



Subject card

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| Subject name and code | Complex concrete structures, PG_00041056 | | | | | | |
| Field of study | Civil Engineering | | | | | | |
| Date of commencement of studies | October 2024 | | Academic year of realisation of subject | | 2024/2025 | | |
| Education level | second-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 | | English | | |
| Semester of study | 1 | | ECTS credits | | 4.0 | | |
| Learning profile | general academic profile | | Assessment form | | assessment | | |
| Conducting unit | Department of Building Structures and Material Engineering -> Faculty of Civil and Environmental Engineering | | | | | | |
| Name and surname of lecturer (lecturers) | Subject supervisor | | dr inż. Magdalena Pawelska-Mazur | | | | |
| | Teachers | | | | | | |
| Lesson types and methods of instruction | Lesson type | Lecture | Tutorial | Laboratory | Project | Seminar | SUM |
| | Number of study hours | 30.0 | 15.0 | 0.0 | 15.0 | 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 | | 5.0 | | 35.0 | 100 |
| Subject objectives | Make acquaintance of students with calculation methods of complex concrete structures. | | | | | | |
| Learning outcomes | Course outcome | | Subject outcome | | Method of verification | | |
| | [K7_K01] is aware of necessity of professional competences improvement; obeys the professional ethics code | | | | [SK2] Assessment of progress of work [SK5] Assessment of ability to solve problems that arise in practice | | |
| | [K7_W09] knows advanced methods of building physics with applications in heat and moisture migration in buildings, energy demand for buildings and its acoustics | | | | [SW1] Assessment of factual knowledge | | |
| | [K7_U02] can design and dimension complex steel, concrete (including reinforced), wood and masonry constructions and its details | | | | [SU4] Assessment of ability to use methods and tools [SU1] Assessment of task fulfilment | | |
| | [K7_W02] knows principles of analysis, design and dimensioning of complex constructions and its elements | | | | [SW1] Assessment of factual knowledge | | |
| | [K7_W04] has knowledge on advanced strength of materials, modeling and optimisation of materials and constructions; has knowledge of fundamentals of Finite Element Method and general nonlinear analysis of engineering constructions and systems | | | | [SW1] Assessment of factual knowledge | | |

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| Subject contents | 1) Properties of concrete and reinforced-concrete. 2) Flat floors (without ribs and beams). 3) Calculations of two-way reinforced slabs according to theory of elasticity and limit states. 4) Foundation slabs on elastic subsoil. 5) Load bearing capacity of rectangular reinforced concrete beams simultaneously subjected to torsion, bending and shearing. 6) Modeling of reinforced concrete tanks. 7) Failure criteria for concrete. 8) Application of truss models for reinforced concrete and prestressed concrete structures. 9) Wall beams. 10) Size effects in concrete beams. 11) Discrete models. 12) Continuous FE models. | | |
| Prerequisites and co-requisites | | | |
| Assessment methods and criteria | Subject passing criteria | Passing threshold | Percentage of the final grade |
| | | 55.0% | 90.0% |
| | | 55.0% | 10.0% |
| Recommended reading | Basic literature | lectures | |
| | Supplementary literature | no need | |
| | eResources addresses | Adresy na platformie eNauczanie: | |
| Example issues/ example questions/ tasks being completed | Calculation and reinforcement of high concrete beams. | | |
| Work placement | Not applicable | | |