# STUDY MODULE DESCRIPTION FORM

| Name of the module/subject | | Code |
|---|---|---|
| **Energy security** | | **1010314381010316136** |

| Field of study | Profile of study (general academic, practical) | Year /Semester |
|---|---|---|
| **Power Engineering** | **(brak)** | **4 / 8** |
| Elective path/specialty | Subject offered in: | Course (compulsory, elective) |
| **-** | **polish** | **obligatory** |

| Cycle of study: | Form of study (full-time,part-time) |
|---|---|
| **First-cycle studies** | **part-time** |

| No. of hours | | | | No. of credits |
|---|---|---|---|---|
| Lecture: **18** | Classes: **-** | Laboratory: **-** | Project/seminars: **-** | **3** |

| Status of the course in the study program (Basic, major, other) | (university-wide, from another field) |
|---|---|
| **(brak)** | **(brak)** |

| Education areas and fields of science and art | ECTS distribution (number and %) |
|---|---|
| **technical sciences** | **3 100%** |

**Responsible for subject / lecturer:**

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## Prerequisites in terms of knowledge, skills and social competencies:

| | | |
|---|---|---|
| 1 | **Knowledge** | Basic knowledge of the bases of electrical power engineering, basics of thermal energy, energy management, and fuels and their utilization. |
| 2 | **Skills** | Ability to effectively self-education in a field related to the chosen field of study. |
| 3 | **Social competencies** | Is aware of the need to expand their competences. |

## Assumptions and objectives of the course:

Acquire knowledge about the shaping energy security complex systems, and acquaintance with the forecasts of changes in the energy sector in the European Union and Poland to increase the reliability of energy supply

## Study outcomes and reference to the educational results for a field of study

### Knowledge:

1. Bbasic knowledge of the risks and activities in the area of ??energy security - [K_W07+++]
2. Kknowledge about the main legal, organizational and economical regulations formative the European Union - [K_W07++]
3. Versed in the latest trends of energy development to increase energy security, in particular the introduction of BAT - [K_W20++]

### Skills:

1. Able to assess the impact of energy on the environment - [K_U17++]
2. Able to analyze the current energy situation and suggest lines of action to increase energy security - [K_U20+]

### Social competencies:

1. Understand the non-technical aspects and impacts associated with the operation of power, including its impact on the environment - [K_K02+]

## Assessment methods of study outcomes

- evaluation of the knowledge and skills demonstrated on the basis of the current check posts and two written tests,
- continuous evaluation for each class skills and expertise by conducting discussions on current issues related to energy security.

## Course description

The main objectives of European energy policy. Balanced Energy Policy. The concepts of reliability, sufficiency and security. The main groups of security threats. Instruments formative energy security. Legal, management and marketing. The European Emissions Trading Scheme. Ways to reduce CO2 emissions. Diversification of energy sources. The main objectives set out in the document "Polish Energy Policy until 2030". The production costs of electricity and heat (C02, S02 ). Clean Coal Technologies. Certificates of origin as instruments to promote activities that increase energy security. Energy tariffs as part of the shaping energy security. Metering and billing, and information systems. Reliability of the power grid. System failures as a feature of large complex systems. The basic principles of defense and reconstruction of power systems during states of emergency and disaster. Defenses and reconstruction generating capacity in the power system in a catastrophic failure.

## Basic bibliography:

1. G.Bartodziej, M.Tomaszewski, Polityka energetyczna i bezpieczeństwo energetyczne, Wydawnictwo Federacji Stowarzyszeń Naukowo-Technicznych ?Energetyka i Środowisko?, Warszawa, 2009

## Additional bibliography:

1. Praca zbiorowa ? Safety of the Polish Power System ? Demence and Restoration Plans, Elektrical Engineering Issue 57, Published by Poznan University of Technology, Poznań, 2008

2. B. Poskrobko- Zrównoważony rozwój gospodarki opartej na wiedzy, Wydawnictwo Wyższej Szkoły Ekonomicznej w Białymstoku, Białystok 2009

3. D.Laudyn, M.Pawlik, F.Strzelczyk ? Elektrownie, WNT W-wa 2000

## Result of average student's workload

| Activity | Time (working hours) |
|---|---|
| 1. participation in the lectures | 18 |
| 2. participation in the consulting | 5 |
| 3. preparation to the tests | 30 |

## Student's workload

| Source of workload | hours | ECTS |
|---|---|---|
| Total workload | 53 | 3 |
| Contact hours | 23 | 1 |
| Practical activities | 0 | 0 |