KURSPLAN

# Dimensionering av aluminium och rostfria stålkonstruktioner 5 högskolepoäng S7009B

## Design of aluminium and stainless steel structures

**Kursplan antagna: Höst 2014 Lp 1 - Höst 2015 Lp 2**

BESLUTSDATUM
**2014-02-10**

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LULEÅ TEKNISKA UNIVERSITET

# Dimensionering av aluminium och rostfria stålkonstruktioner 5 högskolepoäng S7009B

## Design of aluminium and stainless steel structures

## Avancerad nivå, S7009B

| Utbildningsnivå | Fördjupningskod | Betygsskala | Ämne | Ämnesgrupp (SCB) |
| --- | --- | --- | --- | --- |
| Avancerad nivå | A1F | U G# | Stålbyggnad | Byggteknik |

### Ingår i huvudområde

Väg- och vattenbyggnad

# Behörighet

S7004B Stålkontruktioner

# Urval

Urvalet grundas på 30-285 högskolepoäng

# Examinator

Milan Veljkovic

# Mål/Förväntat studieresultat

The course will provide students with basic information on material characteristics, behaviour and design of structures made of aluminium alloys and stainless steels.
The first part of the course will deal with structures made of aluminium alloys. Selection of suitable materials for given structure, material properties and application examples will be provided according to Eurocode 9 (Design of aluminium structures).
Heat affected zone softening (HAZ) will be shown and corresponding effect on design. Finally, advanced models beyond elastic limit will be demonstrated and design will be provided.
The second part of the course will be devoted to structures made of stainless steels. A survey of general stainless steel materials and those suitable for civil engineering structures will be provided. Design background and numerical examples will be according Eurocode 3 (General rules  Supplementary rules for stainless steels) and recommendations of Euro Inox.
Special attention will be given to erection and installation with respect to need of specific treatment, handling and storage of elements and structures.
The course will cover design requirements based on ultimate and serviceability limit states, including design of various types of connections.

# Kursinnehåll

The course consists of two distinct parts:
- structures made and designed of aluminium and specific topics such material characteristics and welding including
  effects of HAZ softening, design of aluminium bolted connections, design beyond the elastic limit;
- structures made and designed of stainless steel and specific topics such material characteristics and the connection
  design, erection and installation.

Several useful software tools for easy application of these models will be presented.
Students should be able to analyse and understand the behaviour of aluminium and stainless steel elements and structures. This will be shown by numerical elements such as beams and columns and complex structures.
The students practise the design methods according to European standards to be able to perform structural design.
Approved home assignments will necessary to obtained pass in the course.

# Genomförande

Kursens undervisningsspråk samt undervisningsform anges för varje kurstillfälle och framgår av kurssidan på Luleå tekniska universitets hemsida.
Lectures, numerical examples and consultations.

# Examination

Om det finns beslut om särskilt pedagogiskt stöd, i enlighet med Riktlinjen Studentens rättigheter och skyldigheter vid Luleå tekniska universitet, finns möjlighet till anpassad eller alternativ examinationsform.
För att erhålla godkänt slutbetyg krävs att alla inlämningsuppgifter och rapporten, på engelska är godkända.
Approved home assignments are required to obtained pass at the course.
Grading: Passed or not passed.

# Litteratur. Gäller från Höst 2014 Lp 1

Eurocode 9 (EN 1999: Design of aluminium structures. Part 1 to Part 5)
Mazzolani F. M.: Aluminium alloy structures, E & FN SPON, London, 1995.
Valtinat G.: Aluminium im Konstruktivem Ingenierbau, Ernst & Sohn, Berlin, 2003.
TALAT, URL: www.eaa.net/eaa/education/TALAT
Eurocode 3 (EN 1993-1-4: Design of steel structures – Part 1-4: General rules - Supplementary rules for stainless steels)
Euro-Inox: http://www.euro-inox.org/
Design Manual for Structural Stainless Steel. Euro Inox and The Steel Construction Institute, 2006

# Kursgivare

Institutionen för samhällsbyggnad och naturresurser (SBN)

# Prov

Provuppsättning saknas

# Kursplanen fastställd

av Eva Gunneriusson 2014-02-10