ECCOMAS:
European Community
on Computational Methods
in Applied Sciences

REGISTRATION

Participants should communicate by e-mail a statement of participation to the Secretariat and, after the payment, a scan copy of the bank transfer receipt. Registration is considered completed only after the scan copy of the bank has been received by email by the secretariat. Courses fees are established as follows:

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

For private registration the method of payment is by bank transfer to:
Dipartimento di Ingegneria Civile e Architettura
UBI_Banca –
Strada Nuova 61/C - 27100 Pavia
IBAN: IT33U0311111300000000046622
SWIFTCODE: BLOPIT22
Purpose of payment:**NL18**, ***attendee's name***.

For public institutions the method of payment is by bank transfer to:
Dipartimento di Ingegneria Civile e Architettura
Banca D'Italia
Institution Code: 81001
Current account: 0037198
Purpose of payment:**NL18**, ***attendee's name***.

Early registration is kindly recommended. For the **early registration**, a scan copy of the bank transfer receipt should be sent **before 31.01.2018**.Registration is transferable to another member of the same organization.

To get the reduced rate, PhD students and post-docs should send a proof of their status.

For cancellations communicated prior to **March 1st, 2018**, 70% of the registration fee will be refunded. No refund will be made for cancellation after that date.

The fee comprises fixed-menu lunches, coffee breaks, and course material.

SECRETARIAT

Via Ferrata, 1 - 27100 Pavia, Italy
Phone: +39.0382.985463 **Fax**: +39.0382.528422
E-mail: sonia.padovan@unipv.it
Web-site: www.unipv.it/compmech/nl18_home.html

UNIVERSITÀ DI PAVIA

ECCOMAS Advanced Course

NL 18 COURSE

NONLINEAR COMPUTATIONAL SOLID & STRUCTURAL MECHANICS

Pavia May 21-25, 2018

Theoretical formulations, technologies, and computations

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

Ordine Ingegneri
provincia di Pavia

COURSE OBJECTIVES

The main objective of this course is to provide engineers, graduate students, and researchers with a **review of numerical techniques and solution algorithms for nonlinear mechanics**. It presents the current state-of-the-art in finite element modeling of nonlinear problems in solid and structural mechanics and illustrates difficulties (and possible solutions) appearing in a number of applications.

Different sources of nonlinear behavior are presented in a systematic manner. Special attention is paid to nonlinear constitutive behavior of materials, large deformations and rotations of structures, contact and instability problems with either material (localization) or geometric (buckling) nonlinearities, which are needed to fully grasp weaknesses of structural design.

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

The objective is thus to provide the participants with a solid basis for using computational tools and software in trying to achieve the optimal design, and/or to carry out a refined analysis of nonlinear behavior of structures.

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

Course schedule and lecture contents can be found on the web-page: **www.unipv.it/compmech/nl18_home.html**.

TUTORIALS

Interactive parts of the course are organized as final sections every day. They are based on addressing simple problems to be solved on the fly as a basis for an interactive discussion, so we strongly encourage students to bring their own laptops and we plan to distribute files, so that students can run examples and participate lively to the tutorials. Depending on the specific topic, the tutorials will be managed by one or more of the teachers and they will be based on using different software.

Special emphasis will be given to FEAP personal version (http://projects.ce.berkeley.edu/feap/feappv/) or simple "in-house" codes written in Matlab or Maple.

COURSE MATERIALS

The **course material** will consist of electronic copies of lecture materials and survey papers. Copies of Finite Element Analysis Program (FEAPpv) computer codes, written by Prof. R.L. Taylor at UC Berkeley, and the complete volume of notes will be made available to all attendees.

LECTURERS

Franco Brezzi. Associate researcher in Mathematical Analysis and Numerical Analysis at the Istituto di Matematica Applicata e Tecnologie Informatiche (IMATI) of CNR (Consiglio Nazionale delle Ricerche). *Expertise*: Numerical Methods for PDE, Structural Mechanics, Fluid Mechanics, Electromagnetism, and FEM.

Robert L. Taylor. Professor in the Graduate School, 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, 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 course will be held in the beautiful and historical **Palazzo Vistarino** in **via Sant'Ennodio, 26, Pavia**, Italy (**web-site**: http://www-wp.unipv.it/vistarino/).

ACCOMODATION

Palazzo Vistarino, which hosts the course, has also some **guest rooms (limited availability)** that are strongly recommended. They can be **booked by sending an email to the Secretariat**.

Other accommodations are available, but they need to be **personally booked by participants**. Please refer to the course website for a list of possible hotels in Pavia.

ORGANIZING COMMITTEE

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Eng. Laura Mazzocchi laura.mazzocchi02@ateneopv.it