SUMMER SCHOOL
8th International course on Seismic Analysis of Structures using OpenSees:
Finite Element-based Framework and Civil Engineering Applications
22-23 July 2024 Tsinghua University Beijing | China

EOS EURASIAN OPENSEES

Tsinghua University

EOSD 2024

AIM OF THE COURSE

OpenSees (Open System for Earthquake Engineering Simulations) is an open-source software mainly conceived for the seismic analysis of structures. The source code is public in order to facilitate its wide diffusion and to be adaptable to the needs of users, who can also modify and extend default libraries in terms of materials, components, and algorithms. The main difficulties that users usually face during their first approach to OpenSees are due to the programming language, which might appear rather complex. Following previous editions, the main goal of this short course is to provide a basic understanding of finite element-based theoretical framework and programming language in OpenSees. Structural engineering and research applications will be also presented.

The **8th Summer School** edition will be held at **Tsinghua University** from **July 22 to July 23, 2024.**

ORGANIZATION OF THE COURSE

The Summer School is full-immersion scheduled over **2 days** starting from fundamentals to advanced applications. **This Summer School is organized together with the 6th Eurasian OpenSees Days Conference** which will be held at **Tsinghua University** from **July 24 to July 25, 2024**

The lectures are organized as follows:

- **Applicative lectures** – Programming language and model development in OpenSees.
- **Illustrative examples** – Examples about the use of OpenSees.
- **Live workshops** – Live exercise using OpenSees.

TARGET AUDIENCE & LANGUAGE

Master students, PhD candidates, post-doctoral fellows, and practitioners. The course will be offered in English.

MAIN ORGANIZERS

Xinzheng Lu, Fabio Di Trapani, Giorgio Monti, and Cristoforo Demartino

SCIENTIFIC COMMITTEE

Xinzheng Lu (Tsinghua University, China), Fabio Di Trapani & Antonio Sberna (Politecnico di Torino, Italy), Giorgio Monti (Sapienza University of Rome, Italy), Linlin Xie (Beijing University of Civil Engineering and Architecture, China), Kaiqi Lin (Fuzhou University, China), Yuan Tian & Donglian Gu (University of Science and Technology Beijing, China), Massimo Petracca (ASDEA Software Technology, Italy).

COURSE SPEAKERS

Maha Kenawy (Oklahoma State University, USA)
Fabio Di Trapani (Polytechnic University of Turin, Italy)
Antonio Pio Sberna (Polytechnic University of Turin, Italy)
Massimo Petracca (ASDEA Software Technology, Italy)
Qiu Zhijian (Xiamen University, P.R. China)
Wang Lei (Wenzhou University, P.R. China)

DATES AND VENUE

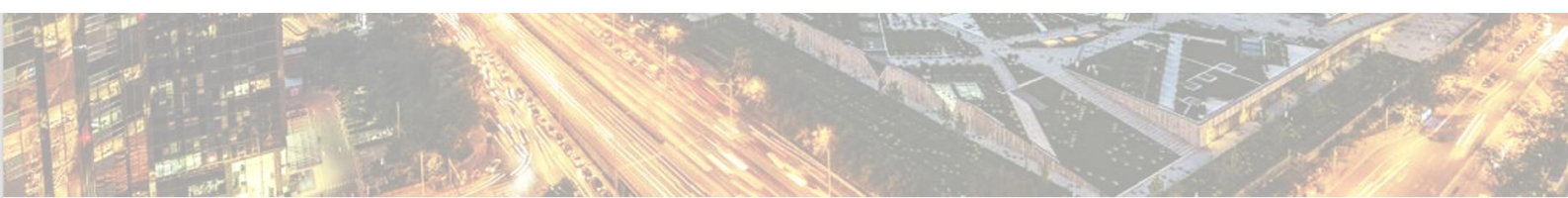
July 22nd to July 23rd, 2024.
Tsinghua University,
HaiDian District, Beijing, P.R. China

REGISTRATION AND FEES

Registration is required. Please send an e-mail to info@eurasianopensees.com before June 15, 2024 to register.

