

Energy Policy								Code of the course	Year / Semester
Type of subject:		Education Profile		The level of education		Form of studies			
Obligatory		General Academic				Stationary			
Type of subject								ECTS	
Lecture	Exercises	Laboratory	Project	Seminar	Practical classes	Exam			
30	-	-	-	15	-	-	6		
Subject coordinator:									
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II. COURSE CONTENT		
Course type – Lecture		Number of hours
1-2	Introduction to energy issues – fundamentals and definitions. Energy, Exergy, Entropy. Heat, Chill and Power – needs and current production technologies and applications. CHP and chill. District heating systems.	2
3-4	The structure and distribution of energy resources. Energy sources – renewable and non-renewable ones. Effects of geography, history, politics and future development perspectives.	2
5-6	World industry and market. The consequences of lack of feedstock. The control of strategic resources – fossil, renewables, rare earth elements.	2
7-8	Problems of handling, transportation and storage of gases, liquids and solids. Materials and safety. Control and measurement technologies.	2

9-10	Energy safety – the importance and affecting factors. The country assets and means to formulate and control energy supply routes. Scenarios of energy policies for county, region and state level.	2
11-13	Climate and energy policy in he international context. Energy safety of some selected countries (resources, production of strategic substrates, import/export, goals, interests, global politics & threats): USA, EU, Russia, China, India, Iran, Asia, Africa, South America, Australia, Scandinavia. Past, present and future.	3
14-15	Diversification of supply and development of network infrastructure for fuel supply. Past and current priorities of energy policy for Poland.	2
16-17	Development of energy market. The risks in the fuel and energy sectors. Companies on the open energy market. Energy safety & supply security for Poland. Optimal use of own energy resources and import/export.	2
18-19	Electrification – opportunities and threats. Biofuels and EV market. Expansion of electricity generation and grid infrastructure. Cross-boundary issues.	2
20-23	Resources and environmental issues: fuels, waste, UPS. Climate change (water, soil, atmosphere), wildlife, oceans. Wellbeing. Identification of unwanted substances and contaminants. Uncontrolled fires. Batteries reuse and PV. Safety issues. Recycling and circular economy.	4
24-27	Energy efficiency and storage. Innovations. Future perspective technologies. Intelligent energy management systems. Modern buildings. Intelligent agriculture. Biomass harvesting and processing. Synthetic fuels. Nanosolids and dopping. Fusion and tokamaks. Nuclear power and hydrogen.	4
28-29	World, EU's and PEP until 2040. Policy update and monitoring. Financial framework andd multi-year planning within the current political situation. Perspectives for the energy business. Urban mining. Space mining and exploration – opportunities and threats.	2
30-30	Test	1

TOTAL:		30
Course type - Seminar		Number of hours
1 1	Introduction. Scope and rules during the activities. Presentation of the topics to deal with and prepare by the students.	1
2-14	Individual students' presentations and discussions on selected current topics associated with energy policy.	13
15 15	Discussion, summary of student's performance, Evaluation of students' performances and seminar credit.	1
TOTAL:		15

DIDACTIC METHODS	
1.	Multimedia presentations
2.	Blackboard
3.	Literature resources: papers and reports

METHODS OF ASSESSMENTS: (F – FORMATIVE; S – SUMMATIVE)	
F01	Activity and discussion during class hours
F02	Evaluation of activities during seminars
S01	Test
S02	Evaluation of seminar presentations

III. STUDENT WORKLOAD		
L.p.	Form of activity	Numer of hours for activity [hours]
1. Direct teaching hours:		
1.1	Hours of classes organized by universities – lectures	30
1.2	Hours of classes organized by universities – exercises	
1.3	Hours of classes organized by universities – laboratory	15
1.4	Hours of classes organized by universities – project	

1.5	Hours of classes organized by universities – field activities	
1.6	Hours of classes organized by universities – seminar	
1.7	Exam	
Total direct hours:		45
2. Student's own work		
2.1	Preparation for exercises and for final exams	15
2.2	Preparation for laboratory test reports, preparation of individual	
2.3	Preparing your own project	
2.4	Preparation for the final exam from the lecture	15
2.5	Exam Preparation	
2.6	Getting acquainted with the indicated literature & seminar work	90
Total student's self-studies:		68
Overall student workload:		135
TOTAL NUMBER OF ECTS FOR THE COURSE:		6
The number of ECTS credits that a student obtains in classes requiring the direct participation of the teacher:		2
The number of ECTS credits that the student obtains as part of his/her own work		4

IV. PRIMARY AND SUPPLEMENTARY LITERATURE

Primary literature

1	Ghosh T., Prelas M., Energy Resources and Systems, Volume 2: Renewable Resources, Springer, 2011
2	Ginley D., Cahen D., Fundamentals of Materials for Energy and Environmental Sustainability, Cambridge University Press, 2012, ISBN online No.: 9780511718786
3	Ghosh T., Prelas M., Energy Resources and Systems: Volume 1, Springer, 2009, doi:10.1007/978-90-481-2383-4
4	Papers and journals in Digital Libraries, particularly: International Journal of Energy Economics and Policy, PEI, Time, Energy Policy Journal, Resources, Applied Energy, Progress in Energy and Combustion Science, Fuel Processing Technology.
5	Current and updated reports and other materials – both commercial, as well as educational

Supplementary literature

VII. OTHER USEFUL INFORMATION ABOUT THE SUBJECT	
1.	Opportunity to review supporting materials and literature: <i>Appropriate to the type of material - in teaching classes, in the TUC Central Library.</i>
2.	Information on when and where the classes will be held <i>Notice board at the Faculty of Infrastructure and Environment and on the website of the Faculty of Infrastructure and Environment, MSz USOS system.</i>
3.	Information about the consultation (times + place): <i>the staff consultation schedule is available on the Faculty of Infrastructure and Environment website and on the staff room door.</i>