



## Subject card

|                                             |                                                                                                                                                                                                    |                                                          |                                                                                                                                                                                                                |                                     |                                                                      |            |     |
|---------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|----------------------------------------------------------------------|------------|-----|
| Subject name and code                       | , PG_00069304                                                                                                                                                                                      |                                                          |                                                                                                                                                                                                                |                                     |                                                                      |            |     |
| Field of study                              | Civil Engineering                                                                                                                                                                                  |                                                          |                                                                                                                                                                                                                |                                     |                                                                      |            |     |
| Date of commencement of studies             | October 2023                                                                                                                                                                                       |                                                          | Academic year of realisation of subject                                                                                                                                                                        |                                     | 2026/2027                                                            |            |     |
| Education level                             | first-cycle studies                                                                                                                                                                                |                                                          | Subject group                                                                                                                                                                                                  |                                     |                                                                      |            |     |
| Mode of study                               | Full-time studies                                                                                                                                                                                  |                                                          | Mode of delivery                                                                                                                                                                                               |                                     | at the university                                                    |            |     |
| Year of study                               | 4                                                                                                                                                                                                  |                                                          | Language of instruction                                                                                                                                                                                        |                                     | Polish                                                               |            |     |
| Semester of study                           | 7                                                                                                                                                                                                  |                                                          | ECTS credits                                                                                                                                                                                                   |                                     | 2.0                                                                  |            |     |
| Learning profile                            | general academic profile                                                                                                                                                                           |                                                          | Assessment form                                                                                                                                                                                                |                                     | assessment                                                           |            |     |
| Conducting unit                             | Department of Engineering Structures -> Faculty of Civil and Environmental Engineering -> Faculties of Gdańsk University of Technology                                                             |                                                          |                                                                                                                                                                                                                |                                     |                                                                      |            |     |
| Name and surname of lecturer (lecturers)    | Subject supervisor                                                                                                                                                                                 |                                                          | dr inż. Arkadiusz Sitarski                                                                                                                                                                                     |                                     |                                                                      |            |     |
|                                             | Teachers                                                                                                                                                                                           |                                                          |                                                                                                                                                                                                                |                                     |                                                                      |            |     |
| Lesson types                                | Lesson type                                                                                                                                                                                        | Lecture                                                  | Tutorial                                                                                                                                                                                                       | Laboratory                          | Project                                                              | Seminar    | SUM |
|                                             | Number of study hours                                                                                                                                                                              | 0.0                                                      | 0.0                                                                                                                                                                                                            | 0.0                                 | 30.0                                                                 | 0.0        | 30  |
|                                             | E-learning hours included: 0.0                                                                                                                                                                     |                                                          |                                                                                                                                                                                                                |                                     |                                                                      |            |     |
|                                             | eNauczanie source address: <a href="https://enauczanie.pg.edu.pl/2025/course/view.php?id=2231">https://enauczanie.pg.edu.pl/2025/course/view.php?id=2231</a>                                       |                                                          |                                                                                                                                                                                                                |                                     |                                                                      |            |     |
| 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                                                                                                                                                                              | 30                                                       |                                                                                                                                                                                                                | 2.0                                 |                                                                      | 18.0       | 50  |
| Subject objectives                          | The aim of the course is to carry out a design project of a composite steelconcrete bridge.                                                                                                        |                                                          |                                                                                                                                                                                                                |                                     |                                                                      |            |     |
| Learning outcomes                           | Course outcome                                                                                                                                                                                     |                                                          | Subject outcome                                                                                                                                                                                                |                                     | Method of verification                                               |            |     |
|                                             | [K6_U07] Design and build engineering structures in a sustainable manner, with care for the natural environment and a minimum carbon footprint                                                     |                                                          | Nie dotyczy                                                                                                                                                                                                    |                                     | [SU3] Assessment of ability to use knowledge gained from the subject |            |     |
|                                             | [K6_W06] Demonstrates practical knowledge and understanding of materials, devices and tools, processes and technologies in the field of civil engineering (and their limitations).                 |                                                          | Knowledge in the field of designing calculations and construction technology for composite bridge structures                                                                                                   |                                     | [SW2] Assessment of knowledge contained in presentation              |            |     |
|                                             | [K6_W07] Understand the investment's impact on the environment and the interrelationships and dependencies between the building structure and the natural environment                              |                                                          | Nie istotne                                                                                                                                                                                                    |                                     | [SW2] Assessment of knowledge contained in presentation              |            |     |
|                                             | [K6_K01] Is aware of the key aspects of professional, ethical and social responsibility related to management, business operation, decision making and opinion formulation in civil engineering.   |                                                          | Nie dotyczy                                                                                                                                                                                                    |                                     | [SK3] Assessment of ability to organize work                         |            |     |
|                                             | [K6_U06] Conduct engineering activities in civil engineering subject area, using and applying practical knowledge and understanding of materials, equipment and tools, processes and technologies. |                                                          | Is able to identify the type of bridge structure and present the main actions affecting it, including long-term and short-term loads. Is able to determine whether a given structure is dynamically sensitive. |                                     | [SU4] Assessment of ability to use methods and tools                 |            |     |

