



ADMISSION TO DOCTORAL STUDIES

Session September 2023

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: <ol style="list-style-type: none">Vlase S. Mecanica. Dinamica, Ed. Infomarket, 2004.Vlase, S., Teodorescu, H., Purcărea, R., Modrea, A. - <i>Mecanica materialelor compozite armate cu fibre</i>, Ed. Infomarket, 2008. ISBN 978-973-8204-98-0.
Prerequisites / Remarks: <i>- knowledge of calculation methods from Mechanics and Theory of elasticity;</i>
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: <ol style="list-style-type: none">Vlase S. Mecanica. Dinamica, Ed. Infomarket, 2004.Vlase, S., Teodorescu, H., Purcărea, R., Modrea, A. - <i>Mecanica materialelor compozite armate cu fibre</i>, Ed. Infomarket, 2008. ISBN 978-973-8204-98-0.
Prerequisites / Remarks: <i>- knowledge of calculation methods from Mechanics and Theory of elasticity;</i>
TOPIC 3: Light structures for electric vehicles
Content / Main aspects to be considered <i>- finite element analysis of stress and deformation states in vehicle structures</i>

- *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;;*

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;;*

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;;*

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;*

Conducător de doctorat,

Prof. dr. ing. Sorin Vlase

Coordonatorul domeniului de doctorat,

Prof. dr. ing. mat. Sorin Vlase

Semnătură