short course on

NON-IDEAL COMPRESSIBLE FLUID DYNAMICS

Lecce – 21-23 September 2026

Director: Prof. Alberto Guardone, Politecnico di Milano
Deputy Director: Dr. Donatella Passiatore, Università del Salento

Goals

The course addresses the diverse disciplines, tools, and applications connected to non-ideal compressible fluid dynamics. International experts will deliver interactive lectures, including two hands-on sessions on numerical tools and experimental activities. Access to cloud computing will be provided for the numerical sessions.

This is an introductory course aimed at graduate students and young researchers new to NICFD, and at senior researchers interested in understanding different aspects of NICFD beyond their expertise. After the course, the International Seminar on NICFD will take place, where recent advancements in the field will be presented to complement the introductory course.

Course schedule

Monday 21st - Afternoon

14:30-15:10	Fundamentals of NICFD – an overview
15:10-15:50	Acoustics and wave propagation in non-ideal flows
15:50-16:10	Discussion & Perspectives
16:10-16:30	*Coffee break*
16:30-17:10	Quasi 1D non-ideal flows
17:10-17:50	Steady multidimensional non-ideal flows
17:50-18:10	Discussion & Perspectives

Tuesday 22nd - Morning

09:30-10:10	Thermodynamic modelling
10:10-10:50	Modelling of two-phase flows
10:50-11:10	Discussion & Perspectives
11:10-11:30	*Coffee break*
11:30-12:10	Turbulence modelling
12:10-12:50	Losses in NICFD flows
12:50-13:10	Discussion & Perspectives
13:10-14:30	*Lunch break*

Tuesday 22nd - Afternoon

14:30-15:30	Numerical methods for NICFD
15:30-15:50	*Coffee break*
15:50-18:10	Hands-on exercise on CFD for NICFD

Wednesday 23rd - Morning

09:30-10:10	ORC Power systems & heat pumps
10:10-10:50	Supercritical CO2 flows
10:50-11:10	Discussion & Perspectives
11:10-11:30	*Coffee break*
11:30-12:10	Automatic design for NICFD applications
12:10-12:50	Uncertainty Quantification in NICFD
12:50-13:10	Discussion & Perspectives
13:10-14:30	*Lunch break*

Wednesday 23rd - Afternoon

14:30-15:30	Experimental Methods for NICFD
15:30-15:50	*Coffee break*
15:50-18:10	Hands-on exercise on exp. data processing for NICFD

Speakers

Delft University of Technology
Prof. Piero Colonna
Prof. Rene Pecnik
Prof. Matteo Pini

Ecole Centrale Lyon
Prof. Christophe Corre

École polytechnique & INRIA Paris
Prof. Pietro Congedo

Lappeenranta University of Technology
Dr. Marta Zocca

Muenster University of Applied Sciences
Prof. Stefan aus der Wiesche

Politecnico di Milano
Prof. Alberto Guardone
Prof. Giacomo Persico
Prof. Andrea Spinelli

Sorbonne University
Prof. Paola Cinnella

UPC - BarcelonaTech
Lluís Jofre Cruanyes

Registration | *Registration is available on the NICFD 2026 website at* https://nicfd-2026.sciencesconf.org

Contacts | *For more info, contact the short course organisers:*
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