

## TIME TABLE

(Registration on Monday at 8:30)

TIME	Monday	Tuesday	Wednesday	Thursday	Friday
	May 11	May 12	May 13	May 14	May 15
9.00 - 9.45	Jaspart	Tremblay	Franssen	Bursi	Pastorino
9.45 - 10.30	Jaspart	Tremblay	Franssen	Bursi	Pastorino
11.00 - 11.45	Jaspart	Tremblay	Salvatore	Salvatore	Cajot
11.45 - 12.30	Jaspart	Tremblay	Salvatore	Salvatore	Cajot
14.30 - 15.15	Tremblay	Welch	Franssen	Bursi	
15.15 - 16.00	Tremblay	Welch	Franssen	Bursi	
16.30 - 17.15	Jaspart	Welch	Franssen	Salvatore	
17.15 - 18.00	Jaspart	Welch	Franssen	Salvatore	

## ADMISSION AND ACCOMMODATION

Applicants must apply at least one month before the beginning of the course. Application forms should be sent on-line through our web site: <http://www.cism.it> or by post.

A message of confirmation will be sent to accepted participants. If you need assistance for registration please contact our secretariat.

The registration fee is 600,00 Euro.

A limited number of participants from universities and research centres who are not supported by their own institutions can be offered board and/or lodging in a reasonably priced hotel. Requests should be sent to CISM Secretariat by **March 11, 2009** along with the applicant's curriculum and a letter of recommendation by the head of the department or a supervisor confirming that the institute cannot provide funding. Preference will be given to applicants from countries that sponsor CISM.

The Deutscher Akademischer Austausch Dienst (DAAD) and the Deutsche Forschungsgemeinschaft (DFG) offer support to German students. Please contact:

DAAD, Kennedyallee 50, 53175 Bonn  
tel. +49 (228) 882-0  
e-mail: [postmaster@daad.de](mailto:postmaster@daad.de)  
web site: <http://www.daad.de/de/kontakt.html>

DFG, Kennedyallee 40, 53175 Bonn  
tel. +49 (228) 885 2655  
e-mail: [ing4@dfg.de](mailto:ing4@dfg.de)  
web site: <http://www.dfg.de>

Information about travel and accommodation is available on our web site, or can be mailed upon request.

*For further information please contact:*

CISM  
Palazzo del Torso - Piazza Garibaldi 18  
33100 Udine (Italy)  
tel. +39 0432 248511 (6 lines)  
fax +39 0432 248550  
e-mail: [cism@cism.it](mailto:cism@cism.it)

Centre International des Sciences Mécaniques  
International Centre for Mechanical Sciences



ACADEMIC YEAR 2009  
The Broglio Session

# PERFORMANCE AND DESIGN OF STEEL AND STEEL-CONCRETE COMPOSITE STRUCTURES SUBJECTED TO FIRE AND SEISMIC LOADINGS

*Advanced Professional Training  
coordinated by*

**Oreste S. Bursi**  
Università di Trento  
Italy

**Jean-Marc Franssen**  
University of Liège  
Belgium

**Udine, May 11 - 15, 2009**

# PERFORMANCE AND DESIGN OF STEEL AND STEEL-CONCRETE COMPOSITE STRUCTURES SUBJECTED TO FIRE AND SEISMIC LOADINGS

The principal aims of this course are two-fold:

1) to timely transfer to analysts and designers in an organic manner research-generated knowledge from three recently completed European Union research projects in the field of steel and composite structures subjected to fire and seismic loadings. Therefore, results following the EU research projects listed herein will be summarized:  
- Hoffmeister et al. Editors, (2006), 7210-PR250. Applicability of composite structures to sway frames, RWTH, Aachen, Germany.

- Kumar et al. Editors, (2007), RFS-CR-03030 FIRESTRUC  
- Integrating advanced three-dimensional modelling methodologies for predicting thermo-mechanical behaviour of steel and composite structures subjected to natural fires, Building Research Establishment, UK  
- Bursi et al. Editors, (2008), ECSC Project RFS-CR-03034 PRECIOUS - Prefabricated Composite Beam-to-Column Filled Tube or Partially Reinforced-Concrete Encased Column Connections for Severe Seismic and Fire Loadings”, University of Trento, Italy.

2) to train groups of PhD students, post docs, experienced researchers and engineering practitioners in order to provide them with a considerably wider understanding of the potentiality and interconnection of steel and steel-concrete composite structures. The course will provide different techniques and tools in order to analyse and/or design innovative and added-values complex steel and composite structures.

The objective of the workshop is three-fold: 1) to describe modern performance-based engineering techniques in order to exploit new computational and design techniques in structural engineering; 2) to promote the interest of researchers and engineering practitioners for steel and composite structures; 3) to investigate in depth a few case studies in Italy and Europe in order to discuss and comment upon technical issues and code applications.

