



LUNDS UNIVERSITET
Lunds Tekniska Högskola

Course syllabus

Konstruktionsteknik - byggsystem

Structural Engineering - Building Systems

VBKF01, 7,5 credits, G2 (First Cycle)

Valid for: 2023/24

Faculty: Faculty of Engineering, LTH

Decided by: PLED V

Date of Decision: 2023-03-21

General Information

Main field: Technology.

Elective Compulsory for: V3

Language of instruction: The course will be given in Swedish

Aim

The course will give the student insight and understanding of the building as a system and how various performance requirements interact with each other when selecting technical solutions for buildings.

Learning outcomes

Knowledge and understanding

For a passing grade the student must

- understand the requirements governing the technical design of a building and the interaction between them
- understand the concept of stabilisation of multi-storey buildings and design against accidental loading and disproportionate collapse
- have insight about how the design of the structural system is affected by requirements concerning fire resistance, sound performance, energy efficiency, services and environmental and climate impact.

Competences and skills

For a passing grade the student must

- be able to design the structural system in multi-storey buildings considering relevant loads and the transfer of these loads to the foundation

- be able to document in written form the motives and considerations that govern the choice of building system
- be able to document the results of technical design of a building in written form and by drawings
- be able to independently find and critically evaluate information about technical solutions for buildings.

Judgement and approach

For a passing grade the student must

- be able to critically evaluate generic technical solutions described by suppliers of building products and system solutions
- be able to adapt such solutions in an independent way for a specific building project.

Contents

The course consists of:

Building systems based on the load bearing system but with an overall view of the building as a system including all relevant aspects for optimum design. Both light-weight and heavy structural systems based on different structural materials are included. An important aspect is horizontal stabilization of the building, which often governs the overall design. The properties of the building system in relation to other performance requirements, such as fire safety, sound performance, energy efficiency, building services, etc. is included in the course, from the point of view that optimal solutions must be based on a holistic perspective.

Structural detailing connected to various types of building systems. Detailing solutions are usually important features in an optimal building system.

Design of structural systems with respect to fire, accidental actions and robustness.

Design project

A design project in the form of a multi-storey office building, where the students shall work with the building as a whole and important detailing solutions. The motives for choice between alternative building systems shall be given. The interaction between the structural system and the requirements for the building envelope, installations of services, fire safety, sound performance and construction methods shall be treated in the design project. A site visit connected to the project will be arranged. The design project is carried out in groups of maximum 3 students.

Examination details

Grading scale: UG - (U,G) - (Fail, Pass)

Assessment: Design project and individual Anonymous written exam.

The examiner, in consultation with Disability Support Services, may deviate from the regular form of examination in order to provide a permanently disabled student with a form of examination equivalent to that of a student without a disability.

Admission

Assumed prior knowledge: VSMA05 Structural Mechanics VBK013 Structural

Engineering or VBKF15 Structural Engineering VBFA01 Building Technology

The number of participants is limited to: No

The course overlaps following course/s: VBK055

Reading list

- Isaksson, T., Mårtensson, A. Thelandersson, S: Byggkonstruktion. Studentlitteratur AB, 2020, ISBN: 9789144138558.

Contact and other information

Course coordinator: Miklós Molnár, miklos.molnar@kstr.lth.se

Course homepage: <http://Canvas>

Further information: Course homepage at Canvas.