



Subject card

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| Subject name and code | Fundamentals of Machines Design 1, PG_00055305 | | | | | | |
| Field of study | Ocean Engineering | | | | | | |
| Date of commencement of studies | October 2021 | Academic year of realisation of subject | | | 2022/2023 | | |
| Education level | first-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 | 2 | Language of instruction | | | Polish | | |
| Semester of study | 4 | ECTS credits | | | 4.0 | | |
| Learning profile | general academic profile | Assessment form | | | assessment | | |
| Conducting unit | Institute of Ocean Engineering and Ship Technology -> Faculty of Mechanical Engineering and Ship Technology | | | | | | |
| Name and surname of lecturer (lecturers) | Subject supervisor | dr inż. Wojciech Leśniewski | | | | | |
| | Teachers | dr inż. Wojciech Leśniewski dr inż. Magdalena Kunicka | | | | | |
| Lesson types and methods of instruction | Lesson type | Lecture | Tutorial | Laboratory | Project | Seminar | SUM |
| | Number of study hours | 30.0 | 15.0 | 0.0 | 0.0 | 0.0 | 45 |
| | 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 | 45 | | 5.0 | | 50.0 | 100 |
| Subject objectives | Student should have principles knowledge in Machine Elements Design | | | | | | |

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| 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 explains the phases and the course of the design and construction process. The student describes the basic types of machining and plastic working used in the construction of machines. Describes the construction and explains the principle of operation of detachable and non-detachable connections. The student calculates the basic types of detachable and non-detachable connections. Describes the design and calculates the shaft-hub connections. The student recognizes and calculates rolling bearings. The student recognizes and lists the types of plain bearings. The student distinguishes between hydrostatic and hydrodynamic bearings. The student recognizes the types of mechanical transmissions. Describes the construction and explains the principle of operation of the discussed types of transmissions. The student describes and explains the construction of chain and belt transmissions | [SU1] Assessment of task fulfilment |
| | [K6_W03] has a basic knowledge on hydromechanics, thermodynamics, machine construction, ecology, materials science and electronics necessary to understand the construction and operation principles of ocean technology objects and equipment | The student explains the phases and the course of the design and construction process. The student describes the basic types of machining and plastic working used in the construction of machines. Describes the construction and explains the principle of operation of detachable and non-detachable connections. The student calculates the basic types of detachable and non-detachable connections. Describes the design and calculates the shaft-hub connections. The student recognizes and calculates rolling bearings. The student recognizes and lists the types of plain bearings. The student distinguishes between hydrostatic and hydrodynamic bearings. The student recognizes the types of mechanical transmissions. Describes the construction and explains the principle of operation of the discussed types of transmissions. The student describes and explains the construction of chain and belt transmissions. | [SW3] Assessment of knowledge contained in written work and projects |
| Subject contents | 1. Design, types and calculations of permanent fastening machine elements. 2. Design, types and calculations of screw joints. 3. Design, types and calculations of hub and shaft fastening. 4. Design of shafts and axles. 5. Springs. 6. Design, types and calculations of ball and roller bearings. 7. Sliding bearings. 8. Gears. 9. Angular, planetary and worm gears. 10. Chain gears. 11. Belt gears. | | |
| Prerequisites and co-requisites | Principles knowledge of technical drawing and mechanics. | | |
| Assessment methods and criteria | Subject passing criteria | Passing threshold | Percentage of the final grade |
| | merytoryczna zawartość | 50.0% | 100.0% |
| Recommended reading | Basic literature | 1. Dietrich M.: Podstawy Konstrukcji Maszyn, tomy 1,2 i 3 2. Kochanowski M.: Wybrane zagadnienia z Podstaw Konstrukcji Maszyn, skrypt PG 2002r. 3. Dobrzański J.: Rysunek Techniczny Maszynowy 4. Spotts M. F., Design of Machine Elements, Prentice Hall | |
| | Supplementary literature | brak | |
| | eResources addresses | Adresy na platformie eNauczanie: | |

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| Example issues/ example questions/ tasks being completed | <ol style="list-style-type: none">1. Ball and roller bearings, drawing, types, calculations method.2. Sliding bearings, drawing, types, explain P, V, PV, calculations procedure, PV diagram.3. Gears types.4. Planetary gears, description and drawing.5. Worm gear, properties, description, schematic. |
| Work placement | Not applicable |