## PRELIMINARY SUGGESTED READINGS

Pustorino S. 2006, Fire safety, ETS, (in Italian).

Bruneau M., Uang C.M. and Whittaker A., 1998 Ductile Design of Steel Structures, McGraw Hill

Franssen J.-M., Zaharia R., 2000. “Design of steel structures subjected to fire”. Univ. of Liege.

Franssen J.-M. 2000. “SAFIR; Non linear software for fire design”. Univ. of Liege;

EN 1993-1-2. 2005. “Eurocode 3: Design of steel structures. Part 1-2: General rules - Structural fire design”;

EN 1991-1-2. (2004). Eurocode 1: Actions on structures - Part 1-2: General actions - Actions on structures exposed to fire.

EN 1993-1-8. (2005). Eurocode 3: Design of steel structures - Part 1-8: Design of joints.

EN 1998-1. 2005. “Eurocode 8: Design of structures for earthquake resistance - Part 1: General rules, seismic actions and rules for buildings”;

EN 1994-1-2. 2005. “Eurocode 4: Design of composite steel and concrete structures - Part 1.2: General rules – Structural fire design”;

## INVITED LECTURERS

**Oreste S. Bursi** - Università di Trento, Italy  
*4 lectures on:* Performance of steel-concrete composite structures subjected to seismic-induced fire loadings.

**Louis-Guy Cajot** - Arcelor Profil, Luxembourg  
*2 lectures on:* Performance-based fire engineering for steel and steel-concrete composite structures: case studies in Europe.

**Jean-Marc Franssen** - University of Liège, Belgium  
*6 lectures on:* Analysis and design of steel and composite structures subjected to fire.

**Jean Pierre Jaspart** - University of Liège, Belgium  
*6 lectures on:* Performance of steel structures under persistent and transient loadings.

**Sandro Pustorino** - Steel structures Promotion Foundation, Italy  
*2 lectures on:* Performance-based fire engineering for steel and steel-concrete composite structures: case studies in Italy.

**Walter Salvatore** - Università di Pisa, Italy  
*6 lectures on:* Performance of steel-concrete composite structures subjected to seismic and fire loadings.

**Robert Tremblay** - École Polytechnique de Montréal, Canada  
*6 lectures on:* Seismic design and performance of steel structures.

**Stephen Welch** - BRE Centre for Fire Safety Engineering, The University of Edinburgh, UK  
*4 lectures on:* Thermo-mechanical behaviour of steel and steel-concrete composite structures subjected to fire.

## LECTURES

All lectures will be given in English. Lecture notes can be downloaded from CISM web site, instructions will be sent to accepted participants.

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OF STEEL AND STEEL-CONCRETE COMPOSITE STRUCTURES  
SUBJECTED TO FIRE AND SEISMIC LOADINGS**

**Udine, May 11 - 15, 2009**

**Application Form**

(Please print or type)

urname \_\_\_\_\_

Name \_\_\_\_\_

Affiliation \_\_\_\_\_

Address \_\_\_\_\_

E-mail \_\_\_\_\_

Phone \_\_\_\_\_ Fax \_\_\_\_\_

**Method of payment upon receipt of confirmation (Please check the box)**

*The fee of Euro 600,00 includes IVA/VAT tax and excludes bank charges.*

I shall send a check of Euro \_\_\_\_\_

Payment will be made to CISM - Bank Account N° 094570210900,  
VENETO BANCA - Udine (CAB 12300 - ABI 05418 - SWIFT AMBPIT2M -  
IBAN CODE IT83Z 05418 12300 09457 0210900).

*Copy of the receipt should be sent to the secretariat.*

I shall pay at the registration counter with check, cash or VISA  
Credit Card (Mastercard/Eurocard, Visa, CartaSi).

**IMPORTANT: CISM is obliged to present an invoice for the above sum. Please indicate to whom the invoice should be addressed.**

Name \_\_\_\_\_

Address \_\_\_\_\_

C.F.\* \_\_\_\_\_

VAT/IVA\* No. \_\_\_\_\_

(\*) Only for EU residents or foreigners with a permanent business activity in Italy.

**Only for Italian Public Companies**

I ask for IVA exemption (ex law n. 537/1993 - art. 14 comma 10).

**Privacy policy:** I understand that data received via this form will be used only to provide information about CISM and its activities, within the limits set by the Italian legislative decree no. 196/2003 and subsequent amendments.

Complete information on CISM's privacy policy is available at [www.cism.it](http://www.cism.it).

I have read the "Admission and Accommodation" terms and conditions and agree.

Date \_\_\_\_\_ Signature \_\_\_\_\_

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