UNIVERSITÀ DI PAVIA

ECCOMAS
Advanced Course

REGISTRATION

To register to the course participants should fill in the online form on the CompMech website (http://nlcourse.unipv.it/registration/)
Registration is completed only after receiving the bank transfer receipt.

FEES

Participant from industry:	1300€ (*early*)	1500€
Faculty members:	850€ (*early*)	1000€
PhD Students & Post-Docs*:	700€ (*early*)	850€

*Proof of status required.

Early registration is kindly recommended. The bank transfer receipt should be sent **before 31.01.2022**. Registration is transferable to another member of the same organization.

Fixed-menu lunches, coffee breaks, and course material are included.

Cancellations: 70% of the registration fee refund for cancellations before **March 1st, 2022**. No refund will be made for cancellations after that date.

PAYMENT METHODS (bank transfer only)

Private registration:
Bank Name: BANCA POPOLARE DI SONDRIO
Office: Succursale di Pavia
Address: Piazzale Ponte Coperto Ticino, 11, 27100 Pavia
IBAN: IT05R0569611300000007008X55
SWIFT: POSOIT2107P
Reason for payment: **NL22**, *participant's name*.

Italian Public Institutions
Dipartimento di Ingegneria Civile e Architettura
Banca D'Italia
Institution Code: 81001
Current account: 0037198
Reason for payment: **NL22**, *participant's name*

SECRETARIAT

Via Ferrata, 3 - 27100 Pavia, Italy
+39.0382.985463
mail to: sonia.padovan@unipv.it
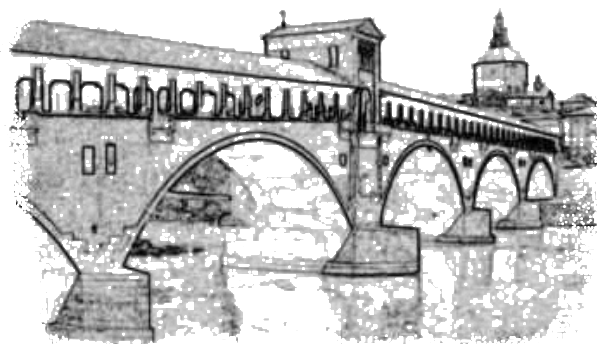http://nlcourse.unipv.it/

NL 22 COURSE

NONLINEAR COMPUTATIONAL SOLID & STRUCTURAL MECHANICS

Pavia   May 16-20, 2022

Theoretical formulations, technologies, and computations

3D@UniPV
Virtual Modeling and Additive Manufacturing for Advanced Materials

COMPMECH
Computational Mechanics & Advanced Materials

COURSE OBJECTIVES

To provide engineers, graduate students, and researchers with a **review of numerical techniques and solution algorithms for nonlinear mechanics**. The course will introduce the current state-of-the-art in finite element modeling of nonlinear problems in computational mechanics and will highlight the difficulties (and possible solutions) in a number of applications.

Different sources of nonlinear behavior will be examined in a systematic manner, with special attention to nonlinear constitutive behavior of materials, large deformations and rotations of structures, contact and instability problems with either material (localization) or geometric (buckling) nonlinearities, necessary to fully grasp structural design weaknesses.

The course will also provide insight on both advanced mathematical aspects and practical aspects of several computational techniques, such as the finite element method, isogeometric analysis, meshless techniques and virtual element method.

Objective of the course is to provide the participants with a solid basis for computational tools and software use to achieve the optimal design, and/or to carry out a refined analysis of nonlinear behavior structures.

The course finally will provide a basis to account for multi-physics and multi-scale effects, likely to achieve a significant break-through in many industrial applications.

Course schedule and lecture contents: http://nlcourse.unipv.it/

TUTORIALS

Every day will end with an interactive session where to address sample problems to be solved on the spot and used as a basis for discussion. Students are strongly encouraged to bring their own laptops in order to run examples and participate actively to the tutorials. Depending on the topic, tutorials will be based on use of different software including FEAPpv (http://projects.ce.berkeley.edu/feap/feappv/) and in-house codes written in Matlab or Maple.

To further guide areas of discussion in the tutorials, applicants are encouraged to describe their specific interests as part of their registration.

COURSE MATERIALS

Electronic copies of lecture materials and survey papers, copies of Finite Element Analysis Program (FEAPpv), and the complete volume of notes will be available to all participants.

LECTURERS

Franco Brezzi. Professor of Mathematical Analysis and Numerical Analysis at University of Pavia, Italy. *Expertise*: Numerical Methods for PDE, Structural Mechanics, Fluid Mechanics, Electromagnetism, and FEM.

Robert L. Taylor. Professor of the Graduate School (POGS), Department of Civil and Environmental Engineering, University of California, Berkeley, USA. *Expertise*: computational mechanics, element technology, contact problems, solution algorithms and software development.

Ferdinando Auricchio. Professor of Mechanics of Solids at University of Pavia, Italy. *Expertise*: constitutive modeling of innovative materials, biomechanics, FEM. *Projects*: "3D@UniPV: Virtual Modeling and Additive Manufacturing (3D printing) for Advanced Materials".

Manfred Bischoff. Head and Professor of Institute of Structural Mechanics at University of Stuttgart, Germany. *Expertise*: nonlinear computational structural mechanics and dynamics, modeling and analysis of shells, FE technology, structural optimization, contact problems, isogeometric analysis, computational material modeling.

Alessandro Reali. Professor of Mechanics of Solids and Head of the Department of Civil Engineering and Architecture at University of Pavia, Italy. *Expertise*: isogeometric analysis, advanced constitutive modeling, mixed FE, and strong-form methods.

Giancarlo Sangalli. Professor of Numerical Analysis at Mathematics Department of University of Pavia, Italy. *Expertise*: multiscale numerical methods, domain decomposition methods, isogeometric methods, with application in solid, fluid mechanics, and electromagnetism.

COURSE LOCATION

The beautiful and historical **Palazzo Vistarino**, **via sant'Ennodio 26, Pavia**, Italy.
(**web-site**: https://www.palazzovistarino.it/eng/)

ACCOMODATION

Participants can book a guest room (with limited availability) at **Palazzo Vistarino**, the course location. **Reservations** will be open **from January 2022**. **Other accommodations** are available for **direct booking by participants**. Please refer to the course website for a list of hotels in Pavia.

ORGANIZING COMMITTEE

Prof. Ferdinando Auricchio — auricchio@unipv.it
Prof. Alessandro Reali — alessandro.reali@unipv.it
Mrs. Sonia Padovan — sonia.padovan@unipv.it