GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

| | | | |
|---|---|---|---|
| Subject name and code | Computer aided design, PG_00052086 | | |
| Field of study | Nanotechnology | | |
| Date of commencement of studies | October 2021 | Academic year of realisation of subject | 2023/2024 |
| 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 | 3 | Language of instruction | Polish |
| Semester of study | 5 | ECTS credits | 5.0 |
| Learning profile | general academic profile | Assessment form | assessment |
| Conducting unit | Zakład Magnetycznych Właściwości Materiałów -> Instytut Nanotechnologii i Inżynierii Materiałowej -> Faculty of Applied Physics and Mathematics | | |
| Name and surname of lecturer (lecturers) | Subject supervisor | dr inż. Marek Augustyniak | |
| | Teachers | dr inż. Marek Augustyniak | |

**Lesson types and methods of instruction**

| Lesson type | Lecture | Tutorial | Laboratory | Project | Seminar | SUM |
|---|---|---|---|---|---|---|
| Number of study hours | 15.0 | 0.0 | 15.0 | 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 | 7.0 | 58.0 | 125 |

**Subject objectives**

The class is supposed to guide students in practical skills related to the computer-aided design. The choice of tools is based on the desire to provide solutions as versatile as possible. In particular, the student shall be helped with:

- understanding and creating standard paper product documentation (CAD 2D)

- understanding the specifics of 3D design, based on at least one of the currently popular programs (Fusion)

- application of engineering simulation methods, primarily based on the FEA (free Salome pre-processor, ANSYS computing system)

**Learning outcomes**

| Course outcome | Subject outcome | Method of verification |
|---|---|---|
| K6_W05 | By modeling materials and products, the student acquires and consolidates knowledge and verifies laws and rules in the field of mechanics, electricity and magnetism, thermodynamics and physical chemistry | [SW3] Assessment of knowledge contained in written work and projects |
| K6_U07 | The Student is capable of estimating effort and approximate cost of his/her design work. | [SU2] Assessment of ability to analyse information |
| K6_U03 | The student knows the commands of AutoCAD; he/she is able to use software such as Fusion 360, Salome, Ansys. | [SU1] Assessment of task fulfilment |

<table>
<tr><td>Subject contents</td><td>AutoCAD or equivalent program, e.g. LibreCAD: interface basics, commands, 2D exercises.<br><br>ANSYS or equivalent program: physics simulation of single parts (mechanics, heat transfer, optional electromagnetism) - comparison with analytical solutions and experiment, where possible<br><br>SALOME + Calculix - free software for 3D modeling and FEM calculations<br><br>OnShape - a CAD 3D software with several extensions, which currently gains on popularity on the engineering design marker</td></tr>
<tr><td>Prerequisites and co-requisites</td><td></td></tr>
<tr><td>Assessment methods and criteria</td><td>
<table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>Student participation intensity</td><td>80.0%</td><td>50.0%</td></tr>
<tr><td>Completing design tasks</td><td>70.0%</td><td>50.0%</td></tr>
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<tr><td>Recommended reading</td><td>
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<tr><td>Basic literature</td><td>Software manuals (PDF, online training courses)</td></tr>
<tr><td>Supplementary literature</td><td>----</td></tr>
<tr><td>eResources addresses</td><td>Podstawowe<br>https://librecad.org - LibreCAD manuals and forums.<br>https://learn.onshape.com - Example of OnShape training courses<br>Adresy na platformie eNauczanie:<br>Komputerowe wspomaganie projektowania (jesień 2023 / MA) - V semestr Nano - Moodle ID: 32619<br>https://enauczanie.pg.edu.pl/moodle/course/view.php?id=32619</td></tr>
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<tr><td>Example issues/ example questions/ tasks being completed</td><td>CAD 2D: Appartment drafting<br><br>OnShape: Designing a Simple Part or an assembly from Scratch<br><br>Salome + Calculix: simple part vibration calculation; work with models from the GrabCAD portal<br><br>ANSYS: prediction of the durability of the car towbar</td></tr>
<tr><td>Work placement</td><td>The acquired skills are directly applicable in industry.</td></tr>
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