



ADMISSION TO DOCTORAL STUDIES

Session September 2026

Field of doctoral studies: Systems Engineering

Doctoral supervisor: Prof. dr. ing. SUCIU Constantin

TOPICS FOR THE ADMISSION TO DOCTORAL STUDIES

TOPIC 1: *Multi-Scale Physics-Based Modelling of Thrombus Dynamics: From Platelet Mechanics to Circulatory-Level Thrombogenesis*

Recommended bibliography:

1. Yazdani, A., Zhang, P., Sheriff, J., Slepian, M. J., Deng, Y., & Bluestein, D. (2020). Multiscale modeling of blood flow-mediated platelet thrombosis. In *Handbook of materials modeling: applications: current and emerging materials* (pp. 2667-2698). Cham: Springer International Publishing.
2. Shankar, K. N., Diamond, S. L., & Sinno, T. (2023). Development of a parallel multiscale 3D model for thrombus growth under flow. *Frontiers in Physics*, 11, 1256462.
3. Zhu, Y., Zhang, P., Han, C., Cong, G., & Deng, Y. (2021, June). Enabling AI-accelerated multiscale modeling of thrombogenesis at millisecond and molecular resolutions on supercomputers. In *International Conference on High Performance Computing* (pp. 237-254). Cham: Springer International Publishing.

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: *Multi-Modal Foundational AI Modelling of Thrombosis Through Integration of Physics-Based, Imaging, and Clinical Data*

Recommended bibliography:

1. Gutierrez, N. G., Mukherjee, D., & Bark Jr, D. (2024). Decoding thrombosis through code: a review of computational models. *Journal of Thrombosis and Haemostasis*, 22(1), 35-47.
2. Crisan, D. N., Cut, T. G., Herlo, L. F., Ivanovic, N., Herlo, A., Alexandrescu, L., ... & Dumache, R. (2026). Artificial Intelligence in Venous Thromboembolism Prevention: A Narrative Review of Machine Learning, Deep Learning, and Natural Language Processing. *Journal of Cardiovascular Development and Disease*, 13(3), 119.
3. Ahmadi, M., Biswas, D., Lin, M., Vrionis, F. D., Hashemi, J., & Tang, Y. (2025). Physics-informed machine learning for advancing computational medical imaging: integrating data-driven approaches with fundamental physical principles. *Artificial Intelligence Review*, 58(10), 297.

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Doctoral supervisor,

Prof. SUCIU Constantin, PhD

Coordinator of the field of doctoral studies,

Prof. SUCIU Constantin, PhD