Universitatea Transilvania din Brașov

Interdisciplinary Doctoral School

ADMISSION TO DOCTORAL STUDIES
Session September 2022

Field of doctoral studies: Electrical Engineering
Doctoral supervisor: Prof. dr.ing. Elena HELEREA

TOPICS FOR THE ADMISSION TO DOCTORAL STUDIES

TOPIC 1: *Energy Internet: Advanced techniques for monitoring, control, forecast, schedule, and optimize power flow in distributed energy resources*

Recommended bibliography:

1. Dugan R., s.a., *Electric power system quality.* Mc. Grow Hill, 2004 (cap. 1-4, 9).
2. R. Morello, C. De Capua, G. Fulco and S. C. Mukhopadhyay, *A smart power meter to monitor energy flow in smart grids: The role of advanced sensing and IOT in the electric grid of the future.* IEEE Sensors Journal, 2017, vol. 17, no. 23 (pag. 7828-7837).
3. A. Zainab, A. Ghrayeb, D. Syed, H. Abu-Rub, S. S. Refaat and O. Bouhali, *Big Data Management in Smart Grids: Technologies and Challenges*, in IEEE Access, vol. 9, pp. 73046-73059, 2021, doi: 10.1109/ACCESS.2021.3080433.
4. H. Zhou, Q. Wu, F. Li and W. Lin, *The micro-grid monitoring software design and development based on Python language,* The 27th Chinese Control and Decision Conference (2015 CCDC), 2015, pp. 4792-4797, doi: 10.1109/CCDC.2015.7162773.
5. N. Suhaimy, N. A. M. Radzi, W. S. H. M. W. Ahmad, K. H. M. Azmi and M. A. Hannan, *Current and future communication solutions for smart grids: A review,* in *IEEE Access*, vol. 10, pp. 43639-43668, 2022, doi: 10.1109/ACCESS.2022.3168740.

TOPIC 2: *Energy and Water Internet: Integrating the water and energy monitoring systems at local and regional levels*

Recommended bibliography:

1. C. D. S. Júnior, R. Munoz, M. D. L. Á. Quezada, s.a., *Internet of Water Things: a remote raw water monitoring and control system*, in IEEE Access, vol. 9, pp. 35790-35800, 2021, doi: 10.1109/ACCESS.2021.3062094.
2. M. Sun, X. Li, H. Tan and X. Zhao, *Probabilistic optimal power-water flow analysis of integrated electricity-water system considering uncertainties and correlations*, 2020 IEEE 4th Conference on Energy Internet and Energy System Integration (EI2), 2020, pp. 1349-1354, doi: 10.1109/EI250167.2020.9347094.
3. E. Casey, S. Beaini, S. Pabi, K. Zammit and A. Amarnath, *The triple bottom line for efficiency: integrating systems within water and energy networks*, in IEEE Power and Energy Magazine, vol. 15, no. 1, pp. 34-42, Jan.-Feb. 2017, doi: 10.1109/MPE.2016.2629741.

TOPIC 3: *Electrical and magnetic properties of the structures*

obtained through printing, with applications in electrical engineering
Recommended bibliography: *1.* Nicolaide, A., *Electromagnetics - General theory of the electromagnetic field - Classical and relativistic approaches* (Third edition revised and augmented). Transilvania University Press, Brasov, 2012 (pag. 31-95). *2. Helerea, E., Călin, M.D.,* Materials in electrical engineering. *Editura Universității Transilvania din Brașov, 2015 (cap. 1).* *3. Neelakanta, P.S.,* Smart Materials. The electrical engineering handbook, *Ed. Richard C. Dorf, Boca Raton: CRC Press LLC, 2000 (pag. 1-16).* 4. *Volmer, M.,* Nanostructuri magnetice: obtinere, proprietăți, aplicații. *Editura Universității Transilvania din Brașov, 2008 (cap. 1).*

TOPIC 4: *Fault diagnosis and lifetime prognosis for electrical components and equipment*
Recommended bibliography: 1. Helerea, E., *Materiale electrotehnice. Dielectrici*, Editura Universităţii Transilvania din Braşov, Braşov, 1998 (cap. 7). 2. Notingher P., Dumitran L., s.a, *Determination of the remaining lifetime of power transformers liquid insulations based on the absorption/resorption currents,* The 10-th International Symposium on Advanced Topics in Electrical Engineering (ATEE), 2017 (pag. 428 – 433). 3. Măriuț, L., Helerea, E., *Multiple stress life analysis on underground power cables from distribution networks*, Proceedings of Doctoral Conference on Computing (DoCEIS), 2012, (pag. 275-283).

Doctoral supervisor,

Prof. dr.ing. Elena HELEREA

[redacted]

Coordinator of the field of doctoral studies,

Prof. dr.ing. Cornel MARINESCU

Signature

[redacted]