University of Gdańsk

Subject card

Subject name and code	Offshore wind farms, PG_00177360		
Field of study	International Economic Relations		
Date of commencement of studies	October 2023	Academic year of realisation of subject	2025/2026
Education level	Bachelor's studies	Subject group	
Mode of study	full-time studies	Mode of delivery	at the university
Year of study	3	Language of instruction	Polish polish
Semester of study	6	ECTS credits	2.0
Learning profile	academic	Assessment form	credit
Conducting unit			
Name and surname of lecturer (lecturers)	Subject supervisor	mgr inż. Tomasz Laskowicz	
	Teachers	mgr inż. Tomasz Laskowicz	

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	30.0	0.0	0.0	0.0	0.0	30

E-learning hours included: 0.0

Learning activity and number of study hours

Learning activity	Participation in didactic classes included in study plan	Participation in consultation hours	Self-study	SUM
Number of study hours	30	0.0	0.0	30

Subject objectives

The aim of the course is to develop a comprehensive understanding of the economic and organizational conditions for the development of offshore wind energy in Poland and worldwide, including an understanding of investment financing mechanisms, cost structures, public support models, and logistics processes related to the implementation and operation of wind farms.An important element of the course is learning about modern wind energy technologies, including floating offshore wind solutions. Students will understand the political, regulatory, and environmental conditions for the development of offshore wind in Europe and worldwide, particularly in the context of decarbonization of the economy, CO emission reduction, and increased energy security.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[MSGL3_W04] has an advanced knowledge of different types and essential elements of the structures of economic entities and organisations, and public institutions	The student has advanced knowledge of the structure of entities responsible for the development, regulation, and supervision of the renewable energy market in Poland and Europe, including the roles of Polskie Sieci Elektroenergetyczne (PSE), the national power system (KSE), the Energy Regulatory Office (URE), the Office of Competition and Consumer Protection (UOKiK), as well as European Union institutions implementing climate and energy policy (e.g., the European Commission, executive agencies). Students will learn about the principles of support mechanisms and strategic government documents (in particular the Polish Energy Policy until 2040 – PEP2040) that define the directions for the development of offshore wind energy and energy transition.	[SW4] test/exam - oral or written [SW2] presentation/project/paper/ report
[MSGL3_W06] knows and understands the relations between economic entities and public institutions functioning in the national, international and intercultural realms	The student understands the relationships between offshore wind farm developers, private investors, transmission system operators, energy consumers, regulatory institutions (URE, RDOŚ, maritime authorities) and European Union bodies in the process of developing, financing and operating offshore wind projects.	[SW4] test/exam - oral or written [SW1] oral statement/ conversation/discussion [SW2] presentation/project/paper/ report
[MSGL3_K02] critically assesses the level of his/her knowledge in the field of economics; is willing to deepen and update this knowledge throughout his/her life	The student is able to critically evaluate and update their knowledge of the renewable energy market, knows sources of information about the energy system and energy prices, understands the importance of data verification, distinguishing facts from opinions, and counteracting misinformation about renewable energy.	[SK1] oral statement/conversation/ discussion [SK4] test/exam - oral or written
[MSGL3_K01] is ready to recognise the importance of knowledge in the field of economics in the process of identifying and solving economic problems and to consult experts in case of difficulties in solving them independently	The student recognizes the importance of economic knowledge in analyzing and evaluating the conditions for the development of renewable energy sources, in particular offshore wind energy, and is able to consult experts on the financing, regulation, and organization of offshore projects.	[SK2] presentation/project/paper/ report [SK4] test/exam - oral or written
[MSGL3_W02] has an advanced knowledge and understanding of the terminology of international economic relations and complementary disciplines	The student knows and understands the specialized terminology used in offshore wind energy projects, particularly in the area of economic and logistical aspects of wind farm construction and operation, financing instruments (CfD, PPA, feed-in tariffs), public support mechanisms, as well as terminology related to global trends in the development of renewable energy sources and energy security policy.	[SW4] test/exam - oral or written
[MSGL3_W08] knows and understands the fundamental dilemmas of contemporary civilisation, including the strategy of sustainable development and corporate social responsibility	The student understands the need for decarbonization of the economy, the importance of offshore wind energy in the energy transition, and the dilemmas associated with the use of maritime space and corporate social responsibility towards the environment and local communities.	[SW4] test/exam - oral or written [SW1] oral statement/ conversation/discussion

Course outcome	Subject outcome	Method of verification
[MSGL3_W11] has an advanced knowledge of (legal, organisational, ethical) rules and norms organising economic structures and institutions (in particular those on the international market)	The student knows the legal and organizational rules and standards governing the development of offshore wind energy, including regulations resulting from the European Green Deal, the REPowerEU program, the EU Offshore Renewable Energy Strategy, and support systems for investments in renewable energy sources in the single European market, as well as their impact on the climate and energy policies of member states.	[SW4] test/exam - oral or written
[MSGL3_K03] participates in the preparation of economic and social projects; can reconcile legal, economic, ecological, political and social requirements	The student understands the links and potential conflicts of interest between different stakeholder groups in offshore wind farm projects and is familiar with the economic, regulatory, and planning tools (including offshore spatial plans) that serve to mitigate and integrate economic, environmental, and social objectives.	[SK2] presentation/project/paper/ report [SK4] test/exam - oral or written

