



LUNDS UNIVERSITET
Lunds Tekniska Högskola

Course syllabus

Konstruktionsteknik Structural Engineering

VBKF15, 9 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.

Compulsory for: V2

Language of instruction: The course will be given in Swedish

Aim

The course will give the student insight and understanding of the requirements put on load-bearing elements. After completion of the course the student will be able to analyse and design basic structural elements and understand the function of load-bearing elements in a building.

Learning outcomes

Knowledge and understanding

For a passing grade the student must

- Be able to analyse the load-bearing elements in a building
- Be able to identify relevant external loads influencing the behaviour of a building
- Understand that in the design process of structural elements and buildings a number of requirements such as the structural behaviour, economical aspects, aesthetics and indoor climate has to be taken into account.

Competences and skills

For a passing grade the student must

- Be able to design structural elements with respect to external loads, material properties and users' demands.
- Be able to design uncomplicated buildings with respect to the behaviour of the elements

and the detailing.

- Be able to design buildings with respect to horizontal stabilization.
- Be able to present the basis for the design process and also present the result of the design in written form as well as by drawings.

Judgement and approach

For a passing grade the student must

- Be able to value the basis used in a design process as well as be able to judge the relevance of the basic assumptions.
- Be able to search and value relevant information based on the acquired knowledge.

Contents

Design principles, partial coefficient methods, load configuration including fire, structural elements, stability of structural systems, steel, timber, concrete and masonry structures.

Design of structural elements subjected to bending moment, axial load, bending moment and axial load, shear force, service loads. Design of constructive details.

The course includes elements that provide training in presentation techniques and CAD.

Examination details

Grading scale: TH - (U,3,4,5) - (Fail, Three, Four, Five)

Assessment: One written short exam and graded design and laboratory assignments. The laboratory assignment is carried out in groups of maximum four persons. The laboratory assignment is graded and must get the grade "pass" to receive final grade for the course. The design assignment is carried out in groups of maximum three persons. It includes design of the load bearing structure for a hall building, presented in a report and drawings. The design assignment is graded and must get the grade "pass" to receive final grade for the course. The final grade in the course is based on the results of the written short exam and the graded assignments.

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.

Parts

Code: 0121. **Name:** Assignments.

Credits: 3. **Grading scale:** UG. **Assessment:** Two written reports. **Contents:** Report 1: Laboratory task report containing problem formulation, materials and test- set-up, results, analyses, conclusions. The report must contain explanatory drawings and diagrams. Report 2: Design of the structural system of a low rise building (including drawings and explanations). For the written assignments, not only the correctness of calculations and results is assessed, but also the quality of the presentation, i.e. structure and descriptive texts of the report.

Code: 0221. **Name:** Short Written Exam.

Credits: 6. **Grading scale:** TH. **Assessment:** Written short exam. **Contents:** Complete course content. **Further information:** The written short exam is taking place during the second part of the term..

Admission

Assumed prior knowledge: VBM012 Building Materials OR VBMA30 Building Materials AND VSMA05 Structural Mechanics OR FME602 Structural Mechanics OR VSMA20 Structural Mechanics

The number of participants is limited to: No

The course overlaps following course/s: VBK012, VSM140, VSM611, VSMF10, VBKF10, VBK013

Reading list

- Isaksson I., Mårtensson A., Thelandersson S.: Byggkonstruktion. Studentlitteratur, 2020, ISBN: 9789144138558.
- Isaksson I. och Mårtensson A.: Byggkonstruktion: regel- och formelsamling. Studentlitteratur, 2020, ISBN: 9789144138565.
- Programledning V: Anvisningar för rapporter på V-programmet. 2015. Available on the programme's website.
- M. Molnár och T. Gustavsson: Murverkskonstruktion. 2020, ISBN: 9789178957224. The PDF-version is free for downloading from Canvas. The printed version can be purchased from the division.

Contact and other information

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

Course homepage: <http://Canvas>

Further information: Course homepage at canvas. All registered students have access to the course homepage.