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Timber Educational Engineering Weeks

The course of **60 hours in total** will take place at the Rothoblaas headquarters in English and consists of **2 parts: First Session and Second Session (two intensive sessions of 5 days each).**

The programme offers the possibility to gain in-depth knowledge on the design of timber structures in only **2 intensive weeks.**

This is a unique opportunity to gain knowledge allowing you to increase your job opportunities in a rapidly expanding field in such a short time.

During the course, the theoretical part will always be complemented by a practical part, including design exercises and laboratory tests, with the assistance of experts who will guide each participant through the learning process.

2 WEEKS

BOOST YOUR KNOWLEDGE

EXPAND YOUR JOB OPPORTUNITIES

VIEW THE PROGRAMME

FIRST SESSION

26th – 30th October 2026

DAY 1

08:30 - 08:45 **Registration of the participants**

08:45 - 09:30

Welcome and distribution of handouts

Eng. Matteo Andreottola, Rothoblaas

09:30 - 10:00

General Introduction

Sustainability, role of forests, forest-based circular bio-economy, potential for timber constructions

Prof. eng. Ghasan Doudak, University of Ottawa

10:00 - 10:15 **Coffee break**

10:15 - 11:15

Wood Material

Characteristics, anatomy, physical and mechanical properties of the wooden material

Prof. eng. Ghasan Doudak, University of Ottawa

11:15 - 12:15

Wood products

Description, types and grading of wood structural materials

Prof. eng. Ghasan Doudak, University of Ottawa

12:15 - 13:15 **Lunch**

13:15 - 14:15

Structural forms, limits and challenges

Different timber structural types: balloon vs platform framing, heavy vs light-frames, domes, trusses, curved beams, and portal frames

Prof. eng. Ghasan Doudak, University of Ottawa

14:15 - 16:15

Building codes & Design Standards

Description of the main national codes for timber structures: Canadian, Eurocode and American design standards

Prof. Eng. Ghasan Doudak, University of Ottawa

19:00 - 22:30 **Network dinner**

DAY 2

08:30 - 10:15

Design of simple structural members

Design of beams and columns for basic loading (compression, tension, shear, bending)

Prof. Eng. Ghasan Doudak, University of Ottawa - Eng. Matteo Andreottola, Rothoblaas

10:15 - 10:30 **Coffee break**

10:30 - 12:30

Design of simple structural members

Design of beams and columns for basic loading (compression, tension, shear, bending)

Prof. Eng. Ghasan Doudak, University of Ottawa - Eng. Matteo Andreottola, Rothoblaas

12:15 - 13:30 **Lunch**

13:30 - 14:45

Serviceability limit states and vibrations According to Canadian and Eurocode

Prof. Eng. Ghasan Doudak, University of Ottawa

14:45 - 15:00 **Coffee break**

15:00 - 16:00

Exercise: Design of beams and columns

Eng. Fernanda Scussiato Lago, University of Ottawa

16:00 - 17:30

Design of timber connections (PART 1)

Design of connections with dowel type fasteners, design principles, minimum distances, issues to avoid in the design methods

Prof. Eng. Ghasan Doudak, University of Ottawa

FREE EVENING

DAY 3

08:30 - 10:00

Design of timber connections (PART 2)

Design of connections with dowel type fasteners, design principles, minimum distances, issues to avoid in the design methods

Eng. Matteo Andreottola, Rothoblaas

10:00 - 10:15 **Coffee break**

10:15 - 11:15

Design of timber connections (PART 3)

Design of connections with dowel type fasteners, design principles, minimum distances, issues to avoid in the design methods

Prof. Eng. Ghasan Doudak, University of Ottawa

11:15 - 12:30

Design of timber connections (PART 4)

Design of connections with dowel type fasteners, design principles, minimum distances, issues to avoid in the design methods

