



## Subject card

|   |  |  |          |                                     |  |            |     |
|---|--|--|----------|-------------------------------------|--|------------|-----|
| Subject name and code                       | Engineering Graphics , PG_00055372   |  |          |                                     |  |            |     |
| Field of study                              | Mechanical Engineering   |  |          |                                     |  |            |     |
| Date of commencement of studies             | October 2023   | Academic year of realisation of subject  |          |                                     | 2023/2024  |            |     |
| Education level                             | first-cycle studies  | Subject group  |          |                                     | Obligatory subject group in the field of study<br>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                           | 1  | ECTS credits   |          |                                     | 5.0  |            |     |
| Learning profile                            | general academic profile   | Assessment form  |          |                                     | assessment   |            |     |
| Conducting unit                             | Department of Machine Design and Vehicles -> Faculty of Mechanical Engineering and Ship Technology   |  |          |                                     |  |            |     |
| Name and surname of lecturer (lecturers)    | Subject supervisor   | dr hab. inż. Waldemar Karaszewski  |          |                                     |  |            |     |
|   | Teachers   | dr hab. inż. Waldemar Karaszewski<br>mgr inż. Katarzyna Mazur<br>mgr inż. Bartosz Bastian<br>dr inż. Katarzyna Zasińska<br>Michał Formela<br>mgr inż. Marek Łubniewski |          |                                     |  |            |     |
| Lesson types and methods of instruction     | Lesson type  | Lecture  | Tutorial | Laboratory                          | Project  | Seminar    | SUM |
|   | Number of study hours  | 30.0   | 0.0      | 0.0                                 | 30.0   | 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                                 |  | 60.0       | 125 |
| Subject objectives                          | The aim of the course is: <ul style="list-style-type: none"><li>shaping 3D imagination,</li><li>learning the principles of projecting and defining working drawings in accordance with applicable standards,</li><li>learning the rules of machine drawing parts and joints used in the machine design,</li><li>learning the principles of creating assembly drawings.</li></ul> |  |          |                                     |  |            |     |

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| Learning outcomes               | Course outcome   | Subject outcome   | Method of verification  |
|                                 | [K6_U03] is able to identify, formulate and develop the documentation of a simple design or technological task, including the description of the results of this task in Polish or in a foreign language and to present the results using computer software or other aiding tools  | A student draws space elements based on orthographic projection. He presents the rules of presentation elements in engineering drawing. He draws and reads structural forms of three-dimensional mechanical elements. He describes surface attributes of elements. He draws of machine elements dimensions and creates working drawings of machine elements according to machine technical drawing standards. He creates working and assembly drawings of machine elements. He reads information about machine elements based on presented elements and units drawings. He draws and reads structural forms of three-dimensional mechanical elements and mechanical units. He reads diagrams of complex mechanical systems. | [SU1] Assessment of task fulfilment<br>[SU3] Assessment of ability to use knowledge gained from the subject |
|                                 | [K6_W07] knows the principles of engineering drawing, standards and tools used in preparation of technical documentation   | A student draws space elements based on orthographic projection. He presents the rules of presentation elements in engineering drawing. He draws and reads structural forms of three-dimensional mechanical elements. He describes surface attributes of elements. He draws of machine elements dimensions and creates working drawings of machine elements according to machine technical drawing standards. He creates working and assembly drawings of machine elements. He reads information about machine elements based on presented elements and units drawings. He draws and reads structural forms of three-dimensional mechanical elements and mechanical units. He reads diagrams of complex mechanical systems. | [SW1] Assessment of factual knowledge   |
| Subject contents                | A role of graphics in engineering activity. Introduction to an individual graphical description of technical objects. Orthogonal and axonometric projections. Views, sections, revolved and removed sections of machine elements. Dimensioning of lengths, diameters, angles. Tolerances of dimensions, fits. Description of surface attributes of machine elements. Location of elements on a drawing. Drawing rules of working and assembly drawings. Standardization in engineering graphics. Permanent joints presentation of machine elements (welded, glue, rivet joints). Presentation of joint connections of machine elements (screw, shaft-hub joints). Presentation ways of standardized machine elements (bearings, gears, clutches, brakes, shafts and axles). Presentation ways of springs and seals. Basic information about technical drawings in electrotechnics and electronics, electric diagrams. Pneumatics and hydraulics diagrams. Drawings and machine diagrams practical reading. |   |   |
| Prerequisites and co-requisites | Based knowledge of elementary geometry and stereometry, theory of machines and metrology.  |   |   |
| Assessment methods and criteria | Subject passing criteria   | Passing threshold   | Percentage of the final grade   |
|                                 | Final exam   | 60.0%   | 60.0%   |
|                                 | Design tasks   | 60.0%   | 40.0%   |
| Recommended reading             | <p>Basic literature</p> <p>Dobrzański T. : Technical and Machine Drawing. WNT, Warsaw, 2017.</p> <p>Rigall A., Sadaj J. : Technical Drawing - Descriptive geometry, Gdansk University of Technology, 2003.</p> <p>Burcan J.: Basics of Technical Drawings, PWN, 2016</p>   |   |   |

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|  | Supplementary literature | Kurmaz L.W.: Designing nodes and machine parts, publishing house of the Kielce University of Technology, 2007  |
| Example issues/<br>example questions/<br>tasks being completed | eResources addresses     | Adresy na platformie eNauczenie:<br>Grafika Inżynierska, W, P, MiBM, sem01, zimowy, 2023/2024<br>(PG_00055372) - Moodle ID: 32513<br><a href="https://enauczenie.pg.edu.pl/moodle/course/view.php?id=32513">https://enauczenie.pg.edu.pl/moodle/course/view.php?id=32513</a> |
| Work placement   | Not applicable           |  |