Reg No: MTGC15/20232

Faculty of Health, Science and Technology
Materials Engineering

Syllabus

Material 2

Course Code:	MTGC15
Course Title:	Material 2 *Materialteknik 2*
Credits:	7.5
Degree Level:	Undergraduate level
Progressive Specialisation:	First cycle, has at least 60 credits in first-cycle course/s as entry requirements (G2F)

Major Field of Study:
MTA (Mechanical Engineering)

Course Approval
The syllabus was approved by the Faculty of Health, Science and Technology 2023-02-01, and is valid from the Autumn semester 2023 at Karlstad University.

Prerequisites
Registered for Materials Engineering, 7.5 ECTS credits, Manufacturing Technology, 7.5 ECTS credits, and Solid Mechanics, 7.5 ECTS, or equivalent

Learning Outcomes
The aim of the course is for students to develop and broaden their knowledge of materials engineering.

Upon completion of the course students should be able to:
1. give an account of the main classes of engineering materials, describe standard sub classifications, main properties and the most important areas of applications,
2. give an account of the specific properties that are obtained in manufacturing processes such as metallurgical process, heat treatment, cold working and hot working,

3. describe and explain how changes in structure can have an impact on the properties of each type of material,
4. explain the advantages and disadvantages of each materials type in relation to a given manufacturing and application, and
5. search, evaluate, and compile information on materials.

Content
The course covers areas of use for materials such as metals, ceramics, and polymers, and how their properties are connected to microstructures obtained in manufacturing. There is a focus on materials used in industrial applications.

Instruction is in the form of lectures, laboratory sessions, and seminars. The lectures provide a theoretical background and examples of materials application. Laboratory sessions and seminars demonstrate applications in practice for increased understanding.

Reading List
See separate document.

Examination
Assessment is based on a written exam and an individual presentation of completed laboratory assignments, plus a mandatory seminar.

If students have a decision from Karlstad University entitling them to Targeted Study Support due to a documented disability, the examiner has the right to give such students an adapted examination or to examine them in a different manner.

Grades
One of the grades 5 (Pass with Distinction), 4 (Pass with Some Distinction), 3 (Pass), or U (Fail) is awarded in the examination of the course.

Quality Assurance
Follow-up relating to learning conditions and goal-fulfilment takes place both during and upon completion of the course in order to ensure continuous improvement. Course evaluation is partly based on student views and experiences obtained in accordance with current regulations and partly on other data and documentation. Students will be informed of the result of the evaluation and of any measures to be taken.

Course Certificate
A course certificate will be provided upon request.

Additional information
The local regulations for studies at the Bachelor and Master levels at Karlstad University stipulate the obligations and rights of students and staff.