Eng. Matteo Andreottola, Rothoblaas

12:30 - 13:30 **Lunch**

13:30 - 15:30

Stability of members and structures

Beam and column buckling, verification and design solutions

Prof. Eng. Ghasan Doudak, University of Ottawa

15:30 - 16:30

Tapered beams

Calculation methods, design issues and solutions, structural concepts, and deflection

Prof. Eng. Ghasan Doudak, University of Ottawa

Walk and dinner on the nature

DAY 4

08:30 - 09:00

Trusses, frames and bracings

Eng. Matteo Andreottola, Rothoblaas

09:00 - 10:15

Structural reinforcements of timber elements

Reinforcements for compression and tension perpendicular to the grain, rolling shear, curved beams, tapered beams and penetrations

Eng. Matteo Andreottola, Rothoblaas

10:15 - 10:30 **Coffee break**

10:30 - 12:15

Exercise: Connection, stability, and bracings

Eng. Fernanda Scussiato Lago, University of Ottawa

12:15 - 13:15 **Lunch**

13:15 - 14:30

Composite floors

Types of composite floors, stiffness, connections, different uses and solutions, calculation methods and construction details

Eng. Fernanda Scussiato Lago, University of Ottawa

14:30 - 17:30

Visit and engineering explanation of the Ottawa university structural labs and testing of the connections

Prof. Eng. Ghasan Doudak, University of Ottawa

19:00 - 23:00 **Gala dinner**

DAY 5

08:30 - 10:30

Durability of timber structures (PART 1)

Design of adequate connection to the ground. Details to guarantee durability of timber structures. Corrosion resistance, waterproofing and airtightness, and hygrometric calculations

Eng. Matteo Andreottola, Rothoblaas

10:30 - 10:45 **Coffee break**

10:45 - 12:15

Fire design of timber structures (PART 1)

Engineer, Canadian Wood Council

12:15 - 13:15 **Lunch**

13:15 - 15:00

Final workshop

Design of a timber structure with large spans with different possible structures and the support of the engineers following the exercises

Eng. Matteo Andreottola, Rothoblaas - Eng. Fernanda Scussiato Lago, University of Ottawa

15:00 - 15:15 **Coffee break**

15:15 - 17:15

Discussion and presentations by attendees

Final design exercise where the attendees carry out design of a timber structure and discuss the design choices with the rest of the group and instructors

SECOND SESSION

10th – 14th May 2027

DAY 1

08:30 - 08:45
Registration of the participants
08:45 - 09:15
Welcome and introduction to the course, distribution of handouts
Eng. Matteo Andreottola, Rothoblaas
Eng. Fernanda Scussiato Lago, University of Ottawa
09:15 - 9:45
Winter session sum up Structural types
Prof. Eng. Ghasan Doudak, University of Ottawa
9:45 - 10:45
Introduction to the design of light frame timber and CLT buildings
General description, design for gravity and lateral loads, stiffness, and design of connection systems
Prof. Eng. Ghasan Doudak, University of Ottawa
10:45 - 11:00 **Coffee break**
11:00 - 12:00
Introduction to the design of of light frame timber and CLT buildings
General description, design for gravity and lateral loads, stiffness, and design of connection systems
Prof. Eng. Ghasan Doudak, University of Ottawa
12:00 - 12:45
Design for gravity loads of light frame timber buildings
Design and verification of structural members in light frame timber buildings subjceted to gravity loads
Dr. Eng. Daniele Casagrande, University of Trento
12:45 - 13:45 **Lunch**
13:45 - 15:00
Design for gravity loads of CLT buildings
Design and verification of CLT floors and walls subjceted to gravity loads
Dr. Eng. Daniele Casagrande, University of Trento
15:00 - 15:15 **Coffee break**
15:15 - 17:00
Introduction to the design of timber buildings under lateral loads
Introduction, load paths, flexible vs rigid diaphragms
Prof. Eng. Ghasan Doudak, University of Ottawa
19:00 - 23:00 **Network dinner**

