GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

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|---|---|---|---|
| Subject name and code | Fundamentals of Machine Design III, PG_00040190 | | |
| Field of study | Mechanical Engineering, Mechanical Engineering | | |
| Date of commencement of studies | October 2020 | Academic year of realisation of subject | 2022/2023 |
| 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 | 3 | Language of instruction | English<br>None |
| Semester of study | 5 | ECTS credits | 3.0 |
| 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 inż. Grzegorz Rotta | |
| | Teachers | dr inż. Grzegorz Rotta | |

**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 | 6.0 | 39.0 | 75 |

**Subject objectives**

Learning the methodology of designing simple mechanical devices

Extending the knowledge and skills to use basic calculation methods for typical machine elements and the methods of selecting catalog parts for the designed technical device

Learning how to effectively create technical documentation using theoretical knowledge and CAD software

## 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 | 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 | [SU5] Assessment of ability to present the results of task<br>[SU1] Assessment of task fulfilment |
| K6_U07 | Is able to design a simple structure, mechanical device, subassembly or test rig using appropriate methods and tools, taking into account the given design criteria | [SU1] Assessment of task fulfilment |
| K6_U11 | Is able to analyze the operation of devices and compare design solutions using safety, environmental, economic and legal criteria | [SU1] Assessment of task fulfilment |
| K6_W08 | Has basic knowledge of the methodology of designing machine parts, mechanical devices, selection of construction materials, manufacturing and operation, including their life cycle | [SW3] Assessment of knowledge contained in written work and projects |
| K6_W04 | Has knowledge of mechanics, including the process of modeling mechanical systems, statics, kinematics and dynamics of rigid bodies as well as basic knowledge in the field of vibrations | [SW3] Assessment of knowledge contained in written work and projects |

## Subject contents

Mai aim is to design a simple machine that performs one simple operation. The designed machine may include such elements as: screw connections, welded connections, shafts and axles, couplings, gears, brakes, bearings, flexible elements.

The project will require basic engineering calculations for typical machine elements

As part of the project, it will also be necessary to prepare drawing documentation, i.e. assembly drawing and 3-5 working drawings

Everything is to be documented in a single report

## Prerequisites and co-requisites

The content of lectures, computational and computer exercises as well as a structural design in Fundamentals of Machine Design I and Fundamentals of Machine Design II subjects

## Assessment methods and criteria

| Subject passing criteria | Passing threshold | Percentage of the final grade |
|---|---|---|
| Final report submitted | 50.0% | 40.0% |
| Weekly assessment of current work progress | 50.0% | 60.0% |

## Recommended reading

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|---|---|
| Basic literature | A set of scripts from the Fundamentals of Machine Design published by the Gdańsk University of Technology<br><br>The content of lectures, computational and computer exercises as well as a structural design in Fundamentals of Machine Design I and Fundamentals of Machine Design II subjects |
| Supplementary literature | - A set of books "Fundamentals of Machine Design" published by PWN, Warsaw-PKM, edited by M. Dietrich, PWN, Warsaw<br><br>- Any works on Fundamentals of Machine Design in Polish and in English |
| eResources addresses | Adresy na platformie eNauczanie: |

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|---|---|
| Example issues/ example questions/ tasks being completed | - Development of various device concepts<br>- Choosing the best concept<br>- Design and verification calculations<br>- Preparation of drawing documentation - assembly drawing and executive drawings |
| Work placement | Not applicable |