



Course syllabus

Integrerad design: Arkitektur - konstruktion Integrated Design: Architectural Design - Structural Design

AAHN10, 7,5 credits, A (Second Cycle)

Valid for: 2023/24

Faculty: Faculty of Engineering, LTH

Decided by: PLED A

Date of Decision: 2023-03-28

General Information

Compulsory for: MARK1

Elective for: A4

Language of instruction: The course will be given in English

Aim

The aim of the course is to establish a common frame of concepts relating to structures, optimisation and architectural expressions, in the interaction between engineers and architects in the final part of their studies.

Further, the aim of the course is to show that structural mechanics concepts and architectural expressions are related by our way of understanding, one by a natural science organization, the other by intuitive understanding.

Learning outcomes

Knowledge and understanding

For a passing grade the student must

- Be able to explain the general behaviour of various types of structures.
- Be able to develop the relation between structural design and architecture.
- Be able to take an active part in an architect - structural engineer discussion about expression and function in a building.

Competences and skills

For a passing grade the student must

For architectural students:

- Be able to develop ideas about form into structures in a dialogue between architect and structural engineer.

For engineering students:

- Be able to formulate and analyse structures, from conceptual sketches to complete projects.
- Be able to develop structural mechanics principles in relation to form issues.
- Be able to use advanced computational computer codes in conceptual projects.

Judgement and approach

For a passing grade the student must

- Have insight into that a fruitful cooperation between architect and structural engineer is obtained by a dialogue, and not by sequential work.
- Be able to take an active part in a cooperation between architect and engineer.
- Present a proposal for a structure and describe how the proposal is a consequence of cooperation.

Contents

The course starts with a series of lectures and discussions about structural concepts and a general description of the relation between structural mechanics/engineering and architecture. Further, structural elements are discussed, as well as how these contribute to give different expressions and how the structural design concepts vary with the expression.

The course is organized as a project course where both architectural students and engineering students contribute with their own future field of expertise. The projects are defined so that spatial qualities meet structural challenges. The literature constitutes a foundation for discussion in seminars concerning the interfacing and negotiation of spatial expression and structural design.

Examination details

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

Assessment: Assessment of project work. In the final project, engineering and architectural students work together in close cooperation. The project is presented at a seminar. To pass, the student must have participated in 75% of the teaching activities and the presentation must consist of a qualitative discussion that leads to a project proposal.

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

Admission requirements:

- ATHA10 The Theory and History of Architecture II (Year 2) or ATHA25 The Theory and History of Architecture IV (Year 2)
- ATHF01 The Theory and History of Architecture V
- AADA20 Digital Tools 5
- ASBF05 The Fundamentals of Urban Design

- AAHF01 Sustainable Technology in the Built Environment
- AAHF10 Sustainable Architectural Design
- ATHF01 The Theory and History of Architecture V
- ATHF05 The Theory and History of Architecture VI
- VBEA05 The Construction Process, Basic Course
- AADA25 Digital Tools 6
- AAHF35 Documentation and Communication
- AAHF20 Architecture - In Time and Space or AAHF26 Architecture - In Urban Contexts or AAHF30 Architecture - In the Contemporary

The number of participants is limited to: 36

Selection: Completed university credits within the program. Within programmes where the course is given as a mandatory or elective mandatory course students are guaranteed admission. There after priority is given to students enrolled in programmes that include the course in the curriculum.

The course overlaps following course/s: AFO280, VSMN15

Reading list

- Otto, Rasch: Finding Form; Towards an Architecture of the Minimal. ISBN: 3-930698-66-8.
- Robbin: Engineering a New Architecture. ISBN: 0-300-06116-1.
- Engel: Structural Principles. ISBN: 0138540195.
- Gyula Sebestyen: New Architecture and Technology. ISBN: 0-7506-5164-4.
- Bill Addis: The Art of the Structural Engineer. ISBN: 1-874056-41-2.
- Manuals for Solid Works.

Contact and other information

Course coordinator: Maria Rasmussen, maria.rasmussen@hdm.lth.se

Further information: The course is linked in a mandatory way to the designing courses Advanced Architectonic Design II (AAHN06) and Spatial Experiment II (???). The course is given by the Divisions of Architecture and Structural Mechanics and assumes balance between the number of architect and engineering students. The course is arranged together with the course “Integrated Design; Structural Design – Architectural Design” (VSMN15).