

TEK2011 Materials Science and Engineering - Study plans 2016-2017

Course code:

TEK2011

Course name:

Materials Science and Engineering

Course level:

Bachelor (syklus 1)

ECTS Credits:

10

Duration:

Autumn

Duration (additional text):

Autumn

Language of instruction:

Norwegian

Expected learning outcomes:**Knowledge**

The student should:

- Have broad knowledge about basic materials science, especially about metals and in general for other design materials.
- Have knowledge about how to choose the right materials in design.
- Have knowledge about how to update their knowledge in the field.
- Have general knowledge of the subject's history.

Skills

The student should:

- be able to reflect on their own professional practice and adjust this under supervision.
- be able to locate, assess and refer to information and subject matter that can be used in the problem.

General knowledge

The student should:

- carry out various problems in the subject as a participant in a group.
- propose and exchange views and experiences of an issue for a project within the course themes, and in a group implement the project throughout the semester with guidance.
- be able to communicate subject matter and the project results orally (by agreement) and in writing.

Topic(s):

- Atomic structure, arrangement, and movement
- Controlling the microstructure and mechanical properties of materials
- Engineering materials (Steel, Aluminum, Ceramics, Polymers and Composite s)
- Processing examples
- Materials selection in design

Teaching Methods:

Group works
Exercises
Project work

Teaching Methods (additional text):

Lectures on Campus
Lab. Exercises/demonstrations on Campus
Presentation of Project(s)
Online learning

Form(s) of Assessment:

Written exam, 3 hours
Evaluation of Project(s)

Form(s) of Assessment (additional text):

- Written exam, 3 hours (counts 60 %)
- Assessment of project (counts 40 %)

Each of the parts must be passed separately.

Grading Scale:

Alphabetical Scale, A(best) – F (fail)

External/internal examiner:

Internal examiner.

Re-sit examination:

August 2017.
Project must be taken again at the next regular implementation.

Tillatte hjelpemidler:**Examination support:**

D: No printed or hand-written support material is allowed. A specific basic calculator is allowed.
(From approved list of permitted aids for examination, NTNU)

Coursework Requirements:

- Students are responsible for establishing project groups, project and optionally contacting a manufacturing company.
- Status project underway. Spoken for Campus Students and written report for Online Students.
- Final report with performance. Spoken for Campus Students and written as a PowerPoint for Online Students.

Academic responsibility:

Faculty of Technology, Economy and Management

Course responsibility:

Førsteamanuensis Henning Johansen

Teaching Materials:

Syllabus provided when the course starts.

Subject material found on the website: <http://materialteknologi.hig.no/materiallaere-ing.htm>

Current support:

- Metalliske materialer; A. Almar Næss; ISBN 82-519-1786-7
- Materiallære; Ørnulf Grøndalen; ISBN 9788276746211
- Essentials of Materials Science and Engineering; Donald R. Askeland and Pradeep P. Phule; ISBN 0-499-24442-2
- The Science and Engineering of Materials; Donald R. Askeland and Pradeep P. Phule; ISBN 0-534-25309-1
- Fundamentals of Materials Science and Engineering, An Integrated Approach; William D. Callister Jr.; ISBN 978-0-471-47014-4
- Materials Science and Engineering: An Introduction; William D. Callister, Jr.; ISBN 978-0-471-73696-7

Replacement course for:

MAS1131 - Materials Science

Additional information:

When applications for the accreditation, transfer and recognition of courses from earlier cohorts or other institutions similar programs, each application is treated individually and applicants must be able to include such credits reduction by overlapping topics.

Publish:

Yes