

SYLLABUS

1. Information regarding the programme

1.1 Higher education institution	Babeş-Bolyai University
1.2 Faculty	Faculty of Geography
1.3 Department	Physical and Technical Geography
1.4 Field of study	Geography
1.5 Study cycle	Master
1.6 Study programme / Qualification	Climate Change and Sustainable Development

2. Information regarding the discipline

2.1 Name of the discipline	Resurse energetice si mediu / Energy resources and the environment						
2.2 Course coordinator	Prof. dr. Calin Baci						
2.3 Seminar coordinator	Prof. dr. Calin Baci						
2.4. Year of study	1	2.5 Semester	2	2.6. Type of evaluation	Ex	2.7 Type of discipline	C

3. Total estimated time (hours/semester of didactic activities)

3.1 Hours per week	3	Of which: 3.2 course	1	3.3 seminary/laboratory	2
3.4 Total hours in the curriculum	42	Of which: 3.5 course	14	3.6 seminary/laboratory	28
Time allotment					Hours
Learning using manual, course support, bibliography, course					15
Additional documentation (in libraries, on electronic platforms, field documentation)					5
Preparation for seminars/labs, homework, papers, portfolios and essays					10
Tutorship					2
Evaluations					1
Other activities: visits, workshops, and other academic activities					
3.7 Total individual study hours	33				
3.8 Total hours per semester	75				
3.9 Number of ECTS credits	3				

4. Prerequisites (if necessary)

4.1 curriculum	No requirements
4.2 competencies	No requirements

5. Conditions (if necessary)

5.1 for the course	No requirements
5.2 for the seminary/lab	No requirements

6. Specific competencies acquired

Professional competencies	<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
Transversal competencies	<ul style="list-style-type: none"> • Teamwork for solving concrete issues • Synthesis of complex notions and their practical use

7. Objectives of the discipline (resulting from the acquired competencies)

7.1 General objective of the discipline	<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 Specific objectives	<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. Content

8.1 Course	Teaching methods	Remarks
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	

future prospective		
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	
Environmental effects of using nuclear energy	Interactive lecture	
Unconventional energy for heating and cooling	Interactive lecture	
Unconventional energy for electricity production	Interactive lecture	
Unconventional fuels	Interactive lecture	
Comparing conventional and unconventional energy sources	Interactive lecture	

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.

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.

8.2 Seminary / lab	Teaching methods	Remarks
Genesis of coal and petroleum	Dialogue	
Peak oil theory. Practical applicability	Dialogue	
Economic and environmental efficiency of energy resources exploitation.	Solving applications	
Types of nuclear reactors and working principles.	Dialogue	
Disasters due to nuclear 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. Corroborating the content of the discipline with the expectations of the epistemic community, professional associations and representative employers within the field of the program

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

10. Evaluation

Type of activity	10.1 Evaluation criteria	10.2 Evaluation methods	10.3 Share of the final score
10.4 Course	Understanding the notions that have been discussed, capacity to use them in practical cases.	exam	30%
	Synthesis of the acquired knowledge	exam	30%
10.5 Seminary/lab	Solving the practical themes that have been proposed, and the reliability of the results	Verificare pe parcurs	20%
	The capacity to solve concrete applications.	Verificare pe parcurs	20%
10.6 Minimum performance standard			
<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			

Date

Signature of course coordinator

Signature of seminary coordinator

.. 29.04.2022

Date of approval

Signature of head of the department

12.10.2022