



Subject card

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|---|--|--|--|-------------------------------------|---|------------|-----|
| Subject name and code | Automatic control of flow machines , PG_00055904 | | | | | | |
| Field of study | Power Engineering | | | | | | |
| Date of commencement of studies | October 2025 | Academic year of realisation of subject | | | 2027/2028 | | |
| Education level | first-cycle studies | Subject group | | | Optional subject group Subject group related to scientific research in the field of study | | |
| Mode of study | Full-time studies | Mode of delivery | | | at the university | | |
| Year of study | 3 | Language of instruction | | | Polish | | |
| Semester of study | 5 | ECTS credits | | | 4.0 | | |
| Learning profile | general academic profile | Assessment form | | | assessment | | |
| Conducting unit | Faculty of Ocean Engineering and Ship Technology | | | | | | |
| Name and surname of lecturer (lecturers) | Subject supervisor | | dr inż. Mohammad Ghaemi | | | | |
| | Teachers | | | | | | |
| Lesson types and methods of instruction | Lesson type | Lecture | Tutorial | Laboratory | Project | Seminar | SUM |
| | Number of study hours | 30.0 | 0.0 | 30.0 | 0.0 | 0.0 | 60 |
| | 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 | 60 | | 4.0 | | 36.0 | 100 |
| Subject objectives | design and analysis fundamentals of turboset control system | | | | | | |
| Learning outcomes | Course outcome | | Subject outcome | | Method of verification | | |
| | [K6_U04] is able to design a simple device structure and prepare the accompanying technical documentation, conduct a basic technical and economic analysis of energy systems, including technologies using renewable and pro-ecological energy sources as well as conventional and nuclear energy, design energy installations for them and their basic elements (including electric lighting)); select, operate and control the most commonly used electrical devices and drive systems. | | The student is able to design a simple control system for turbosets and internal combustion engines, and prepare the necessary related technical documentation, conduct a basic technical and economic analysis of these systems, taking into account environmental aspects. | | [SU1] Assessment of task fulfilment [SU3] Assessment of ability to use knowledge gained from the subject | | |
| | [K6_W03] knows the basics of automation and automatic regulation, knows the principles of the selection of electrical devices, drive systems and their control | | The student knows the basics of automatic control of turbosets and engines used in power engineering, including gas and steam turbine sets and internal combustion engines. | | [SW1] Assessment of factual knowledge | | |
| Subject contents | Cooperation of a turboset automatic control systems with other systems of control and safety devices. Analysis and research of turboset controllers. Specifics of steam and gas turbines control. Modelling of charged piston engine dynamics. Turbocharging systems of pulsating and constant charging installations. Dynamics of stream and pressure of turbocharging air. System correction. Calculation methods examples. Main disturbance signals. Resonance features. Influence of control system on dynamic processes of an engine control. | | | | | | |
| Prerequisites and co-requisites | Knowledge of automatic control and thermal turbines and their thermal cycles. | | | | | | |
| Assessment methods and criteria | Subject passing criteria | | Passing threshold | | Percentage of the final grade | | |
| | tests | | 50.0% | | 100.0% | | |

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| Recommended reading | Basic literature | 1. Domachowski Z.: Regulacja automatyczna turbozespołów cieplnych. Wydawnictwo Politechniki Gdańskiej. Gdańsk, 2011, 2. Graul K., Jenseit W.: Regulacja turbin parowych. WNT, Warszawa, 1962, 3. Domachowski Z.: Steam Turbine Control, In: Steam and Gas turbines - Principles of Operation and Design, ed. by K. Kosowski. Alstom. France, Switzerland, United Kingdom, Poland, 4. Domachowski Z., Automatyka i Robotyka. Podstawy, Wydawnictwo Politechniki Gdańskiej, Gdańsk 2003, 5. Perycz S., Podstawy Automatyki, Politechnika Gdańska, Skrypt , Gdańsk 1985. Automatic Control, Politechnika Gdańska, Skrypt , Gdańsk 1985. |
| | Supplementary literature | none |
| | eResources addresses | Adresy na platformie eNauczanie: |
| Example issues/ example questions/ tasks being completed | | |
| Work placement | Not applicable | |

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