Timber Engineering, PhD-course 2021 (7,5 credits)

Course information, 2021-04-07

Course dates: week 20 (May 17-21, 2021)
Course venue: The course will be held via Zoom.

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 May. 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

The course content will cover the following main areas:

- Wood as an engineering material
- Engineered wood products
- Design and modelling of timber members and structural systems
- Conceptual design (choice of structural system)
- Design and modelling of joints
- Stability and bracing of timber structures
- Earthquake engineering applied to timber structures
- Fire safety of timber structures
- Forensic engineering applied to timber structures
- Hybrid timber-based 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 + a project. Both the exam and the project will have to be finalised and sent in to the course administration according to the deadlines given below in order to be awarded a course certificate.

Written exam:	Monday 21st June – Thursday 24th June, 2021
Project deadlines:	First hand-in: 31st of August, 2021
	Peer review: 17th of September, 2021
	Final hand-in: 1st of October, 2021
	Presentations: 4th of October (prel)

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 handed out 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 e.g.:

Thelandersson, S., Larsen H.J., Ed. "Timber Engineering", Contributions by 18 scientists from Europe and North America. Wiley & Sons, London, Feb.2003, ISBN 0-470-84469-8.

Cost

Participation is free of charge for PhD-students from universities belonging to SBU (LTH, KTH, Chalmers, LTU). PhD-students from other universities: 10.000 SEK. Participants from industry/companies: 20.000 SEK.

Registration

Please register ASAP but latest April 11th, preferably by using the google form (see link below). Alternatively, please email your name & affiliation to eva.fruhwald_hansson@kstr.lth.se

https://docs.google.com/forms/d/e/1FAIpQLScBelQN2aMFruvQqhaZuffbSK4oZzN1ad2cL_ddwYumYXq5bQ/viewform?usp=sf_link

Detailed schedule – see next page

Schedule, Timber Engineering course, 17-21 May, 2021.

Date	Time	Topic	Responsible*
Monday 17/5	10:15-12:00	Timber, engineered wood products	Marie Johansson, LnU
	12:00-13:15	***LUNCH***	
	13:15-15:00	Special members, holes and notches, fracture mechanics	Henrik Danielsson/ Robert Jockwer
	15:15-17:00	Composite members	Roberto Crocetti, KTH
Tuesday 18/5	8:15-10:00	High timber buildings	Pierre Landel, RISE
	10:15-12:00	CLT- Design and use	Henrik Danielsson, LTH
	12:00-13:15	***LUNCH***	
	13:15-15:00	Dowel-type joints	Michael Dorn, LnU
	15:15-17:00	Adhesive joints: Theory and use of Innovative joints / glued-in rods	Erik Serrano, LTH / Robert Jockwer, Chalmers
Wednesday 19/5	8:15-9:00	Presentation of "Sara Kulturhus"	Robert Schmitz, White
	9:15-12:00	Project preparation work: Presentation of project topics Presentation of participants' research	Eva Frühwald Hansson, Erik Serrano
	13:00-14:00*	Invited lecture: "Modelling of timber structures – experience from practice"	Samuel Blumer (sblumer ZT GmbH, Austria)
	14:00-17:00	Matchmaking Planning of projects Presentation of project plans	All
Thursday 20/5	8:15-10:00	Stability and bracing	Johan Vessby, KAU
	10:15-12:00	Frames, arches, shells, conceptual design for long-span structures	Roberto Crocetti, KTH
	12:00-13:15	***LUNCH***	
	13:15-16:00	Fire, seismic engineering	Roberto Tomasi, NMBU
	16:15-17:00	Bridges and durability design	Jonas Niklewski, LTH
Friday 21/5	8:15-10:00	Acoustics and vibration	Delphine Bard, LTH
	10:15-11:00	Forensic timber engineering	Eva Frühwald Hansson, LTH
	11:15-12:00	Q&A: Project work and course feedback	All

**Added 2021-04-07*