Universitatea Transilvania din Brașov

**Interdisciplinary Doctoral School**

## ADMISSION TO DOCTORAL STUDIES Session September 2022

**Field of doctoral studies: Electronic, telecommunications and informational technologies**
**Doctoral supervisor: Prof. PhD. Cotfas daniel Tudor**

## TOPICS FOR THE ADMISSION TO DOCTORAL STUDIES

| **TOPIC 1:** *Automated remote control of solar energy systems* |
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| **1. Solar energy conversion in electric and thermal energy**<br>**2. Remote control-real time monitoring**<br>**3.** Fault detection<br>**4.** Dust influence analysis<br>**5.** Methods for cleaning the PV systems |
| **Recommended bibliography:**<br>**1. D.T. Cotfas, P.A. Cotfas, Chapter IX: PV Innovative Techniques and Experimental Test Sets, Socrates Kaplanis and Eleni Kaplani "Renewable Energy Systems: Theory,Innovations and Intelligent Applications", Nova Science Publishers, USA, 2013**<br>**2. Nicholas Jenkins, Renewable Energy Engineering, Cambridge University Press, 2017.**<br>**3. Angèle Reinders, Pierre Verlinden, Wilfried van Sark, Alexandre Freundlich, Photovoltaic Solar Energy: From Fundamentals to Applications, Wily, 2017** |

| **TOPIC 2:** *Artificial Intelligence applied in renewable energy sources characterization* |
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| **1.Renewable energy sources**<br>**2.Artificial intelligence (AI)**<br>**3.AI to characterize and forecast the energy production of the photovoltaic/thermoelectric hybrid system** |
| **Recommended bibliography:**<br>**1. Socrates Kaplanis and Eleni Kaplani "Renewable Energy Systems: Theory,Innovations and Intelligent Applications", Nova Science Publishers, USA, 2013.**<br>2. S. Balamurugan, Ajay Kumar Vyas, Kamal Kant Hiran, Harsh S. Dhiman Artificial Intelligence for Renewable Energy Systems, Wily, 2022.<br>3. Rabindra Nath Shaw, Ankush Ghosh, Saad Mekhilef, Valentina Emilia Balas, Applications of AI and IOT in Renewable Energy, Elsevier, 2022. |

| **TOPIC 3:** *Agrivoltaics* |
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| **1.Photovoltaic systems and hybrid systems**<br>**2.Bifacial modules**<br>**3.Smart sensors**<br>**4.Abedometer**<br>**5.Light and water management** |
| **Recommended bibliography:**<br>**1. Socrates Kaplanis and Eleni Kaplani Renewable Energy Systems: Theory,Innovations and Intelligent Applications, Nova Science Publishers, USA, 2013.**<br>**2. Shiva Gorjian and Pietro Elia Campana, Solar Energy Advancements in Agriculture and Food Production Systems,2022**<br>3. Nicholas Jenkins, Renewable Energy Engineering, Cambridge University Press, 2017<br>4. Angèle Reinders, Pierre Verlinden, Wilfried van Sark, Alexandre Freundlich, Photovoltaic Solar Energy: From Fundamentals to Applications, Wily, 2017.<br>5. Rabindra Nath Shaw, Ankush Ghosh, Saad Mekhilef, Valentina Emilia Balas, Applications of AI and IOT in Renewable Energy, Elsevier, 2022. |

| **TOPIC 4:** *Researches on energy harvesting management for security networks* |
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| **1.Energy harvesting: photovoltaic, thermoelectric, piezoelectric**<br>**2.Low power sensors**<br>**3.Sensors networks**<br>**4.Security issues**<br>**5.Energy management** |
| **Recommended bibliography:**<br>**1. Socrates Kaplanis and Eleni Kaplani Renewable Energy Systems: Theory,Innovations and Intelligent Applications, Nova Science Publishers, USA, 2013.**<br>**2.** Angèle Reinders, Pierre Verlinden, Wilfried van Sark, Alexandre Freundlich, Photovoltaic Solar Energy: From Fundamentals to Applications, Wily, 2017.<br>3.N. Bizon, N.M. Tabatabaei, F. Blaabjerg, E. Kurt, Energy Harvesting and Energy Efficiency: Technology, Methods, and Applications, Springer 2017.<br>4.A.Serdijn, A.L.R.Mansano, M.Stoopm, Wearable Sensors, Fundamentals,<br>Implementation and Applications, 2014,<br>Harvesting, 2014<br>5.Pascal Nouet, et al. Ultra-Low-Power Sensors, John Wiley & Sons, 2013 |

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Prof. Dr. **Cotfas Daniel Tudor**

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