Type	Fees
In-person attendee (meal included)	€150 / ￥1150 / $162
Remote attendee	€100 / ￥750 / $106

Payments will be accepted at https://openseesdays2024.civil.tsinghua.edu.cn/.



PROGRAM

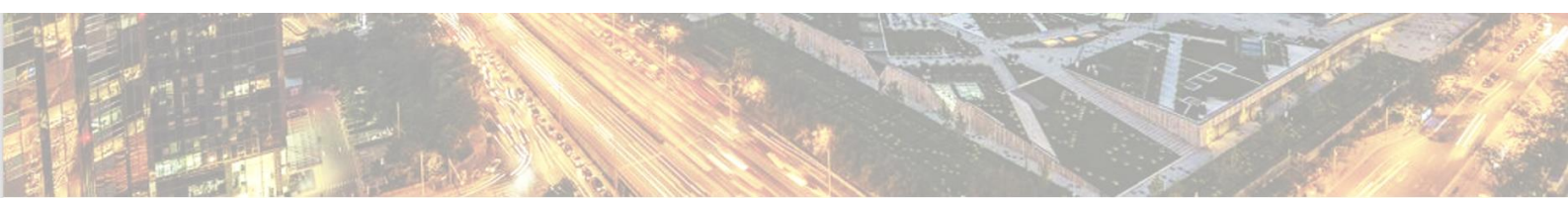
Day 1. Monday, July 22nd, 2024 - Introduction & static analysis

08:30-09:00	Registration	
09:00–09:15	Welcome	X. Lu / G. Monti
09:15–09:30	Framework, aims and scope of the course	C. Demartino
09:30–10:45	**Applicative lecture**: Brief introduction to Python (interpreters and IDEs) and overview of OpenSeesPy. Implementation of a simple linear structure in OpenSees	C. Demartino
10:45-11:00	Coffee break	
11:00-12:00	**Applicative lecture**: Introduction to modeling 3D structures	C. Demartino
12:00–13:00	Lunch break	
13:00–15:00	**Applicative lecture**: Non-linear Static analysis of frame structures using OpenSees: concentrated plasticity approach	F. Di Trapani
15:00-15:15	Coffee break	
15:15–17:15	**Applicative lecture**: Non-linear Static analysis of frame structures using OpenSees: distributed plasticity approach	F. Di Trapani
17:15–19:00	**Live workshop**: Modelling and analysis of elastic and nonlinear frame structures subject to static loads	

Day 2. Tuesday, July 23rd, 2024 - Dynamic analysis & advanced applications

8:30–10:30	**Applicative lecture**: Dynamic analysis of frame structures using OpenSees	A.P. Sberna
10:30-10:45	Coffee break	
10:45–12:00	**Applicative lecture**: Parametric modelling and model updating	C. Demartino
12:00–13:00	Lunch break	
13:00–14:45	**Applicative lecture**: Introduction to geotechnical modelling in OpenSees	Qiu Zhijian & Wang Lei
14:45-15:00	Coffee break	
15:00–16:30	**Applicative lecture**: Implementing material models in OpenSees	M. Petracca
16:30–17:30	**Applicative example:** Case studies developed with STKO	M. Petracca
17:30–19:00	**Live workshop**: Dynamic analysis of a non-linear frame structure with OpenSees	
19:00–19:30	Closure, certificate ceremony, and group photo	

Time is referred to Beijing time.



PREVIOUS EDITIONS

This list of previous editions of the course details its history and geographic reach, reflecting its international reputation and evolving curriculum. Each edition was hosted by distinguished universities in Italy and China, offering participants the opportunity to learn directly from experienced instructors and experts in the field of seismic engineering. The sessions covered a range of dates and formats, ensuring comprehensive training and education in the use of OpenSees for structural analysis and earthquake engineering simulations.

