



Subject card

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|---|--|---|----------|-------------------------------------|--|------------|-----|
| Subject name and code | Concrete Engineering Structures, PG_00042240 | | | | | | |
| Field of study | Civil Engineering | | | | | | |
| Date of commencement of studies | February 2023 | Academic year of realisation of subject | | | 2023/2024 | | |
| Education level | second-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 | 1 | Language of instruction | | | Polish | | |
| Semester of study | 2 | ECTS credits | | | 5.0 | | |
| Learning profile | general academic profile | Assessment form | | | exam | | |
| Conducting unit | Department of Concrete Structures -> Faculty of Civil and Environmental Engineering | | | | | | |
| Name and surname of lecturer (lecturers) | Subject supervisor | dr inż. Marek Wesolowski | | | | | |
| | Teachers | dr inż. Paweł Piotrkowski dr inż. Małgorzata Lachowicz dr inż. Marek Wesolowski | | | | | |
| Lesson types and methods of instruction | Lesson type | Lecture | Tutorial | Laboratory | Project | Seminar | SUM |
| | Number of study hours | 45.0 | 0.0 | 15.0 | 15.0 | 0.0 | 75 |
| | 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 | 75 | | 5.0 | | 45.0 | 125 |
| Subject objectives | Knowledge of methods of calculation of RC folded plates, suspending roofs and silos. Properties of RC confined columns and CFST, Introduction to RC structures with non - metal reinforcement. | | | | | | |
| Learning outcomes | Course outcome | Subject outcome | | | Method of verification | | |
| | [K7_W14] knows and applies building codes and obeys the Construction Law; has knowledge on environmental impact of investment realisation | knows standards for designing advanced RC structures | | | [SW3] Assessment of knowledge contained in written work and projects | | |
| | [K7_U06] is able to choose proper tools (measuring, analytical or numerical) to solve engineering problems, to acquire, filter, process and analyse data | knows advanced computer and analytical aids for designing advanced RC structures | | | [SU4] Assessment of ability to use methods and tools | | |
| | [K7_W02] knows principles of analysis, design and dimensioning of complex constructions and its elements | knows methods of designing advanced RC structures | | | [SW1] Assessment of factual knowledge | | |
| | [K7_U02] can design and dimension complex steel, concrete (including reinforced), wood and masonry constructions and its details | knows to design advanced RC structures | | | [SU1] Assessment of task fulfilment | | |
| Subject contents | Introduction to designing folded plates. Internal forces in folded plates of different types. Analysis of triangle multi - span folded plate. Details of reinforcement in folded plates. Suspended roofs. Methods of dimensioning. RC confined columns and CFST, Parameters determining effectiveness of confinement. Post - critical behaviour. Methods of designing. Silos. Methods of designing. Details of reinforcement. Concrete structures with non - metal reinforcement (dGFRP, AFRP, BFRP and CFRP). | | | | | | |
| Prerequisites and co-requisites | | | | | | | |

| Assessment methods and criteria | Subject passing criteria | Passing threshold | Percentage of the final grade |
|---------------------------------|--------------------------|--|-------------------------------|
| | Project | 60.0% | 33.0% |
| | Exam | 50.0% | 67.0% |
| Recommended reading | Basic literature | <ol style="list-style-type: none"> 1. M. Knauff, Obliczanie konstrukcji żelbetowych według Eurokodu 2. PWN, Warszawa 2012 2. M. Knauff i inni,, Tablice i wzory do projektowania konstrukcji żelbetowych z przykładami obliczeń. PWN, Warszawa 2013 3. J. Pędziwiatr, Wstęp do projektowania konstrukcji żelbetowych wg PN-EN 1992-1-1:2008, Dolnośląskie Wydawnictwo Edukacyjne, Wrocław 2010 4. W.Starosolski, <i>Konstrukcje żelbetowe</i>, t.I, Wydawnictwo Naukowe PWN, Warszawa 2012 5. Norma żelbetowa PN-EN 1992-1-1:2008 6. Norma żelbetowa PN-B-03264:2002 7. A. Halicka, D. Franczak: Projektowanie zbiorników żelbetowych. Zbiorniki na materiały sypkie, Wydawnictwo Naukowe PWN, Warszawa 2011 8. W. Nowacki, R. Dąbrowski, Silosy. Metody obliczeń i konstrukcja, Budownictwo i Architektura, Warszawa 1955 9. K.Grabiec, <i>Żelbetowe konstrukcje cienkościenne</i>, Wydawnictwo Naukowe PWN, Warszawa 1999 10. J.Kobiak W.Stachurski, <i>Konstrukcje żelbetowe</i>, t.3, Arkady, Warszawa 1989 <p>J.Kobiak W.Stachurski, <i>Konstrukcje żelbetowe</i>, t.4, Arkady, Warszawa 1991</p> | |
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| | Supplementary literature | <p>1. Podstawy projektowania konstrukcji żelbetowych i sprężonych według Eurokodu 2, praca zbiorowa. Dolnośląskie Wydawnictwo Edukacyjne, Wrocław 2006.</p> <p>2. Konstrukcje betonowe, żelbetowe i sprężone – komentarz do normy PN-B-03264:2002, Wyd. ITB, Warszawa 2005.</p> <p>3. B.Bukowski T.Godycki-Ćwirko, <i>Tarczownice</i>, Politechnika Gdańska 1958</p> <p>4. F.Otto, <i>Dachy wiszące</i>, Arkady, Warszawa 1959</p> <p>5. W.K.Kaczurin, <i>Teoria konstrukcji wiszących</i>, Arkady, Warszawa 1965</p> <p>6. S.Pałkowski, <i>Konstrukcje ciągnowe</i>, Wydawnictwa Naukowo-Techniczne, Warszawa 1994</p> <p>7. K.Grabiec, <i>Konstrukcje betonowe. Przykłady obliczeń statycznych</i>, Wydawnictwo Naukowe PWN, Warszawa 1998</p> <p>8. T.Godycki-Ćwirko T.Godycki-Ćwirko, <i>Mechanika betonu</i>, Arkady, Warszawa 1982</p> <p>T.Godycki-Ćwirko i in., <i>Projektowanie elementów konstrukcji żelbetowych</i>, cz I i II, Politechnika Łódzka 1981</p> |
| | eResources addresses | Adresy na platformie eNauczanie: Inżynierskie Konstrukcje Betonowe 2023 - Moodle ID: 33081 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=33081 |
| Example issues/ example questions/ tasks being completed | Project of folded plate roof | |
| Work placement | Not applicable | |