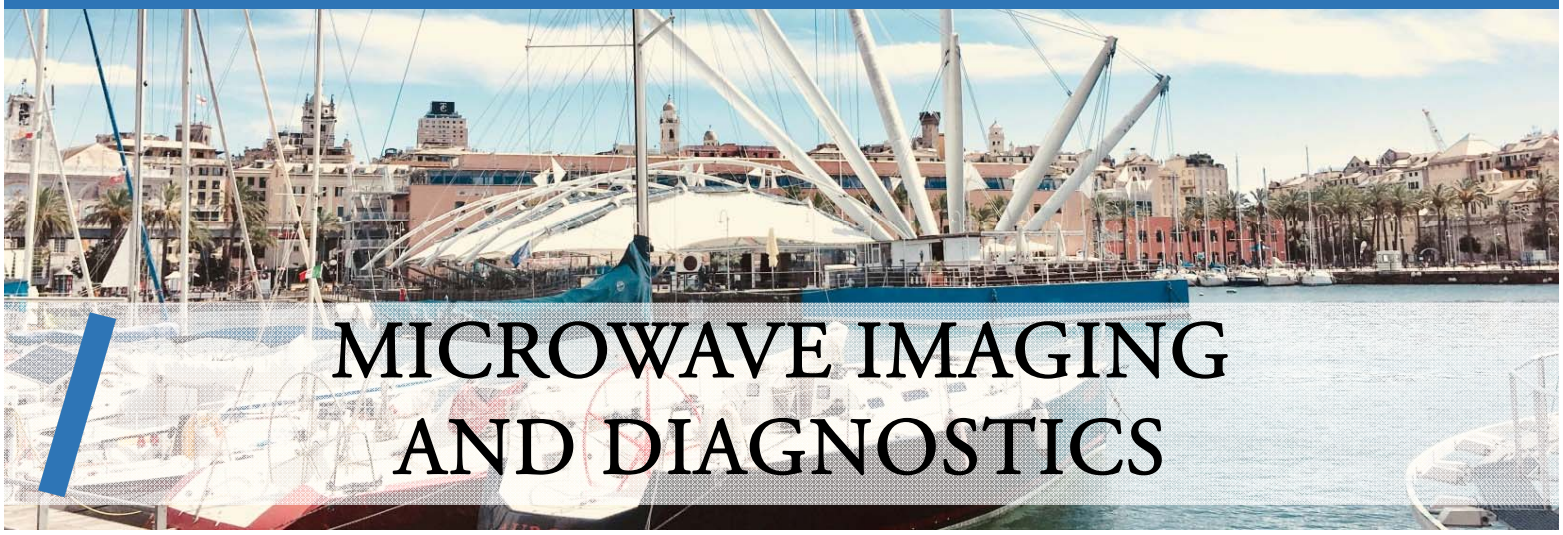
ESoA 2025 Course @ Genoa



MICROWAVE IMAGING AND DIAGNOSTICS

The exploitation of electromagnetic field data as a sensing tool enables numerous engineering applications, including biomedical diagnostics, underground investigations, through-the-wall imaging, and non-destructive testing of transport infrastructures and buildings, among others. This course reviews the fundamental equations and challenges of inverse problems in high-frequency electromagnetics. It then focuses on classical and modern solution procedures and algorithms, discussing the capabilities, limitations, and future perspectives of both approximate and exact reconstruction methods.
Theoretical concepts will be reinforced with practical examples, exercises, and application-specific lessons.

Day 1: Introduction and Basic Theory
Day 2: Methods for Dealing with Non-Linearity and Ill-Posedness
Day 3: Deterministic and Stochastic Imaging Methods
Day 4: AI-Based Imaging Methods and Applications
Day 5: Further Applications & Future Trends

Who Should Attend?

Targeted at PhD students, researchers, scientists, and engineers, this course aims to: (a) provide foundational knowledge of microwave diagnostics and imaging, (b) strengthen understanding of inverse problems in electromagnetics, (c) explore cutting-edge and recent advances in inversion algorithms, and (d) showcase applications of inverse scattering techniques across research, industrial, and civil domains.

Lecturers

- **Dr. CROCCO Lorenzo**, CNR, Italy
- **Prof. ESTATICO Claudio**, University of Genoa, Italy
- **Prof. ISERNIA Tommaso**, University Mediterranea of Reggio Calabria, Italy
- **Prof. LOVETRI Joe**, University of Manitoba, Canada
- **Prof. MASSA Andrea**, ELEDIA@UniTN - DICAM, Italy; UESTC, China; Tsinghua University, China
- **Prof. RANDAZZO Andrea**, University of Genoa, Italy

Date and Location

March 10-14, 2025 – Genoa, Italy

The course is offered on-site and on-line (synchronous and asynchronous) with video recordings, hand-outs, etc. of the lectures available off-line

Course Coordinators

- Prof. RANDAZZO Andrea
- Prof. MASSA Andrea
- Prof. ISERNIA Tommaso
- Dr. CROCCO Lorenzo

Registration Types and Fees

- Academic: 550 €
- Industrial & Profit institutions: 1100 €

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