

## Course Syllabus

### Mechanical Properties of Metals 7.5 Credits\*, First Cycle

#### Learning Outcomes

After completion of this course, students shall be able to:

- demonstrate an understanding of and familiarity with the terminology used for the mechanical properties of metals,
- describe the fundamentals of plastic deformation and their mechanisms,
- use basic dislocation theory to describe various hardening mechanisms,
- describe the fundamentals of fracture mechanics,
- describe the fundamentals of fatigue and creep properties of metals, and
- apply their knowledge to model the mechanical properties.

#### Course Content

The course deals with a wide range of topics related to the mechanical properties of metals. These include plastic deformation, deformation mechanisms, dislocation theory, hardening mechanisms, fracture, fatigue, and creep.

Basic theories and knowledge of the subject are presented both in lectures, where a more in-depth review of different mechanisms of deformation and fracture is conducted, and through exercises where the students practise their analytical skills. The course also includes assignments and labs on the deformation and testing of metals.

#### Assessment

Written examination (5 credits), active participation in laboratory experiments and written lab report (1.5 credits), and assignment (1 credit).

#### Forms of Study

Lectures, exercises and mandatory laboratory work

#### Grades

The Swedish grades U, 3, 4, 5.

- Laboratory work and assignments U-G.
- The grading scale U, 3, 4 and 5 is used for the written examination.
- The written exam determines the final grade for the course.

#### Prerequisites

Bachelor of Engineering (Mechanical, Metallurgy, Materials Science, Production Engineering) of at least 180 credits and English 6

**Other Information**

Replaces GMP29J.

**Subject:**

Materials Technology

**Group of Subjects:**

Materials Technology

**Disciplinary Domain:**

Technology, 100%

**This course can be included in the following main field(s) of study:**

1. Materials Technology

**Progression Indicator within (each) main field of study:**

1. G2F

**Approved:**

Approved 28 January 2020

Valid from 28 January 2020