

Timber Engineering, PhD-course 2025 (7,5 credits)

Course information, 2025-03-31

Course dates: June 9-13, 2025

Course venue: The course will be held in Lund.

Course organisation: Divs. of Structural Engineering and Structural Mechanics, Lund University
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Background, objectives and content

Welcome to the PhD-course in Timber Engineering during a week in June. The course is administrated by two divisions at Lund University and is one of the research education courses run under the auspices of [Sveriges Bygguniversitet](#) (“*Swedish Universities of the Built Environment*”).

Timber Engineering is the discipline, art, skill and profession of acquiring and applying scientific principles and practical knowledge to analyse, develop and design timber structures that support or resist loads. It deals with structural components, joints and systems based on both solid timber and engineered wood products.

The objectives of the course are to

- provide an understanding of:
 - Mechanical and physical properties of wood and wood based products
 - Design and modelling principles of timber members, joints, timber structures and timber based hybrid structures
- Give an overview of current research in timber engineering and related areas
- Get insight into practical applications by e.g. study visit and/or laboratory exercises

The course content will cover the following main areas:

- Wood as an engineering material and engineered wood products
- Machine strength grading and related modelling of sawn timber
- Modification of wood
- Design and modelling of timber members and structural systems, including special members, holes and notches
- Design and modelling of joints (glued joints and joints with mechanical fasteners)
- FE-assisted design process, Verification and validation of FE models, Design verification
- Design for lateral stability
- Fire safety of timber structures
- Monitoring of timber buildings
- Bridges, durability and moisture monitoring
- Learning från failures in timber structures

Attendance

Recommended basis for the course is an academic degree in civil engineering or building technology. General knowledge about structural engineering including basic knowledge about design of timber structures is required. The course should be of interest for graduate students, teachers and researchers in structural engineering and architecture and for practicing structural engineers and architects who would like to specialise in timber structures.

Examination and credits

Apart from the lectures given during the course week in Lund, the full course includes a written exam and a project. Both the exam and the project will have to be finalised and sent to the course administration according to the deadlines given below in order to be awarded a course certificate.

Written exam: Monday 16 June – Thursday 19 June, 2025
Project deadlines: First hand-in: 31st of August, 2025
Peer review: 21 of September, 2025
Final hand-in: 5 of October, 2025
Presentations: 7 of October, 2025

The written exam is to be done as individual work, while the projects will be done in groups of approximately 2-4 students. Project work includes a written paper (e.g. conference paper), a peer-review and a final presentation (via Zoom).

Course literature

Lecture notes and selected journal papers and other texts will be made available during the course and constitute the main course literature. Additional literature should be consulted in preparation for the course and as reference literature for project work, a literature list will be available on the course homepage.

Cost

Participation is free of charge for PhD-students from universities belonging to SBU (LTH, KTH, Chalmers, LTU) as well as for PhD-students from cooperating universities (LnU, KAU, Dresden and Biberach). PhD-students from other universities: 10.000 SEK. Participants from industry/companies: 20.000 SEK.

Registration

Please register ASAP but latest April 13th, by using the google form link https://docs.google.com/forms/d/e/1FAIpQLSdTpU9xTOv9IITPAXc7nZNLwmiY-UiVIK8iz8Xc_ZKo1XSTjg/viewform?usp=header (alternatively by email to Eva, eva.fruhwald_hansson@kstr.lth.se).

Detailed schedule

Date	Time	Topic	Responsible
Monday 9/6	10:00-10:15	Welcome (coffee served from 9.30)	Erik & Eva
	10:15-12:00	Timber, engineered wood products	Marie Johansson
	12:00-13:15	LUNCH	
	13:15-15:00	Special members, holes and notches, fracture mechanics	Henrik Danielsson & Robert Jockwer
	15:15-17:00	Adhesive joints – theory and use of innovative joints / glued-in rods	Erik Serrano & Robert Jockwer
Tuesday 10/6	8:15-9:00	Short presentation by participating PhD-students on their research	All PhD-students, Eva & Erik
	9:15-10:00	Modification of wood	Maria Fredriksson
	10:15-12:00	CLT – design and use	Henrik Danielsson
	12:00-13:15	LUNCH	
	13:15-15:00	Monitoring timber buildings, capture varying properties	Michael Dorn
	15:15-16:15	Modelling of Sawn Timber and Principles for Machine Strength grading of Sawn Timber and Lamellas for EWP	Anders Olsson
	16:30-17:00	Presentation of project tasks	Erik & Eva
Wednesday 11/6	8:15-10:00	Dowel-type joints	Thomas Bader
	10:15-12:00	FE-assisted design process, Verification and validation of FE models, Design verification	Janusch Töpler (Zoom)
	12:00-13:15	LUNCH	
	13:15-15:00	Design for lateral stability	Johan Vessby
	15:15-17:00	Historic Timber Structures & Learning from failures	Carl Thelin & Eva Frühwald Hansson
Thursday 12/6	8:15-12:00	Study visit	Erik & Eva
	12:00-13:15	LUNCH	
	13:15-14:00	Discussions on project tasks, choice of project	All Phd-students, Erik & Eva
	14:00-17:00	Lab and testing to failure (kl 16.00), including Afterwork	Martin Gunder, Oskar Ranefjärd, Eva & Erik
Friday 13/6	8:15-10:00	Bridges, durability and MC monitoring	Jonas Niklewski
	10:15-12:00	Fire and timber structures	Daniel Brandon
	12:00-12:15	Course closure	Erik & Eva

Participating teachers:

Anders Olsson, Building Technology, LnU

Daniel Brandon, Fire Safety Engineering, LTH

Carl Thelin, KFS AB and Building Technology, LnU

Erik Serrano, Structural Mechanics, LTH (course coordinator)

Eva Frühwald Hansson, Structural Engineering, LTH (course coordinator)

Henrik Danielsson, Structural Mechanics, LTH

Janusch Töpler, Institute for Timber Design, Biberach University of Applied Sciences

Johan Vessby, Building Technology, KAU

Jonas Niklewski, Structural Engineering, LTH

Maria Fredriksson, Building Materials, LTH

Marie Johansson, Wood tech, RISE

Martin Gunder, Structural Engineering, LTH

Michael Dorn, Building Technology, LnU

Oskar Ranefjärd, Structural Engineering, LTH

Robert Jockwer, TU Dresden

Thomas Bader, Building Technology, LnU