



Subject card

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|---|--|--|--|-------------------------------------|---|------------|-----|
| Subject name and code | Electric Energy Market, PG_00038375 | | | | | | |
| Field of study | Electrical Engineering | | | | | | |
| Date of commencement of studies | October 2025 | | Academic year of realisation of subject | | 2026/2027 | | |
| Education level | second-cycle studies | | Subject group | | Specialty subject group Subject group related to scientific research in the field of study | | |
| Mode of study | Part-time studies | | Mode of delivery | | at the university | | |
| Year of study | 2 | | Language of instruction | | Polish | | |
| Semester of study | 3 | | ECTS credits | | 2.0 | | |
| Learning profile | general academic profile | | Assessment form | | assessment | | |
| Conducting unit | Department Of Electrical Power Engineering -> Faculty Of Electrical And Control Engineering -> Wydział Politechniki Gdańskiej | | | | | | |
| Name and surname of lecturer (lecturers) | Subject supervisor | | dr hab. inż. Paweł Bućko | | | | |
| | Teachers | | | | | | |
| Lesson types and methods of instruction | Lesson type | Lecture | Tutorial | Laboratory | Project | Seminar | SUM |
| | Number of study hours | 10.0 | 0.0 | 10.0 | 0.0 | 0.0 | 20 |
| | 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 | 20 | | 6.0 | | 24.0 | 50 |
| Subject objectives | Knowledge about rules of electricity market operation. | | | | | | |
| Learning outcomes | Course outcome | | Subject outcome | | Method of verification | | |
| | [K7_W71] has general knowledge in humanistic, social, economic or legal sciences, including their fundamentals and applications | | The student is able to keep an economic account in the field of energy market. | | [SW3] Assessment of knowledge contained in written work and projects | | |
| | [K7_K05] can think and act creatively and entrepreneurially | | The student is able to make rational market decisions. | | [SK5] Assessment of ability to solve problems that arise in practice | | |
| | [K7_U11] is able to analyse the variability of electricity loads, calculate power and energy losses, can carry out cost accounting | | The student knows the principles of electricity generation costs. | | [SU1] Assessment of task fulfilment | | |
| Subject contents | Costs and prices calculation in energy sectors – brief rules. Structure of electrical energy market. Market participants. Natural monopoly. Liberalization on energy markets. The Polish energy law regulation. Energy policy. Role of Regulation Office on energy markets. Brief classification of different markets segments. Electrical energy tariffs. Rules of tariffs construction. Rates in tariffs for final consumers. Tariffs of distribution companies. Minimization of electricity purchase cost by consumers. System operator and his role on energy market. The operators tariff. Purchase of electricity by distribution companies. The Polish Power Exchange – rules of electricity turnover, position on energy market, energy prices, binding rules. The Balancing Market – role of the Balancing Market, rules of energy turnover, energy prices, influence on other energy markets. Competitive energy markets in Poland. Other possible structure of markets (pool, Single Buyer). Local and whole-system markets. The transmissions services market. The TPA (Third Party Access) rule in Europe. The transmissions tariffs and rates. Tariffs construction – cost calculation (marginal costs versus bounded costs). Ancillary services on energy market. The power reserves. Ancillary services in power and frequency control. Voltage control. Black start readiness. Island operation of subsystem. Ancillary service purchase by operator. Problems of ancillary services cost allocation. | | | | | | |
| Prerequisites and co-requisites | Brief knowledge of power system structure and operation | | | | | | |
| Assessment methods and criteria | Subject passing criteria | | Passing threshold | | Percentage of the final grade | | |
| | Exercise report | | 50.0% | | 50.0% | | |
| | Midterm colloquium | | 50.0% | | 50.0% | | |

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| Recommended reading | Basic literature | <ol style="list-style-type: none"> 1. Mielczarski : Rynki energii elektrycznej. ARE, Warszawa - Wrocław 2001. 2. Weron, Weron : Giełda energii – strategię zarządzania ryzykiem. CIRE, Wrocław 2000. 3. Gładyś, Matla : Praca elektrowni w systemie elektroenergetycznym. WNT, Warszawa 1990. |
| | Supplementary literature | <ol style="list-style-type: none"> 1. Toczyłowski : Optymalizacja procesów rynkowych przy ograniczeniach. WPW, Warszawa 2004. 2. Kalinowski, Malko, Szalbierz, Wilczyński : Efektywność międzynarodowego handlu energią elektryczną. KAPRINT, Lublin 1999. |
| | eResources addresses | Adresy na platformie eNauczanie: |
| Example issues/ example questions/ tasks being completed | <ol style="list-style-type: none"> 1. Calculation of the Power Exchange price basing on price bids. 2. Calculation of the Balancing Market payments. | |
| Work placement | Not applicable | |

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