#### Machine and Product Design

Code: MK5MGTTG04GX18-EN

ECTS Credit Points: 4

Evaluation: exam

Year, Semester: 1st fall semester

Its prerequisite(s): -

Further courses are built on it: Yes/No

Number of teaching hours/week (lecture + practice): 2+2

Topics:

The goal of the subject is to show the process of machine design, the properties and possibilities of methodical design. Students get acquainted with the main design strategies, and their properties, with process and main steps of the discursive strategy. Birth of the product idea, design of the product, building up of the requirements, techniques of looking for solution principles and combination of principles. Students will be able to choose the right solutions using the technical valuating methods. They acquire the basic rules and guidelines of design, which helps to create constructions suitable for manufacturing and assembly. In practices the goal is to show how the theory functioning in the practice. Students solve design tasks following the steps of design methodology.

Literature:

Compulsory:

* G.Pahl and W. Beitz: Engineering Design: A Systematic Approach Translated by Arnold Pomerans and Ken Wallace, The Design Council London, 1988, ISBN 0 85072 239x

Recommended:

* Koller R..: Design Method for Machine, Device and Apparatus Construction, SpringerVerlag, Berlin/Heidelberg, 1979
* [Amaresh Chakrabarti:](https://link.springer.com/search?facet-creator=%22Amaresh+Chakrabarti%22) Engineering Design Synthesis; Understanding, Approaches and Tools, Springer, 2002, ISBN: 978-1-84996-876-8 (Print) 978-1-4471-3717-7 (Online)

Schedule

|  |  |
| --- | --- |
| 1st week: Registration week  |  |
| 2nd week: Lecture: Stages of Technical lifetime of products. Functions of products. Practice: issuing the 1. task. Compilation of requirements.  | 3rd week: Lecture: General process flow of the design process. Practice: Analysis of functions of products. The list of requirements.  |
| 4th week: Lecture: Design strategies. The demand for methodical design.  Practice: Analysis of functions of products. The list of requirements.  | 5th week: Lecture: Product design, specification of the task, Compilation of system of requirements. Practice: Issuing the home assignment.  |
| 6th week: Lecture: Conception design. Abstraction of the task. Practice: The process flow of the design process.  | 7th week: Lecture: The structure of the functions.  Practice: Building up the structure of the functions.  |
| 8th week: 1st drawing week  |   |
| 9th week: Lecture: Looking for solution principles, combination of principles. Selection of the suitable variations. Practice: Building up variations of solutions.  | 10th week: Lecture: Technical valuating. Valuating methods in the design process. Practice: Technical valuating. Choosing the right solution.  |
| 11th week: Lecture: mid-term test Practice: elaborating the home assignment  | 12th week: Lecture: Basic rules and principles of construction. Practice: elaborating the home assignment  |
| 13th week: Lecture: Guidelines of construction for proper design regarding manufacturing and assembly. Practice: presentation of the home assignment.  | 14th week: Lecture: Technical documentation-systems. Principles of preparing the technical documentation. Practice: presentation of the home assignment.  |
| 15th week: 2nd drawing week  |  |

Requirements A, for a signature:

Attendance on the lectures is recommended, but not compulsory.

Participation at practice is compulsory. Student must attend the practices and my not miss more than three practice during the semester. In case a student misses more than three, the subject will not be signed and the student must repeat the course. Active participation is evaluated by the teacher in every class. If student’s behaviour or conduct doesn’t meet the requirements of active participation, the teacher may evaluate their participation as an absence due to the lack of active participation in class.

Students have to submit all the design tasks as scheduled minimum on a sufficient level.

During the semester there is an end-term test.

B, for grade:

The course ends in exam.