UNIVERSITÀ DEGLI STUDI DI PALERMO

dipartimento di ingegneria unipa

EOS EURASIAN OPENSEES

Società Italiana di Scienza delle Costruzioni

SUMMER SCHOOL

6th International course on

Seismic Analysis of Structures using OpenSees

Finite Element-based Framework and Civil Engineering Applications

AIM OF THE COURSE

OpenSees (Open System for Earthquake Engineering Simulations) is an open source software conceived for the seismic analysis of structures. The source code is public 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. Applications in research and practice will be also presented.

SHORT PROGRAM

July 19, 2021

8:30 -13:15 • Registration, • Framework, aims and scope of the course, • Fundamentals of FEM, • Introduction to TCL and OpenSees.

14:15-19:00 • Seminar “Strategies of assessment of the out-of-plane behaviour of masonry infills”, • Introduction to TCL and OpenSees, • Modelling and analysis of an elastic frame.

July 20, 2021

9:00 -13:15 • Methods and formulations for nonlinear analysis of reinforced concrete frames, • Static nonlinear analysis of frame structures using OpenSees (part I).

14:30-19:00 • Seminar “Modelling of masonry wall shear strength and deformability by combined fiber beam elements in OpenSees”, • Static nonlinear analysis using OpenSees (part II), • Static nonlinear analysis of an inelastic frame structure.

July 21, 2021

9:00 -13:15 • Dynamic analysis of frame structures using OpenSees, • Dynamic analysis of base isolated structures using OpenSees.

14:30-19:00 • Seminar “Macro-element model for the nonlinear analysis of masonry buildings using OpenSees”, • Connecting Matlab to OpenSees and modelling of 3D structures, • Dynamic analysis of a frame structure.

20:30 • Social dinner.

July 22, 2021

9:00 -13:15 • Adding a new material to OpenSees, • Seminar “Structural optimization and GAs in OpenSees”, • Seminar “Advanced models with parallel computing in OpenSees with STKO and the Python API”.

14:30-18:00 • Seminar “Earthquake and Tsunami analysis of RC frames using OpenSeesPy”, • Seminar “OpenSees: Past, Present, and Future”, • Closure and certificate ceremony.

MAIN ORGANIZERS

Giorgio Monti (Sapienza University of Rome, EOS), **Giovanni Minafò** (University of Palermo), **Cristoforo Demartino** (Zhejiang University).

REGISTRATION AND FEES

Registration is required **before July 15, 2021** by sending an e-mail to: **opensees.eos.course@gmail.com.** The individual fee cost is **50€ + taxes (social dinner not included)**.

SPEAKERS

Seminars

Michael H. Scott
Oregon State University

Liborio Cavaleri
University of Palermo

Piero Colajanni
University of Palermo

Giuseppe Carlo Marano
Politecnico di Torino

Minjie Zhu
Oregon State University

Theoretical and applicative lectures

Cristoforo Demartino
Zhejiang University

Fabio Di Trapani
Politecnico di Torino

Amedeo Flora
University of Basilicata

Emma La Malfa Ribolla
University of Palermo

Francesco Marmo
University of Naples Federico II

Giovanni Minafò
University of Palermo

Salvatore Sessa
University of Naples Federico II

VENUE

University of Palermo – Dipartimento di Ingegneria
Viale delle Scienze, Ed.8, 90128, Palermo.

ONLINE CLASSES attendance is allowed.

SCIENTIFIC COMMITTEE

Giorgio Monti (Sapienza University of Rome, EOS), **Giuseppe Carlo Marano** (Politecnico di Torino), **Camillo Nuti** (Roma Tre University), **Luciano Rosati** (University of Naples Federico II), **Bruno Briseghella** (Fuzhou University), **Fabrizio Mollaioli** (Sapienza University of Rome), **Sashi Kunnath** (UC Davis), **Yan Xiao** (Zhejiang University/University of Illinois at Urbana Champaign Institute), **Giuseppe Quaranta** (Sapienza University of Rome), **Rita Greco** (Politecnico di Bari), **Fabio Di Trapani** (Politecnico di Torino), **Cristoforo Demartino** (Zhejiang University/University of Illinois at Urbana Champaign Institute), **Francesco Marmo** (University of Naples Federico II), **Giovanni Minafò** (University of Palermo).