

Tárgytematika / Course Description

Theory and practice of metal forming

AJNM_ATT013

Tárgyfelelős neve /

Teacher's name: dr. Tancsics Ferenc

Félév / Semester: 2022/23/2

Beszámolási forma /

Assesment: Vizsga

Tárgy heti óraszám /

Teaching hours(week): 2/1/0

Tárgy féléves óraszám /

Teaching hours(sem.): 0/0/0

OKTATÁS CÉLJA / AIM OF THE COURSE

Summary of the requirements and instructions required to complete the *Theory and practice of plastic forming* course.

TANTÁRGY TARTALMA / DESCRIPTION

Curriculum:

WEEK 1

Description of the requirements, presentation of the subject.

Module 1 / Lesson 1:

Basic concepts, Metal crystal structures, Microstructural plasticity, Dislocation mechanism, Effects hindering dislocation movement, Macro-structural plasticity.

WEEK 2

Module 2 / Lesson 2:

Geometric equations, Strain state theory, Stress state theory, Material-equations, Plasticity conditions, Deformation work.

WEEK 3

Module 3 / Lesson 3:

Heating characteristics of steels, Boundary layer friction, Boundary layer lubrication, Tool wear characteristics, Effect of cold forming, Screw production, Cold forming, Temperatures of cold and hot forming

WEEK 4

Module 4 / Lesson 4:

[Open die forging](#), Basic operations, Assistant operations, Weight of forging piece, Forging machines for open die forging, [Closed / Impression die forging](#), Forging machines for closed die forging, Applications and methods, Closed / Impression die forging technology, Forging tool design viewpoints

WEEK 5

Module 4 / Lesson 5:

[Rolling](#), Rolling mill, Basics of rolling technology, Typical rolling processes, [Extrusion](#), Extrusion equipment, Extrusion dies, Basics of extrusion technology, Optimization of extrusion parameters

WEEK 6

Module 4 / Lesson 6:

[Pipe manufacturing](#), Seamless pipes manufacturing, Cross-roll piercing processes, Elongation rolling processes, Operations of pipe rolling finishing, Elongation by cold Pilger, Comparison of pipe production methods, [Metal drawing](#), Bar, tube and wire draw machines, Metal draw dies, Basics of metal drawing technology

WEEK 7

Issuance of task: completing of a forging drawing of a crown wheel using an arbitrary CAD system

WEEK 14

Submission of task: completed forging drawing in PDF format

SZÁMONKÉRÉSI ÉS ÉRTÉKELÉSI RENDSZERE / ASSESSMENT'S METHOD**Condition to fulfil signature**

The student can get a signature if he/she submits his assignment qualifying their semester's work in an appropriate form and with an elaborated content by the end of the course (week 14).

Condition to fulfil exam grade

The student can apply for the exam if he/she has a signature for the semester. The exam has to be taken in writing, by writing an exam test based on the curriculum of the semester. Exam dates and venues are announced in the NEPTUN system.

Grades that can be obtained based on the evaluation of the exam test:

50%-65% 2

66%-75% 3

76%-85% 4

86%-100% 5

Condition to fulfil an offered exam grade:

Student can receive an offered exam grade if he/she fulfils the requirements for obtaining a signature and submits his/her assignment with excellent or good evaluation.

Laboratory practice

Laboratory practice occasions following the lectures are used for consultation and solving practical tasks.

Additional conditions

If the number of students in the course is less than 3, the lessons are processed independently. Specific questions that arise during processing are always discussed on the following week. If the student does not require the consultation, he/she can automatically proceed to the next lesson. The consultation request have to be indicated at least one day before the consultation.

KÖTELEZŐ IRODALOM / OBLIGATORY MATERIAL