

FIȘA DISCIPLINEI

1. Date despre program

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|---------------------------------------|--|
| 1.1 Instituția de învățământ superior | Universitatea Babeș-Bolyai Cluj-Napoca |
| 1.2 Facultatea | Știința și Ingineria mediului |
| 1.3 Departamentul | Știința Mediului |
| 1.4 Domeniul de studii | Știința mediului |
| 1.5 Ciclul de studii | Master |
| 1.6 Programul de studiu / Calificarea | Gestiunea și protecția mediului Dezvoltare sustenabilă și managementul mediului |

2. Date despre disciplină

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|--|--|---------------|---|------------------------|---|-------------------------|----|
| 2.1 Denumirea disciplinei | Resurse energetice și mediu / Energy resources and the environment | | | | | | |
| 2.2 Titularul activităților de curs | Prof. Asoc. dr. Giuseppe Etiope | | | | | | |
| 2.3 Titularul activităților de seminar | Prof. Asoc. dr. Giuseppe Etiope | | | | | | |
| 2.4 Anul de studiu | 2 | 2.5 Semestrul | 2 | 2.6. Tipul de evaluare | E | 2.7 Regimul disciplinei | Ob |

3. Timpul total estimat (ore pe semestru al activităților didactice)

| | | | | | |
|--|----|--------------------|----|-----------------------|-----|
| 3.1 Număr de ore pe săptămână | 3 | Din care: 3.2 curs | 1 | 3.3 seminar/laborator | 2 |
| 3.4 Total ore din planul de învățământ | 42 | Din care: 3.5 curs | 28 | 3.6 seminar/laborator | 14 |
| Distribuția fondului de timp: | | | | | ore |
| Studiul după manual, suport de curs, bibliografie și notițe | | | | | 30 |
| Documentare suplimentară în bibliotecă, pe platformele electronice de specialitate și pe teren | | | | | 15 |
| Pregătire seminarii/laboratoare, teme, referate, portofolii și eseuri | | | | | 10 |
| Tutoriat | | | | | 4 |
| Examinări | | | | | 4 |
| Alte activități: | | | | | |
| 3.7 Total ore studiu individual | | 55 | | | |
| 3.8 Total ore pe semestru | | 97 | | | |
| 3.9 Numărul de credite | | 5 | | | |

4. Precondiții (acolo unde este cazul)

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| 4.1 de curriculum | • |
| 4.2 de competențe | • |

5. Condiții (acolo unde este cazul)

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| 5.1 De desfășurare a cursului | • |
| 5.2 De desfășurare a seminarului/laboratorului | • |

6. Competențele specifice acumulate

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|--------------------------------|--|
| Competențe profesionale | <ul style="list-style-type: none"> • Understanding the main issues of the energy resources management at a global scale • Understanding the geological and geographical of the conventional energy resources at a global scale • The global competition for resources and the links to economy and politics • Understanding the correlation between energy resources exploitation and the environmental effects at a local and global scale • Understanding the future perspectives and actions for a better energy |
| Competențe transversale | <ul style="list-style-type: none"> • Teamwork for solving concrete issues • Synthesis of complex notions and their practical use |

7. Obiectivele disciplinei (reieșind din grila competențelor acumulate)

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|---------------------------------------|---|
| 7.1 Obiectivul general al disciplinei | <ul style="list-style-type: none"> • The topic Energy resources and the environment offers to the students a holistic view on the complex relation between identification, extraction and use of energy resources, and the environment on the other side. The conventional sources of energy are examined, in terms of geological occurrence, geographical distribution, extraction procedures, and use. As well, a short introduction to the unconventional energy resources is given, in terms of distribution, current and future potential, weight in the world energy balance, costs, environmental impact. |
| 7.2 Obiectivele specifice | <ul style="list-style-type: none"> • Improvement of the students' capacity to operate with complex notions, applying their knowledge and abilities to systems that include natural and anthropogenic components, costs, use, and environmental issues. • Understanding the global scale issues that affect the energy resources. |

8. Conținuturi

| 8.1 Curs | Metode de predare | Observații |
|---|---------------------|------------|
| Conventional resources of energy, types, and the history of their development | Interactive lecture | |
| Petroleum genesis, occurrence and distribution at worldwide scale | Interactive lecture | |
| Depletion of oil resources, the peak-oil theory, the current reserves | Interactive lecture | |
| The international oil and gas market | Interactive lecture | |
| Economic and political crises generated by the access to energy resources | Interactive lecture | |
| Coal as a major energy resource, use, new methods of extraction and use | Interactive lecture | |
| Global distribution of the coal resources, degree of depletion, | Interactive lecture | |

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| future prospectives | | |
| Hydroelectric power. Distribution of the potential, positive and negative effects. Is it hydroelectric power a <i>green energy</i> ? | Interactive lecture | |
| Nuclear energy, how the electricity is obtained from nuclear power? | Interactive lecture | |
| Environmenta effects of using nuclear energy | Interactive lecture | |
| Unconventional energy for heating and cooling | Interactive lecture | |
| Uconventional energy for electricity production | Interactive lecture | |
| Unconventional fuels | Interactive lecture | |
| Comparing conventional and unconventional energy soures | Interactive lecture | |

Referneces:

Deffeyes K (2008). Hubbert's Peak: The Impending World Oil Shortage (New Edition) Princeton University Press (September 29, 2008).