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| Subject contents                                               | Course content – project<br>Identification of actions affecting the structure.<br>Determination of internal forces in the specified steelconcrete grillage, taking into account the construction technology.<br>The forces should be determined using analytical methods as well as with the aid of an engineering software program for the analysis of 3D grillage/frame structures.<br>Determination of stress magnitudes resulting from quasi-static loads, rheological effects (creep and shrinkage), and temperature differences between steel and concrete. |                                                                                                                                                                                                                                                                                                                                                                           |                               |
| Prerequisites and co-requisites                                | Has knowledge of calculation procedures for steel and concrete cross-sections.<br>Is familiar with methods of determining internal forces using analytical approaches and basic engineering software for the analysis of frame and beam (3D) structures.                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                           |                               |
| Assessment methods and criteria                                | Subject passing criteria                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Passing threshold                                                                                                                                                                                                                                                                                                                                                         | Percentage of the final grade |
|                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 60.0%                                                                                                                                                                                                                                                                                                                                                                     | 50.0%                         |
|                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 51.0%                                                                                                                                                                                                                                                                                                                                                                     | 50.0%                         |
| Recommended reading                                            | Basic literature                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 1) Koreleski J. Zespólone Konstrukcje Mostowe. PWN Warszawa-Kraków 1967<br>2) Karlikowski J. Madaj A. Wołowicki W. Mostowe konstrukcje zespolone WKŁ<br>3) Karlikowski J. Madaj A. Wołowicki W.: Mosty zespolone stalowo-betonowe. Zasady projektowania PN-EN 1994-2 WKŁ 2015<br>4) Siwowski T> Turoń B. Projektowanie mostów zespolonych według Eurokodu 4. Rzeszów 2016 |                               |
|                                                                | Supplementary literature                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 1) Ryżyński A i inni Mosty Stalowe, PWN Warszawa-Poznań 1984<br>2) Kazimierz Furtak: Mosty Zespolone PWN 1999<br>2) Madaj A., Wołowicki W.: Budowa i utrzymanie mostów. WKiŁ, Warszawa 1995<br>3) Franciszek Szelaowski Mosty metalowe część i i II WKŁ Warszawa 1966                                                                                                     |                               |
|                                                                | eResources addresses                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                           |                               |
| Example issues/<br>example questions/<br>tasks being completed | Determination of internal forces in a grillageslab bridge structure.<br>Determination of stresses resulting from quasi-static loads and from effects related to concrete creep and shrinkage, as well as temperature-difference impacts.<br>Presentation of equipment and ancillary components used in road bridges.<br>Able to sketch the structure of bridge supports and their elements.                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                           |                               |
| Practical activities within the subject                        | Not applicable                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                           |                               |

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