



Subject card

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|---|--|---|-------------------------------------|------------|--|---------|-----|
| Subject name and code | Protection of the atmosphere and the climate, PG_00061704 | | | | | | |
| Field of study | Recycling and Energy Recovery | | | | | | |
| Date of commencement of studies | October 2026 | Academic year of realisation of subject | | | 2026/2027 | | |
| Education level | first-cycle studies | Subject group | | | Obligatory subject group in the field of study 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 | 1 | Language of instruction | | | Polish | | |
| Semester of study | 2 | ECTS credits | | | 1.0 | | |
| Learning profile | general academic profile | Assessment form | | | assessment | | |
| Conducting unit | Department of Environmental Engineering Technology -> Faculty of Civil and Environmental Engineering -> Faculties of Gdańsk University of Technology | | | | | | |
| Name and surname of lecturer (lecturers) | Subject supervisor | dr inż. Magda Kasprzyk | | | | | |
| | Teachers | | | | | | |
| Lesson types | Lesson type | Lecture | Tutorial | Laboratory | Project | Seminar | SUM |
| | Number of study hours | 10.0 | 10.0 | 0.0 | 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 | 1.0 | 4.0 | 25 | | |
| Subject objectives | The aim of the course is to provide an introduction to the principles of atmospheric protection, emissions and the challenges posed by climate change. | | | | | | |
| Learning outcomes | Course outcome | Subject outcome | | | Method of verification | | |
| | [K6_U02] solves engineering issues and problems in the area of raw materials and energy recovery through the use of appropriate analytical, numerical and experimental tools and methods. | The student solves engineering issues and problems in the area of resource and energy recovery by applying appropriate and relevant analytical, numerical and experimental tools and methods. | | | [SU4] Assessment of ability to use methods and tools [SU2] Assessment of ability to analyse information | | |
| | [K6_K03] is committed to independent lifelong learning and independently follows the development of science and technology, especially in the area of recycling raw materials and energy. | The student engages in independent lifelong learning and independently follows developments in science and technology, especially in the area of resource and energy recovery. | | | [SK2] Assessment of progress of work [SK4] Assessment of communication skills, including language correctness | | |
| | [K6_W02] analyzes engineering and technological issues and problems in the area of raw materials and energy recovery using appropriate and appropriate analytical, numerical and experimental tools and methods | The student analyses engineering and technological issues and problems in the area of resource and energy recovery using appropriate and relevant analytical, numerical and experimental tools and methods. | | | [SW1] Assessment of factual knowledge [SW3] Assessment of knowledge contained in written work and projects | | |
| Subject contents | Course content – lecture 1. The atmosphere (composition and properties of the air, vertical structure of the atmosphere). Types, causes and sources of atmospheric air pollution. Human activity as a source of greenhouse gas emissions. 2.State of air quality in Poland and Europe. 3.Changes in climate of anthropogenic origin. 4.Main effects of climate change. Negative impact on the ocean. 5.Climate extremes and the effects on humans. | | | | | | |
| Prerequisites and co-requisites | | | | | | | |
| Assessment methods and criteria | Subject passing criteria | Passing threshold | | | Percentage of the final grade | | |
| | | 60.0% | | | 50.0% | | |
| | | 60.0% | | | 50.0% | | |

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| Recommended reading | Basic literature | <p>1.IPCC, 2021: Podsumowanie dla Decydentów. W: Zmiana Klimatu 2021: Fizyczne Podstawy Naukowe. Wkład I Grupy Roboczej do Szóstego Raportu Oceny Międzyrządowego Zespołu ds. Zmiany Klimatu. [V. Masson-Delmotte, i in. (red.)]. Cambridge University Press.</p> <p>2.Klimatyczne ABC. Podręcznik o zmianach klimatu dla każdego. REDAKCJA NAUKOWA M. Budziszewska, A. Kardaś, Z. Bohdanowicz. Wydawnictwo Uniwersytetu Warszawskiego</p> <p>3.Nauka o Klimacie. A. Kardaś, Sz. Malinowski, M.Popkiewicz. Wydawnictwo: Post Factum, 2018</p> <p>4.P. Stepnowski, E. Synak, B. Szafranek, Z. Kaczyński, Monitoring i analityka zanieczyszczeń środowiska, Uniwersytet Gdański 2010. https://chemia.ug.edu.pl/sites/default/files/nodes/strona-chemia/33539/files/monitoring.pdf</p> |
| | Supplementary literature | <p>5.Nature-based Solutions for Microclimate Regulation and Air Quality. European Commission B-1049 Brussels 2020</p> <p>6.Air quality Pollution sources and impacts, EU legislation and international agreements. European Parliament 2018.</p> <p>7.Research Findings in support of the EU. Air Quality Review. European Commission B-1049 Brussels 2013.</p> <p>8.L. Falkowska , K. Korzeniewski, Chemia atmosfery, Wydawnictwo Uniwersytetu Gdańskiego, 1998.</p> <p>9.M. Szklarczyk, Ochrona atmosfery, Wydaw. Uniwersytetu Warmińsko-Mazurskiego, 2001.</p> <p>10.pod red. K. Judy-Rezler i B. Toczko, Pyły drobne w atmosferze Kompendium wiedzy o zanieczyszczeniu powietrza pyłem zawieszonym w Polsce, Biblioteka Monitoringu Środowiska, Warszawa 2016. http://www.gios.gov.pl/images/aktualnosci/Pyly_drobne_w_atmosferze.Kompendium_wiedzy.pdf</p> <p>11.K. Judy-Rezler, Oddziaływanie zanieczyszczeń powietrza na środowisko, Oficyna wydawnicza PW, Warszawa 2016.</p> <p>12.G.W. van Loon, S.J. Duffy, Chemia Środowiska, Wydawnictwo Naukowe PWN, Warszawa 2007</p> <p>13.R.G. Griffin, Principles of air quality management, Taylor &Francis group: Boca Raton, 2007.</p> <p>14.Lewandowska A., L. Falkowska, Aerozole i gazy w atmosferze ziemskiej zmiany globalne, Wydawnictwo UG, Gdańsk 2009.</p> |
| | eResources addresses | |
| Example issues/ example questions/ tasks being completed | Explanation of terms and differences: emission, immission, dry deposition, wet deposition, classical smog, photochemical smog.The additional greenhouse effect.Sources of carbon and how it circulates in nature.Radiative forcing, feedback.Adaptation and mitigation of climate change. | |
| Practical activities within the subject | Not applicable | |

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