AF2405 Fire in Buildings 7.5 credits

Brand i byggnader

This is a translation of the Swedish, legally binding, course syllabus.

Establishment

On 07/10/2021, the Dean of the ABE School has decided to establish this official course syllabus to apply from autumn term 2022, registration number A-2021-1876 3.2.2

Grading scale

A, B, C, D, E, FX, F

Education cycle

Second cycle

Main field of study

The Built Environment

Specific prerequisites

Documented knowledge in Building Materials and Building Physics, 15 ECTS corresponding to the content in courses AF1301 and AF1402.

Eng B/6 according to the Swedish upper secondary school system.

Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

Intended learning outcomes

On completion of the course, the students should be able to:

Understand the different stages a fire in a building goes through and

Briefly describe the development of a fire from the early stage to the flash over fire.

Define the concepts concepts fire load and opening factor.

Describe the most important fire properties of the most common building materials.

Describe how common building materials behave at high temperatures.

Fire technically dimensioning construction parts with simple methods.

Apply methods for calculation of fire and fire gas spread.

Calculate power generation, temperature profile, fire gas temperature, smoke filling and required fire ventilation.

Assess how fire gases can be handled with openings shields, ventilating systems and pressurization.

Specify appropriate fire cells for a simple building.

Design simple buildings so that satisfying evacuation can take place in case of fire.

From a risk perspective, get an insight into the impact of forest fires on the built environment close to forests.

Have knowledge of current research and development in the fire technically field.

Course contents

The different stages of a fire, ignition, different types of flames, flame spread, heat development during combustion, heat and mass balance, fire plumes, pressure profiles, smoke gases and toxicity.

Effect of fire load and opening factor. The buildings vulnerability to fire and the effect of fire on a building. How load-bearing structures can be protected in case of fire.

Human behavior in the event of fire. Evacuation. Arrangements for firefighting. Fire cells.

Examination

- TEN1 - Written exam, 5.0 credits, grading scale: A, B, C, D, E, FX, F

- ÖVN1 - Exercises, 2.5 credits, grading scale: P, F

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

If the course is discontinued, students may request to be examined during the following two academic years.

Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.