- **First edition**
  February 18, 2016 – Roma Tre University, Italy.
  May 20, 2016 – Nanjing Tech University, China.
- **Second edition**
  February 17, 2017 – Roma Tre University, Italy.
  July 3-4, 2017 – Fuzhou University, China.
  July 6-7, 2017 – Nanjing Tech University, China.
- **Third edition**
  March 20, 2018 – University of Naples “Federico II”, Italy.
  March 27, 2018 – Roma Tre University, Italy.
- **Fourth edition**
  March 10, 17, April 29, 2019 – Fuzhou University, China.
  March 27 to 29, 2019 – Sapienza University of Rome, Italy.
- **Fifth edition**
  January 20-22, 2019 – Politecnico di Torino, Italy
- **Sixth edition**
  July 19-22, 2021 – University of Palermo, Italy
- **Seventh edition**
  July 5-6, 2022 – Politecnico di Torino, Italy

Rome 2018

Turin 2019

Palermo 2021

Turin 2022

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EOSD 2024

EUROASIAN OPENSEES ASSOCIATION

Eurasian OpenSees (EOS), formerly European OpenSees, is a trans-continental non-profit association of engineers and academics who share the vision of contributing to the development of efficient and effective computational tools for complex engineering analysis and design. EOS was officially founded and registered in 2017.

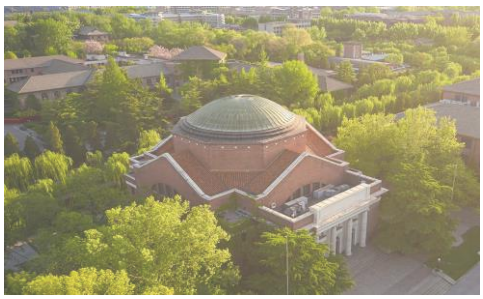
The transformation from a European based organization to a Eurasian one came due the vast contributions of researchers in Asia to computational structural mechanics and their elaborate and numerous efforts in developing and utilizing OpenSees. EOS aims to bridge the continental gap between the East and West and contribute to global engineering and scientific collaboration. The mission of the organization is to:

- Encourage and promote the principles of structural engineering according to the theories and techniques developed within the framework of international scientific research, with particular but not exclusive reference to the structural calculation framework OpenSees, developed at the University of California, Berkeley;
- Organize, promote and disseminate study and research activities, training, development, design, promotional and publishing initiatives and other initiatives designed to foster exchanges of experience both between members and with other scholars and institutions.
- Develop and offer cutting-edge courses, workshops, seminars, and conferences to enrich the skillsets of researchers and practitioners around the world.

All the students and researchers interested in OpenSees are highly encouraged to become part of the association!

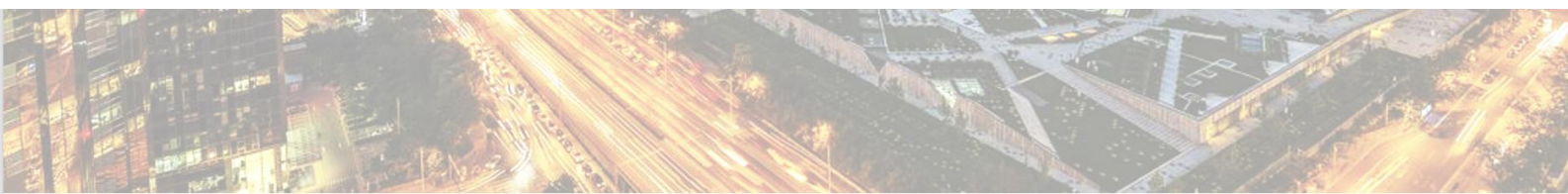
TSINGUA UNIVERSITY

Tsinghua University's campus is situated in northwest Beijing, on the site of the former imperial gardens of the Qing dynasty, and is surrounded by a number of historical sites. Currently, the university has 21 schools and 59 departments, with faculties in science, engineering, humanities, law, medicine, history, philosophy.