Subject contents	**Decarbonization and Climate Change** • Causes of global warming, the role of the energy sector in CO emissions, and the importance of renewable energy sources in achieving climate targets. **Fundamentals of Offshore Wind Technology** • Structure of wind turbines: foundations, towers, nacelles, rotors, monitoring and control systems. **Floating Offshore Wind Emerging Technologies** • Types of floating structures (spar, semi-submersible, TLP), their advantages and limitations in deep-water applications. **Lifecycle of an Offshore Wind Farm** • Phases: development, pre-construction, construction, operation & maintenance, decommissioning. **Development and Pre-Construction Phase** • Spatial planning, obtaining environmental permits, technical design, and supplier contracting. **Construction Phase** • Logistics of transporting and installing foundations, cables, and turbines; role of installation ports and specialized vessels. **Operation and Maintenance** • Service strategies, turbine performance monitoring, organization of service bases and technician transport. **Decommissioning and Circular Economy** • Decommissioning processes, legal frameworks, and recycling of components. **Financing Systems for Offshore Wind Projects** • CfDs, renewable energy auctions, PPAs, commercial and hybrid financing models, risk allocation mechanisms. **EU Energy Policy and Strategies** • European Green Deal, REPowerEU, EU Offshore Renewable Energy Strategy, Fit for 55. **Project Cost Structure** • CAPEX, OPEX, DEVEX, DECEX breakdown; factors influencing costs, the impact of scale and technology choices. **LCOE Levelized Cost of Energy** • Definition, calculation methods, cost reduction drivers, and the competitiveness of offshore wind versus other energy sources. **Polish Offshore Wind Projects Case Studies** • Baltic Power, Baltica, BC-Wind projects: development processes, financing models, implementation prospects. **Social Responsibility and Social Acceptance** • The impact of wind farms on local communities, stakeholder conflicts, communication strategies, and public participation. **Presentation and Analysis of Problem-Solving Approaches** • Case studies group analysis of offshore wind projects, solving logistical, financial, and regulatory challenges, presentations, and discussion.

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<tr><td>Prerequisites and co-requisites</td><td colspan="3">The student should have: an understanding of basic concepts of international economics; knowledge of English at least at B2 level, enabling them to use professional literature and industry materials; basic knowledge of macroeconomics</td></tr>
<tr><td>Assessment methods and criteria</td><td colspan="3"><table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>Active participation in class and contribution to discussions</td><td>51.0%</td><td>15.0%</td></tr>
<tr><td>Problem solving and presentation</td><td>51.0%</td><td>25.0%</td></tr>
<tr><td>Written exam</td><td>51.0%</td><td>60.0%</td></tr>
</table></td></tr>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td colspan="2">Sikorski Ł. (red.), Morska energetyka wiatrowa. Praktyczne wprowadzenie, Helion S.A., Gliwice 2023, ISBN 978-83-8322-709-2.
Jelley N. (2021), Krótki kurs. Energetyka odnawialna, tłum. M. Sugiero, Gliwice: Helion Onepress, ISBN: 978-83-283-7756-2.</td></tr>
<tr><td>Supplementary literature</td><td colspan="2">Global Wind Energy Council, Global Wind Report 2024, GWEC, Brussels 2024.
International Renewable Energy Agency (IRENA), Renewable Power Generation Costs in 2023, IRENA, Abu Dhabi 2023.
WindEurope, Offshore Wind in Europe Key Trends and Statistics 2023, WindEurope, Brussels 2024.</td></tr>
<tr><td>eResources addresses</td><td colspan="2"></td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td colspan="3">1. Understanding the importance of LCOE for reducing the cost of offshore wind energy installations involves analyzing how the level of energy costs over the entire life cycle of an investment (Levelized Cost of Energy) becomes a key indicator of project profitability. Students should consider which elementssuch as turbine power, port infrastructure availability, financing costs, and length of service lifehave the greatest impact on LCOE, and how the pursuit of lower LCOE shapes offshore wind technology development strategies and investment decisions.

2. The importance of offshore wind energy for national energy security requires reflection on how local electricity production from the sea reduces dependence on fossil fuel imports, increases supply stability, and diversifies the energy mix.

3. Stakeholder conflicts in the offshore farm development process and ways to mitigate them include recognizing the relationships between developers, local communities, the fishing industry, environmental organizations, and public institutions. Students should indicate how public consultation, transparent communication, and the use of spatial planning and environmental assessment tools can reduce resistance and promote public acceptance of large investments in renewable energy.</td></tr>
<tr><td>Work placement</td><td colspan="3">Not applicable</td></tr>
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