ENI (2010), World Oil and Gas Review, Rome.

European Renewable Energy Council (2010) Renewable Energy in Europe: Markets, Trends and Technologies, Earthscan.

Gauß P. (2009) International Trade China: Coal, Oil and Gas, GRIN Verlag.

Hunt J (1996). Petroleum geochemistry and geology, W. H. Freeman; Second Edition (October 15, 1995)

International Energy Agency (2004) Renewable energy: market & policy trends in IEA countries, OECD-IEA.

International Energy Agency (2007) World Energy Outlook 2007: China and India Insights. OECD Publishing.

Kaltschmitt M., Streicher W., Wiese A. (2007) Renewable energy: technology, economics, and environment. Springer Verl.

Luft G., Korin A. (2009) Energy security challenges for the 21st century: a reference handbook, ABC-CLIO.

Moran D., Russell J.A. (2009) Energy security and global politics: the militarization of resource management, Routledge.

Müller-Kraenner S. (2008) Energy security: re-measuring the world, Earthscan.

Nersesian R.L. (2010) Energy for the 21st Century: A Comprehensive Guide to Conventional and Alternative Sources, M.E. Sharpe, Inc.

Shankleman J. (2006) Oil, profits, and peace: does business have a role in peacemaking? US Institute of Peace.

Wengenmayr R., Bürke T. (2008) Renewable energy: sustainable energy concepts for the future, Wiley-VCH.

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|--|-----------------------------|------------|
| 8.2 Seminar / laborator | Metode de predare | Observații |
| Genesis of coal and petroleum | Dialogue | |
| Peak oil theory. Practical applicability | Dialogue | |
| Economic and environmental efficiency of energy resourcces exploitation. | Solving applications | |
| Types of nuclear reactors and working principles. | Dialogue | |
| Disasters due to nucelar energy use. Case study | Dialogue | |
| Energy efficiency of the unconventional resources | Solving applications | |
| Designing a local system for the improving the energy independency of a small city | Individual or group project | |

References:

Deffeyes K (2008). Hubbert's Peak: The Impending World Oil Shortage (New Edition) Princeton University Press (September 29, 2008).

ENI (2010), World Oil and Gas Review, Rome.

European Renewable Energy Council (2010) Renewable Energy in Europe: Markets, Trends and Technologies, Earthscan.

International Energy Agency (2004) Renewable energy: market & policy trends in IEA countries, OECD-IEA.

Kaltschmitt M., Streicher W., Wiese A. (2007) Renewable energy: technology, economics, and environment. Springer Verl.

Nersesian R.L. (2010) Energy for the 21st Century: A Comprehensive Guide to Conventional and Alternative

Sources, M.E. Sharpe, Inc.

Wengenmayr R., Bührke T. (2008) , Renewable energy: sustainable energy concepts for the future, Wiley-VCH.

9. Coroborarea conținuturilor disciplinei cu așteptările reprezentanților comunității epistemice, asociațiilor profesionale și angajatori reprezentativi din domeniul aferent programului

- Understanding the appropriate management of the conventional and unconventional resources
- The importance of improving the energy use efficiency

10. Evaluare

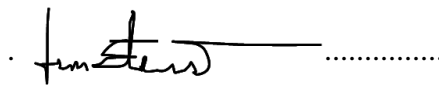
| Tip activitate | 10.1 Criterii de evaluare | 10.2 metode de evaluare | 10.3 Pondere din nota finală |
|---|--|-------------------------|------------------------------|
| 10.4 Curs | Understanding the notions that have been discussed, capacity to use them in practical cases. | examen | 30% |
| | Synthesis of the acquired knowledge | examen | 30% |
| 10.5 Seminar/laborator | Solving the practical themes that have been proposed, and the reliability of the results | Verificare pe parcurs | 20% |
| | The capacity to solve concrete applicaions. | Verificare pe parcurs | 20% |
| 10.6 Standard minim de performanță | | | |
| <ul style="list-style-type: none">• Understanding the main notions that have been discussed• The ability to synthesize data in order to obtain a complete view on the study topics | | | |

Data completării

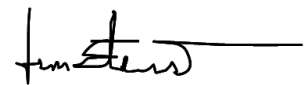
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Semnătura titularului de curs



Semnătura titularului de seminar



Data avizării în departament

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Semnătura directorului de departament

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