OPENSEES DAYS EURASIA 2024

This Summer School is organized together with the 6th Eurasian OpenSees Days Conference which will be held at Tsinghua University from July 24 to July 25, 2024. You are warmly invited to attend also the conference by registering at https://openseesdays2024.civil.tsinghua.edu.cn/



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OPENSEES DAYS EURASIA

6th EURASIAN CONFERENCE ON OPENSEES

24-25 July 2024

Tsinghua University

Beijing | China

OPENSEES

(Open System for Earthquake Engineering Simulation) is an object-oriented, software framework created at the National Science Foundation-sponsored Pacific Earthquake Engineering (PEER) Center. It allows users to create finite element applications for simulating the response of structural and geotechnical systems subjected to earthquakes. OpenSees is now a reference software platform in research and practical engineering applications

WELCOME TO BEIJING

After the successful conferences in Rome 2012, Salerno 2015, Porto 2017, Hong Kong 2019, and Turin 2022, **the 6th Eurasian conference on OpenSees is to be held in Beijing**, China, on 24-25 July 2024.

OSD 2024, an official conference of the Eurasian OpenSees International Association (EOS), aims to provide an international forum where users and developers of OpenSees can exchange and share recent advances and future perspectives in research and education

CONFERENCE TOPICS

Conference topics will cover research and practical experiences with OpeeSees in the field of structural and geotechnical engineering, development of new elements and materials, development of pre and post processors for OpenSees. Authors can submit abstracts through the conference website.

ORGANIZING COMMITTEE

Xinzheng Lu, Giorgio Monti, Cristoforo Demartino, Fabio Di Trapani, Antonio Sberna, Linlin Xie, Kaiqi Lin, Yuan Tian, Donglian Gu, Yongjia Xu

SCIENTIFIC COMMITTEE

Filip Filippou, Asif Usmani, Giorgio Monti, Frank McKenna, Humberto Varum, Joel Conte, José Miguel Castro, Cristoforo Demartino, Fabio Di Trapani, Zhongguo Guan, Liming Jiang, Lizhong Jiang, Kazuhiko Kasai, Dimitrios Lignos, Fabrizio Mollaioli, Massimo Petracca, Giuseppe Quaranta, Xavier Romão, Enrico Spacone, Longhe Xu, Zhaodong Xu, Christos Zeris

KEYNOTE SPEAKERS

Sashi K. Kunnath, USA
Anastasios Sextos, UK
Guido Camata, Italy
To be added
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IMPORTANT DATES

Abstract submission:	20 April 2024
Abstract acceptance:	30 April 2024
Early-bird registration:	31 May 2024
OpenSees Course:	22-23 July 2024
Conference:	24-25 July 2024
Paper submission (optional):	1 October 2024

Accepted papers will be published on **Lecture Notes in Civil Engineering (Springer)** and **indexed on Elsevier SCOPUS**

OS COURSE FEES

In-person attendee	€ 150/ ¥ 1150 (meal included)
Remote attendee	€ 100/ ¥ 750

CONFERENCE FEES

	Early	Late
In-person delegate	€ 320/ ¥ 2500	€ 380/ ¥ 3000
In-person student	€ 200/ ¥ 1500	€ 250/ ¥ 2000
Remote w/o pres'n	€ 100/ ¥ 750	€ 150/ ¥ 1150

One registration for one presentation only.

Fees include attendance to conference sessions, presentation of one paper, coffee/lunch breaks, social dinner and one-year free academic license of **ASDEA Scientific ToolKit for OpenSees (STKO)**.

VENUE

Tsinghua University
HaiDian District, Beijing (China)

INFO & CONTACTS website: https://openseesdays2024.civil.tsinghua.edu.cn/ **email:** openseesdays2024@gmail.com