DAY 2

08:30 - 10:30
Structural design of light frame timber and CLT buildings under lateral loads
Design of light frame timber and CLT shear walls subjected to lateral loads
Dr. Eng. Daniele Casagrande, University of Trento
10:30 - 10:45 **Coffee break**
10:45 - 12:45
Exercise: structural design of a timber building (PART 1)
Design and verification of a light timber frame building for gravity and lateral loads
Eng. Fernanda Scussiato Lago, University of Ottawa
12:45 - 13:45 **Lunch**
13:45 - 14:45
Exercise: structural design of a timber building (PART 2)
Design and verification of a CLT building for gravity and lateral loads
Eng. Fernanda Scussiato Lago, University of Ottawa
14:45 - 15:00 **Coffee break**
15:00 - 16:25
Visit and engineering explanation of the Ottawa university structural labs and testing of the connections
Prof. Eng. Ghasan Doudak, University of Ottawa

FREE EVENING

DAY 3

08:30 - 10:30
Durability of timber structures
Details to ensure durability of timber structures. Corrosion resistance in aggressive environment, design of flat roofs, and avoiding condensation risk
Dr. Eng. Paolo Grossi, Rothoblaas
10:30 - 10:45 **Coffee break**
10:45 - 12:45
Design of timber bridges and large-span structures
Design challenges, installation methods, and innovative solutions
Dr. Eng. Paolo Grossi, Rothoblaas
12:45 - 13:45 **Lunch**
13:45 - 14:45
Introduction to extreme loading
Design of structures subjected to extreme loads (Wind, earthquake, blast and tornadoes)
Prof. Eng. Ghasan Doudak, University of Ottawa
14:45 - 16:45
Seismic design of timber structures (PART 1)
Introduction of seismic design of timber buildings, seismic vs wind load, ductility and dissipation of timber connection, capacity based design
Prof. Eng. Ghasan Doudak, University of Ottawa
Walk and dinner on the mountain

DAY 4

08:30 - 10:30
Seismic design of timber structures (PART 2)
Calculation methods and standards for seismic design
Dr. Eng. Daniele Casagrande, University of Trento
10:30 - 10:45 **Coffee break**
10:45 - 11:45
Modelling of timber structures (PART 1)
Modelling of structures using finite elements, calculation of horizontal forces on different shear walls and on connections.
Dr. Eng. Daniele Casagrande, University of Trento
11:45 - 12:45
Modelling of timber structures (PART 2)
Modelling of structures using finite elements, calculation of horizontal forces on the different shear walls and on connections
Dr. Eng. Daniele Casagrande, University of Trento
11:45 - 12:45 **Lunch**
13:45 - 16:45
Fire design of timber structures (PART 2)
Calculation methods for structural elements and connections protected and not protected, fire design of CLT
Engineer, Canadian Wood Council
Gala dinner

DAY 5

09:00 - 11:00
Exercise: seismic, modelling
Eng. Fernanda Scussiato Lago, University of Ottawa
11:00 - 11:15 **Coffee break**
11:15 - 12:15
Structural design for Blast and Tornados
Prof. Eng. Ghasan Doudak, University of Ottawa
12:15 - 13:15 **Lunch**
13:15 - 15:15
Final workshop
Final design exercise where attendees carry out design of a mass timber structure for fire, seismic actions and extreme loadings and discuss the design choices with the rest of the group and instructors.
Eng. Matteo Andreottola, Rothoblaas - Dr. Eng. Daniele Casagrande, University of Trento - Eng. Fernanda Scussiato Lago, University of Ottawa - Prof. Eng. Ghasan Doudak, University of Ottawa
15:15 - 15:30 **Coffee break**
15:30 - 17:30
Discussion and presentations by attendees
Final design exercise where attendees carry out design of a mass timber structure for fire, seismic actions and extreme loadings and discuss the design choices with the rest of the group and instructors