

Technical Documentation (18TED)

winter term 2019/2020

lectures: Tomáš Fíla

<http://mech.fd.cvut.cz/members/fila/18ted-cn>

Subject annotation

18TED is focused on the basic knowledge of the technical documentation, technical drawings standards and practices, basic dimensions and geometrical tolerances practices. During the course, the students will go through the following main topics:

- basic projection methods
- technical drawing standards and practice
- part and assembly specifications in the technical drawings
- dimensions and tolerance systems
- ISO tolerance system

Goals

The absolvent will gain the abilities to read, to understand and partially to create the technical documentation in the mechanical engineering area.

Literature

C. Simmons, D. Maguire: Manual of Engineering Drawing - Fourth Edition, Technical Product Specification and Documentation to British and International Standards, Butterworth-Heinemann, 2012

Coban Engineering Website, <http://www.cobanengineering.com/mechanicalengineering/MechanicalEngineering.asp>

Lectures and practices schedule

1. Lecture 1 - Introduction. Technical drawings. Fonts. Lines. Projection methods. (9/26/2019)
2. Practice 1 - Practicing theory of lecture 1. (10/3/2019)
3. Lecture 2 - Technical drawings - Sections. Auxiliary views. Complex description. (10/10/2019)
4. Practice 2 - Practicing theory of lecture 2. (10/17/2019)
5. Lecture 3 - Technical drawings - Dimensions. Basic tolerances. (10/24/2019)
6. Practice 3 - Practicing theory of lecture 3. (10/31/2019)

7. Lecture 4 - Technical drawings - Text arrays. Notes. Leaders. Block diagrams. Best practice. (11/7/2019)
8. Practice 4 - Practicing theory of lecture 4. (11/14/2019)
9. Lecture 5 - ISO hole/shaft tolerance system. (11/21/2019)
10. Practice 5 - Practicing theory of lecture 5. (11/28/2019)
11. Lecture 6 - Standard parts. Bearings. Gears. Bushings. Practical methodics. (12/5/2019)
12. Practice 6 - Practicing theory of lecture 6. Deadline for homework. (12/12/2019)
13. Lecture 7 - Written test. Oral exam. Grade. (12/19/2019)

Requirements for completion

1. Attendance. Student has to attend at least 4 from 7 lectures and at least 4 from 6 practices. Student will give signature in the attendance list at the beginning of every lecture and practice.
2. Homework. Student has to submit 3 homework (see Homework section). The homework submission deadline is 12/12/2019. The homework has to be submitted in the corrected final form after revision of the lecturer.
3. Test and oral exam. Student has to pass through the written test and oral exam (see Test and oral exam section).
4. All requirements has to be passed at the latest till 2/14/2020.

Homework

Guidelines for all three homework are available on: <http://mech.fd.cvut.cz/members/fila/18ted-cn/homeworks/>. The scanned drawings and sketches in the pdf format can be consulted with the lecturer via e-mail (fila@fd.cvut.cz). After the revision and eventual necessary corrections of the drawings, the homework have to be submitted personally to the lecturer. For the submission, both drawings (homework 2 and homework 3) will be inserted in the drawing folder (homework 1) and given to the lecturer for the final acceptance.

1. HOMEWORK 1 - Drawing folder. Create a drawing cover from the A3 paper according to the guidelines in the attached pdf file. Draw with a hard pencil on a hard paper A3. Fold the A3 paper to create the folder.
2. HOMEWORK 2 - Part drawing. Create a drawing of a part according to the attached image file. Select variant of the part according to your ID number written in the "Actual Overview" table http://mech.fd.cvut.cz/members/fila/18ted-cn/src/dochazka_18TED-CN_ZS1920.pdf. Draw with a hard pencil on a hard paper A4. Draw according to the drawing standards and rules, correct errors of the original file. Use standard sheet format with the description and legend.

3. HOMEWORK 3 - Assembly drawing. Create a drawing of an assembly according to the guidelines in the attached pdf file. Select variant of the joint according to your ID number written in the "Actual Overview" table http://mech.fd.cvut.cz/members/fila/18ted-cn/src/dochazka_18TED-CN_ZS1920.pdf. Draw with a hard pencil on a hard paper A3. Include the bill of materials and the exemplary section view of the connection. Use standard sheet format with the description and legend.

Test and oral exam

Final exam will have the written part containing three simple examples and the oral part in that the student will defend the written test.

1. Example 1 - simple part sketch - draw a sketch of a simple part in the perpendicular projection. 3 points.
2. Example 2 - ISO hole/shaft tolerance system example - calculate ISO tolerance according to the set requirements. 3 points.
3. Example 3 - geometrical tolerance example - prescribe geometrical tolerance of a simple part. 2 points.
4. Oral part - student will be informed about the performance in the written part and will comment/defend the examples in the written part. From maximum count (8 points) at least 4+ points have to be received by the student to continue in the oral part. After the oral part, the student will receive a grade (grade will depend on the student's performance in both written and oral part, for rough idea: 4+pt - 5pt E, 5pt-6pt D, 6pt-7pt C, 7pt B, 8pt A).