Universitatea Transilvania din Brașov

Interdisciplinary Doctoral School

ADMISSION TO DOCTORAL STUDIES Session September 2023

Field of doctoral studies: Industrial Engineering

Doctoral supervisor: Assoc. prof. Sebastian-Marian ZAHARIA, PhD

TOPICS FOR THE ADMISSION TO DOCTORAL STUDIES

TOPIC 1: *Research on additive manufacturing and testing of industrial products*

Content / Main aspects to be considered:

Computer aided design of industrial products

Additive manufacturing processes of industrial products

Design of experiments

Testing of industrial products

Statistical processing of experimental data

Recommended bibliography:

1. Adam Khan, M., Winowlin Jappes, J. T., Innovations in Additive Manufacturing, Springer, London, 2022, ISBN 978-3-030-89400-9.
2. Dave, H.K., Davim, J.P., Fused Deposition Modeling Based 3D Printing (Materials Forming, Machining and Tribology), Cham, Springer, 2021, ISBN 978-3-030-68023-7.
3. Gibson, I., Rosen, D., Stucker, B., Khorasani, M., Additive Manufacturing Technologies, Third Edition, London, Springer, 2021, ISBN 978-3-030-56126-0.
4. Muralidhara, H. B., Banerjee, S., 3D Printing Technology and Its Diverse Applications, Apple Academic, 2022, ISBN 978-10-0314534-9.
5. Paulo, D.J., Rupinder, S., Additive manufacturing: applications and innovations, CRC Press, London, 2019, ISBN 978-0-367-78094-4.
6. Srivatsan, T.S., Sudarshan, T.S., Additive Manufacturing: Innovations, Advances, and Applications, CRC Press, London, 2020, ISBN 978-0-367-73778-8.
7. Yang, J., Na, L., Jianping Shi, Wenlai Tang, Gang Zhang, Feng Zhang, Multimaterial 3D Printing Technology, Elsevier, Londra, 2021, ISBN 978-0-08-102991-6.
8. Zaharia, S.M., Enescu L.A., Pop, M.A., Mechanical performances of lightweight sandwich structures produced by material extrusion-based additive manufacturing, Polymers, Vol. 12, No. 8, pp. 1740, 2020.
9. Zaharia, S.M., Chicoș, L.A., Lancea, C., Pop, M.A., Effects of Homogenization Heat Treatment on Mechanical Properties of Inconel 718 Sandwich Structures Manufactured by Selective Laser Melting, Metals, Vol. 10, No.5, pp. 645, 2020.

Prerequisites / Remarks: *Bachelor's and master's degree in the field of industrial engineering or related fields.*

TOPIC 2: *Research on the reliability and accelerated testing of industrial products*

Content / Main aspects to be considered:

Reliability tests

Reliability analysis of industrial products

Accelerated testing of industrial products

Statistical processing of experimental data

Recommended bibliography:

1. Dodson, B., Schwab, H., Accelerated Testing : A Practitioner's Guide to Accelerated and Reliability Testing, SAE International, Warrendale, ISBN 978-146-86-0350-7.
2. Elsayed A.E., Reliability Engineering, Wiley, New Jersey, 2021, ISBN 978-1-119-66592-2.
3. Klyatis, L.M., Accelerated Reliability and Durability Testing Technology, Wiley, New Jersey, 2012, ISBN 978-047-04-5465-7.
4. Klyatis, L.M., Trends in Development of Accelerated Testing for Automotive and Aerospace Engineering, Academic Press, London, 2020, ISBN 978-012-81-8842-2.
5. Nelson, W., Accelerated Testing: Statistical Models, Test Plans, and Data Analysis, Wiley, New Jersey, 2004, ISBN 978-0-471-69736-7.
6. Tortorella, M., Reliability, Maintainability, and Supportability: Best Practices for Systems Engineers, Wiley, New Jersey, 2015, ISBN 978-1-118-85888-2.
7. Zaharia, S.M., Martinescu, I., Fiabilitatea și securitatea sistemelor industriale (Reliability and security of industrial systems), Printech Press, București, 2018, ISBN 978-606-23-0918-3.
8. Zaharia, S.M., Martinescu, I., Încercări de fiabilitate (Reliability tests), Transilvania University Press, Brasov, 2012, ISBN 978-606-19-0084-8.
9. Zaharia, S.M., Reliability and Maintenance Engineering. Theory, simulation techniques and applications, LAP Lambert Academic, Berlin, 2019, ISBN 978-620-0-28820-2.
10. Zaharia, S.M., Reliability, maintenance and testing of aerospace systems, LAP Lambert Academic, Berlin, 2019, ISBN 978-620-0-00390-4.

Prerequisites / Remarks: *Bachelor's and master's degree in the field of industrial engineering or related fields.*

TOPIC 3: *Research on additive manufacturing of polymer and composite industrial products*

Content / Main aspects to be considered:

Computer aided design of industrial products

Manufacturing processes of polymeric and composite industrial products

Design of experiments

Testing of polymer and composite materials

Statistical processing of experimental data

Recommended bibliography:

1. Dave, H.K., Davim, J.P., Fused Deposition Modeling Based 3D Printing (Materials Forming, Machining and Tribology), Cham, Springer, 2021, ISBN 978-3-030-68023-7.
2. Fink, J.K., 3D Industrial Printing with Polymers, Wiley, Londra, 2018, ISBN 978-1-119-55531-5.
3. Gibson, I., Rosen, D., Stucker, B., Khorasani, M., Additive Manufacturing Technologies, Third Edition, London, Springer, 2021, ISBN 978-3-030-56126-0.

4. Muralidhara, H. B., Banerjee, S., 3D Printing Technology and Its Diverse Applications, Apple Academic, 2022, ISBN 978-10-0314534-9.
5. Paesano, A. Handbook of Sustainable Polymers for Additive Manufacturing,, Taylor & Francis, 2022, ISBN 978-1-138-47888-6.
6. Paulo, D.J., Rupinder, S., Additive manufacturing: applications and innovations, CRC Press, London, 2019, ISBN 978-0-367-78094-4.
7. Srivatsan, T.S., Sudarshan, T.S., Additive Manufacturing: Innovations, Advances, and Applications, CRC Press, London, 2020, ISBN 978-0-367-73778-8.
8. Yang, J., Na, L., Jianping Shi, Wenlai Tang, Gang Zhang, Feng Zhang, Multimaterial 3D Printing Technology, Elsevier, Londra, 2021, ISBN 978-0-08-102991-6.

Doctoral supervisor,

Assoc. prof. Sebastian-Marian ZAHARIA, PhD

Signature

Coordinator of the field of doctoral studies,

Prof. Gheorghe OANCEA, PhD

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