RENEWABLE ENERGY **(IVth Year, VIIIth SEMESTER)**

**Credit value** ECTS 4

## Course category

Speciality (Imposed)

**Course Code:** A.EMIAIA.S.403

**Course coordinator:
prof. PhD. Roşca Radu**

# Course objectives

Present-day technologies for producing renewable energy

# Contents (syllabus)

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| **Course (chapter/subchapters)** |
| Atmospheric air dynamics |
| Evaluation of wind resource |
| Wind turbines |
| Use of geothermal energy (introduction; high temperature geothemal resources) |
| heat pumps for the use of low temperature geothemal resources |
| Introduction to solar geometry |
| Conversion of solar energy into thermal energy |
| Conversion of solar energy into electric energy |
| **Practical training** |
| Verification of the radiation law |
| Use of the CoolPack software package |
| Evaluation of wind resource |
| Design of a geothermal colector using a heatpump |
| Design of a solar collector |
| Test of a PV panel |

# References

1. Ackermann, Th. (ed.), 2005 - Wind power in power systems. John Willey&Sons, Ltd., West Sussex, England

2. Bandoc, Georgeta, Degeratu, M., 2007 – Instalaţii şi echipamente pentru utilizarea energiei mecanice nepoluante. Utilizarea energiei vântului. Edit. MATRIXROM, Bucureşti.

# 3. Chiasson, A.D., 2016 - Geothermal heat pump and heat engine systems - theory and practice. John Wiley & Sons, Ltd.

4. Hau, E., 2006 – Wind turbines: fundamentals, technologies, application, economics. Springer Verlag, Berlin, Heidelberg.

5. Johnson, G.L., 2006 – Wind energy systems. Kansas State University; on-line: https://www.rpc.com.au/information/faq/wind-power/wind-energy-systems.html)

6. Lucian, V.E., 2011 – Surse alternative de energie. Edit. MATRIXROM, Bucureşti.

7. Lucian, V., 2014 – Energia solară – ghid de captare şi conversie a energiei solare pentru utilizare. Edit. UNIVERSITARĂ, Bucureşti.

8. Maican, E., 2015 – Sisteme de energii regenerabile. Edit. PRINTECH, Bucureşti.

9. Ochsner, K., 2011 – Pompe de căldură pentru tehnica încălzirii. Edit. MATRIXROM, Bucureşti.

10. Roldán Serrano, Maria Isabel, 2017 - Concentrating Solar Thermal Technologies. Springer International Publishing, Switzerland.

11. Roşca R., 2024 – Energii regenerabile. "Edit. Ion Ionescu de la Brad" Iaşi.

**Final evaluation**

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| **Evaluation form** | **Evaluation method** | **Percent of final grade** |
| Course attending | - | 10% |
| Practical training | tests, activity | 30% |
| Exam | written test | 60% |

**Contact**

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