



Politecnico
di Torino

WINTER SCHOOL

THERMAL PHENOMENA RELATED TO STRESS IN MATERIALS

ABSTRACT

SPEAKER



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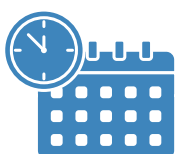


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**THE COURSE IS RECOGNIZED FOR THE
PH.D. ACCREDITATION CREDITS
ACCORDING TO PHD SCHOOLS**



**19–20 Febraury 2025 –Room 17
21 Febraury 2025 – Room 17 b**

TOPICS

- Analysis of deformation mechanisms and thermodynamic phenomena in case of metallic materials.
- Notions of electromagnetic radiation and thermal transport phenomena.
- Surface temperature measurements: from local to global instruments.
- Thermography: thermal cameras, typologies, techniques, applications, etc.
- The emissivity problem.
- Recent applications of Thermography in the mechanical field: research activities, case studies and practical applications.

INVITED LECTURES

- *“IR cameras technology”* – **Nicola Genna** (Advanced/Integrated Systems Business Unit – Teledyne FLIR Solutions).
- *“Estimating the intrinsic dissipation using the second harmonic of the temperature signal”* – **Prof. Mauro Ricotta** (Department of Industrial Engineering – University of Padova).
- *“Infrared thermography-based evaluation of the elastic-plastic J-integral to correlate fatigue crack growth data of a stainless steel”* – **Prof. Giovanni Meneghetti** (Department of Industrial Engineering – University of Padova).
- *“Alternative methods for estimation of fatigue life via IR thermography”* – **Martin Matuš** (Faculty of Mechanical Engineering, Division of Strength and Elasticity –Czeck Technical University)
- *“Energy and related temperature variation assessment for quantitative damage analysis of various materials: application for fatigue and fracture mechanics”* – **Umberto Galletti** (Department of Mechanics Mathematic Management, Bari Polithecnic University)
- *“Design and Monitoring of Cycloidal Gearboxes: Architecture, Power Losses, Thermal Modeling, and Infrared Thermography Analysis”* – **Lorenzo Maccioni** (Faculty of Engineering, NOI Techpark – Free University of Bozen-Bolzano)