



## Subject card

|   |  |  |   |                                     |   |            |     |
|---|--|--|---|-------------------------------------|---|------------|-----|
| Subject name and code                       | Plastic Materials Technology, PG_00045062  |  |   |                                     |   |            |     |
| Field of study                              | Ocean Engineering, Ocean Engineering   |  |   |                                     |   |            |     |
| Date of commencement of studies             | October 2020   |  | Academic year of realisation of subject   |                                     | 2022/2023   |            |     |
| Education level                             | first-cycle studies  |  | Subject group   |                                     |   |            |     |
| 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  |                                     | 2.0   |            |     |
| Learning profile                            | general academic profile   |  | Assessment form   |                                     | assessment  |            |     |
| Conducting unit                             | Department of Theory and Ship Design -> Faculty of Mechanical Engineering and Ship Technology  |  |   |                                     |   |            |     |
| Name and surname of lecturer (lecturers)    | Subject supervisor   |  | dr hab. inż. Lech Rowiński  |                                     |   |            |     |
|   | Teachers   |  | dr hab. inż. Lech Rowiński  |                                     |   |            |     |
| Lesson types and methods of instruction     | 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   |  |   |                                     |   |            |     |
| 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   |   | 3.0                                 |   | 22.0       | 55  |
| Subject objectives                          | Review of non-metallic materials used in shipbuilding. Construction relationship with technology in composite structures. Review of structural nodes and principles of their design. basic construction calculations. Technological process of composite structures. Molding technologies items composite structures. Technological equipment and tools. Technological materials. Assembly structural elements and finishing works. Design and technological requirements resulting from regulations of classification societies and standards   |  |   |                                     |   |            |     |
| Learning outcomes                           | Course outcome   |  | Subject outcome   |                                     | Method of verification                                  |            |     |
|   | [K6_U05] can formulate a simple engineering task and its specification within the range of design, construction and operation of ocean technology objects and systems  |  | The student knows the rules of creating polymer composites i methods of making reinforced polymer composites. The student knows the basic rules use of construction technology shipbuilding. The student knows basic elements of the structure hull, calculations and rules dimensioning. |                                     | [SU1] Assessment of task fulfilment                     |            |     |
|   | [K6_W05] has an organized knowledge on design, construction and operation of ocean technology objects and systems  |  | The student knows the basic concepts in the field of plastics synthetic. knows the basic technological processes as a result whose property is acquired utilities of synthetic materials and knows the basic types of materials synthetic.  |                                     | [SW2] Assessment of knowledge contained in presentation |            |     |
| Subject contents                            | Lecture: Review and selection of non-metallic materials used in ship structures. The connection between construction and technology in composite structures. Review of structural nodes and principles of their design. basic construction calculations. Technological process of composite structures. Technologies of forming structural elements from composites. Technological equipment and tools. Technological materials. Organization of the technological process. Research on the effectiveness of the technological process. Construction of thermoplastic structures. Assembly of structural elements and finishing works. Design and technological requirements resulting from the regulations of classification societies and standards. Laboratory: Materials for the production of composites and technological materials Preparation of technological equipment Contact forming Vacuum forming Vacuum injection molding Thermoplastic molding Molding thermoplastic composites by injection |  |   |                                     |   |            |     |
| Prerequisites and co-requisites             | No requirements  |  |   |                                     |   |            |     |

| Assessment methods and criteria                                | Subject passing criteria        | Passing threshold  | Percentage of the final grade |
|--|---------------------------------|--|-------------------------------|
|  | Essay                           | 60.0%  | 100.0%                        |
| Recommended reading  | Basic literature                | 1. Berger M. i inni: Poliestry wzmocnione w budownictwie okrętowym, Wydawnictwo Morskie, Gdynia, 1961. 2. Kozłowski J., Wilczopolski M., Wituszyński K.: Konstrukcje okrętowe z kompozytów polimerowych ; Wydawnictwo Morskie, Gdańsk, 1982. 3. Przepisy klasyfikacji i budowy jachtów morskich (JAC), Czę ć II, Kadłub 1996/1998 4. Przepisy klasyfikacji i budowy łodzi motorowych (MOT), Czę ć II, Kadłub 1996/1998 |                               |
|  | Supplementary literature        | 1. Jan Rabek, Współczesna wiedza o polimerach, wyd PWN, Warszawa 2009 2. Jan Pielichowski, "Technologia tworzyw sztucznych", Wydawnictwo Naukowo-Techniczne , wyd VI, 2003   |                               |
|  | eResources addresses            | Adresy na platformie eNauczanie:<br>Technologia Tworzyw Sztucznych BOJ 2022 - Moodle ID: 27110<br><a href="https://enauczanie.pg.edu.pl/moodle/course/view.php?id=27110">https://enauczanie.pg.edu.pl/moodle/course/view.php?id=27110</a>  |                               |
| Example issues/<br>example questions/<br>tasks being completed | Design the hull structural node |  |                               |
| Work placement   | Not applicable                  |  |                               |