



ADMISSION TO DOCTORAL STUDIES

Session September 2022

Field of doctoral studies: Industrial Engineering

Doctoral supervisor: Prof. dr. eng. Dorin-Ioan CATANA

TOPICS FOR THE ADMISSION TO DOCTORAL STUDIES

TOPIC 1: *Researches regarding the optimization of the work places by using wearable sensors*

Content / Main aspects to be considered - The use of wearable sensors allows the monitoring of the movements performed by the employee at work. The analysis of the collected data, their processing and optimization as well as the integration of the human factor in the planning stages, design and validation of the product life cycle, will lead to the obtaining of ergonomic and productive jobs.

Recommended bibliography:

1. Cătană D. – Evaluarea riscului în securitatea și sănătatea ocupatională, Editura Lux Libris, Braşov, 2013
2. Darabon A., s.a. – Managementul securității și sănătății în muncă, Vol. 1, Editura AGIR, Bucureşti, 2001
3. Darabon A., s.a. – Managementul securității și sănătății în muncă, Vol. 2, Editura AGIR, Bucureşti, 2001

Prerequisites / Remarks: Bachelor's and master's degree in Industrial engineering or Mechanical engineering, knowledge of the human modeling and simulation tools

TOPIC 2: *Researches regarding the increasing of the ceramic material performances, 3D printed*

Content / Main aspects to be considered - 3D printing is the solution for many practical problems. The establishing of the mechanical and technological properties for ceramic materials printed by the FDM process, will allow the optimization of designed parts by applying finite element analysis.

Recommended bibliography:

1. Berce P., s.a. – Fabricarea rapidă a prototipurilor, Editura Tehnică, Bucureşti, 2000
2. Gregory I., s.a. – 3D-Printed mechanochromic materials, Applied Materials & Interfaces, Vol. 7 (1), 2015, pp. 577-583
3. Hofmann M., s.a. – 3D Printing gets a boost and opportunities with polymer materials, Macro Letters, Vol. 3, 2014, pp. 382– 386
4. Bakarich S. E. s.a. – Three-dimensional printing fiber reinforced hydrogel composites, Applied

Materials & Interfaces, Vol. 6, 2014, pp. 15998– 16006

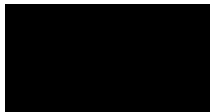
5. Ruiz-Morales JC, s.a – Three dimensional printing of components and functional devices for energy and environmental applications, Energy & Environmental Science, Vol. 10, 2017, pp. 846-859
6. Catana D-I, Pop M-A – Studies regarding simulation process to static loading of the structures obtained from polylactic acid, 3D printed, Journal of Applied Polymer Science, V, February, 50036, 2021
7. Catana D-I, s.a. – Comparison between the test and simulation results for PLA structures3D printed, bending stressed, Molecules, Volume 26, Issue 11, 3325, 2021olume 138, Issue 6

Prerequisites / Remarks: Bachelor's and master's degree in Industrial engineering or Mechanical engineering, knowledge of CAD-CAE (simulation) tools

Doctoral supervisor,

Prof. dr.ing. Dorin-Ioan CATANA

Signature



Coordinator of the field of doctoral studies,

Prof. dr.ing. Gheorghe OANCEA

Signature

