# GDAŃSK UNIVERSITY OF TECHNOLOGY

## Subject card

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| Subject name and code | Computer Aided Design of the Hull, PG_00060542 |
| Field of study | Design and Construction of Yachts, Naval Architecture and Offshore Structures |

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| Date of commencement of studies | October 2024 | Academic year of realisation of subject | 2025/2026 |
| Education level | first-cycle studies | Subject group | Optional subject group<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 | 2 | Language of instruction | Polish |
| Semester of study | 4 | ECTS credits | 4.0 |
| Learning profile | general academic profile | Assessment form | assessment |

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| 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. Cezary Żrodowski |
| | Teachers | |

| Lesson types and methods of instruction | Lesson type | Lecture | Tutorial | Laboratory | Project | Seminar | SUM |
|---|---|---|---|---|---|---|---|
| | Number of study hours | 15.0 | 0.0 | 0.0 | 30.0 | 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 |

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| Subject objectives | Getting to know the characteristics of the available CADCAM/CAE computer-aided design software for the maritime industry and mastering the skills of its use on selected examples of hull design. |

| Learning outcomes | Course outcome | Subject outcome | Method of verification |
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| | [K6_K03] is aware of the impact of non-technical aspects on the engineer's work and the impact of engineering activities on the natural environment | The student is able to use functionalities of CAD tools, supporting sustainable design | [SK2] Assessment of progress of work |
| | [K6_W04] has knowledge in the field of computer science, electronics, electrical engineering, automation and control, information technology, computer graphics, useful for understanding the possibilities of their use in ocean engineering | 141 / 5,000<br>Translation results<br>Translation result<br>The student correctly selects CAD tools for various design problems, taking into account the advantages and disadvantages of mesh and parametric geometry. | [SW3] Assessment of knowledge contained in written work and projects |
| | [K6_U02] can work individually and in a team, communicate through various techniques in professional environment and also record, analyse, and present the results of work, can estimate the time needed to complete a given task | The student demonstrates knowledge of individual and team work techniques built into modern CAD software | [SU4] Assessment of ability to use methods and tools<br>[SU1] Assessment of task fulfilment |

| Subject contents | 1. CAD/CAM/CAE software for maritime industry, functionality, requirements, comparison of available programs. |
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| | 2. Modeling of parametric hull shape and propeller |
| | 3. Modeling of hull compartmentation |
| | 4. Calculation of ship hydrostatics and stability |
| | 5. Hydrodynamic resistance simulation (CFD) |
| | 6. Strength simulations (MES) |
| | 7. Optimization of parametric shape with MDO software |
| | 8. Generating od 2D documentation on the basis of 3D model. |

| Prerequisites and co-requisites | Basic computer skills. |
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| Assessment methods and criteria | Subject passing criteria | Passing threshold | Percentage of the final grade |
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| | Realsation of ongoing exercises | 50.0% | 70.0% |
| | Presentation of selected subject | 50.0% | 30.0% |

| Recommended reading | Basic literature | Carl Machover: "C4" |
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| | | User's manuals for selected programs: |
| | | 1. Inventor |
| | | 2. SolidWorks |
| | | 3. Siemens NX |
| | | 4. AVEVA Marine |
| | | 5. Maat Hydro |
| | | 6. Star-CCM+ |
| | | 7. PolyCAD |
| | | 8. Delft Ship |
| | | 9. NAPA |
| | | 10. FORAN |
| | | 11. Maxsurf |
| | Supplementary literature | e-learning course o eNauczanie platform |
| | eResources addresses | Adresy na platformie eNauczanie: |

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| Example issues/ example questions/ tasks being completed | 1. Parametric model of hull form. |
| | 2. Associative model of hull assembly. |
| | 3. CFD simulation of propeller. |
| | 4. FEA simulation of simple structure. |
| Work placement | Not applicable |