

**SYLLABUS**

# **Collapse Mechanisms in Fire Exposed Structures 7.5 credits S7012B**

**Kollapsmekanismer för brandutsatta konstruktioner**

**Course syllabus admitted: Autumn 2018 Sp 2 - Present**

**DECISION DATE  
2018-08-17**

# Collapse Mechanisms in Fire Exposed Structures 7.5 credits S7012B

## Kollapsmekanismer för brandutsatta konstruktioner

### Second cycle, S7012B

Education level	Grade scale	Subject	Subject group (SCB)
Second cycle	G U 3 4 5	Brandteknik	Building Technology

## Entry requirements

22,5 credits in Fire Engineering; S0003B Fire Dynamics I, S0004B Construction and Fire Resistance and Analysis and Design of Fire Loading in Buildings (S0006B) or corresponding courses.

## Selection

The selection is based on 30-285 credits

## Examiner

Michael Försth

## Course Aim

The aim is to understand basic principals of design of buildings made of different structural materials: steel, timber and concrete at normal temperature and for the fire situation using analytical approach. A basic of background information on Eurocode design models will be provided. Design verification at the room temperature and in fire situation of structural resistance in tension, compression, bending and shear will be presented with number of design examples. Best practice details for buildings made of different materials will be shown.

## Contents

The lectures cover the fire design of buildings. Various construction materials and a background to fire safe solutions will be discussed and a number of illustrative examples will be discussed. Assignments will be focused on an economical fire design of buildings made of concrete, wood or steel. Presentation of various best-practice construction details will be discussed.

## Realization

Each course occasion's language and form is stated and appear on the course page on Luleå University of Technology's website.

Lectures, exercises, assignments (computer assignment and/or lab exercises). Lectures and consultations for assignments.

## Examination

If there is a decision on special educational support, in accordance with the Guideline Student's rights and obligations at Luleå University of Technology, an adapted or alternative form of examination can be provided. Oral exam with differentiated grades. To get the final grade all assignments should be approved.

## Overlap

The course S7012B is equal to S7006B

## Literature. Valid from Autumn 2018 Sp 2

Jean-Marc Franssen, Paulo Vila Real: Fire design of steel structures, ECCS and Ernst&Sohn, 2010  
Fire Safety in Timber Buildings. Technical guideline for Europe. SP 2010:19. Stockholm, 2010  
Isaksson, Mårtensson, Thelandersson et al. Konstruktionsteknik, Studentlitteratur, 2017  
Handouts distributed via Internet

## Course offered by

Department of Civil, Environmental and Natural Resources Engineering

## Items/credits

Number	Type	Credits	Grade
0003	Oral examination	1.5	TG G U 3 4 5
0004	Assignment report	6	TG U G#

## Last revised

by Assistant Director of Undergraduate Studies Eva Gunneriusson, Department of Civil, Environmental and Natural Resources Engineering 2018-08-17

## Syllabus established

by Assistant Director of Undergraduate Studies Eva Gunneriusson, Department of Civil, Environmental and Natural Resources Engineering 2017-02-10