

Content / Main aspects to be considered

- *finite element analysis of stress and deformation states in vehicle structures*
- *mechanical vibrations*

Recommended bibliography:

- 1. Vlase S. Mecanica. Dinamica, Ed. Infomarket, 2004.**
2. Vlase, S., Teodorescu, H., Purcărea, R., Modrea, A. - *Mecanica materialelor compozite armate cu fibre*, Ed. Infomarket, 2008. ISBN 978-973-8204-98-0.

Prerequisites / Remarks:

- *knowledge of calculation methods from Mechanics and Theory of elasticity;;*

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TOPIC 4: *The study of the behavior of inertial platforms during earthquakes*

Content / Main aspects to be considered

- *finite element analysis of stress and deformation states in vehicle structures*
- *mechanical vibrations*

Recommended bibliography:

- 1. Vlase S. Mecanica. Dinamica, Ed. Infomarket, 2004.**
2. Vlase, S., Teodorescu, H., Purcărea, R., Modrea, A. - *Mecanica materialelor compozite armate cu fibre*, Ed. Infomarket, 2008. ISBN 978-973-8204-98-0.

Prerequisites / Remarks:

- *knowledge of calculation methods from Mechanics and Theory of elasticity;;*

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

TOPIC 5: Analytical and numerical methods for the dynamic analysis of the human vehicle system in case of accidents

Content / Main aspects to be considered

- finite element analysis of stress and deformation states in vehicle structures
- mechanical vibrations
- analytical mechanics

Recommended bibliography:

1. **Vlase S. Mecanica. Dinamica, Ed. Infomarket, 2004.**
2. Vlase, S., Teodorescu, H., Purcărea, R., Modrea, A. - *Mecanica materialelor compozite armate cu fibre*, Ed. Infomarket, 2008. ISBN 978-973-8204-98-0.

Prerequisites / Remarks:

- knowledge of calculation methods from Mechanics and Theory of elasticity;;

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TOPIC 6: Modeling the car-driver-passenger system for the analysis of impact loads to improve the load safety

Content / Main aspects to be considered

- finite element analysis of stress and deformation states in vehicle structures
- mechanical vibrations
- analytical mechanics
- safety of the traffic

Recommended bibliography:

1. **Vlase S. Mecanica. Dinamica, Ed. Infomarket, 2004.**
2. Vlase, S., Teodorescu, H., Purcărea, R., Modrea, A. - *Mecanica materialelor compozite armate cu fibre*, Ed. Infomarket, 2008. ISBN 978-973-8204-98-0.

Prerequisites / Remarks:

- knowledge of calculation methods from Mechanics and Theory of elasticity; Finite Element Method;

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without tuition fee (state budget funded)

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

Conducător de doctorat,

Prof. dr. ing. Sorin Vlase

Coordonatorul domeniului de doctorat,

Prof. dr. ing. mat. Sorin Vlase

Semnătură