



SUMMARY OF THE 2025 COURSES — ERICE

All Courses are sponsored by the World Federation of Scientists (WFS), the Sicilian Regional Government, the Italian Ministry of Education, University and Scientific Research and the Galileo Galilei Foundation (GGF). Some of the Courses are under the sponsorship of the Italian Ministry of Foreign Affairs, the Italian Ministry of Health, the North Atlantic Treaty Organization (NATO), the American National Science Foundation (NSF), the Italian National Research Council (CNR), the Weizmann Institute of Science, the European Physical Society (EPS), the Italian National Institute for Nuclear Physics (INFN), the Enrico Fermi Historical Museum of Physics and Study and Research Centre, the World Wildlife Fund (WWF), the Commission of the European Communities (CEC), some of the main Italian and foreign Universities and Research Centres, and the World Laboratory

- INTERNATIONAL SCHOOL OF QUANTUM ELECTRONICS
Directors: A.N. CHESTER – D.S. WIERSMA
68th Course: *The frontiers of attosecond and ultrafast X-ray science*
Directors: L. DI MAURO – M. NISOLI
7 – 13 April 2025
- INTERNATIONAL SCHOOL OF MOLECULAR ONCOLOGY
Director: F.M. BUONAGURO
4th Course: *Advanced molecular biomarkers in oncology*
Directors: A. BUDILLON – F.M. BUONAGURO
13 – 16 April 2025
- INTERNATIONAL SCHOOL OF NONEQUILIBRIUM PHENOMENA
Directors: A. LANZARA – M.G. PALMA – B. SPAGNOLO
10th Course: *Applications and theoretical aspects on: Non-equilibrium phenomena, topology, superconductivity, and superfluidity*
Directors: R. CITRO – C. GUARCELLO – D. VALENTI
27 April – 1 May 2025
- INTERNATIONAL SCHOOL ON BIOELECTROMAGNETISM «ALESSANDRO CHIABRERA»
Directors: F. BERSANI – M.R. SCARFÌ
12th Course: *Advances in electroporation-based therapy: From principles to clinical applications*
Directors: R. DAVALOS – M. LIBERTI
2 – 7 May 2025
- INTERNATIONAL SCHOOL ON TREASURES OF ART AND SCIENCE
Director: L. ZICHICHI
19th Seminar
Director: L. ZICHICHI
8 – 9 May 2025
- INTERNATIONAL SCHOOL OF CARDIAC SURGERY
Directors: G. GEROSA – U.F. TESLER
10th Course: *Teaching, learning, doing*
Directors: G. GEROSA – D. PACINI – M. PILATO – M. RINALDI
10 – 13 May 2025
- INTERNATIONAL SCHOOL ON TREASURES OF ART AND SCIENCE
Director: L. ZICHICHI
20th Seminar: *Scientists for a day: the youngest in Erice*
Director: L. ZICHICHI
13 – 14 May 2025
- INTERNATIONAL SCHOOL OF SOLID STATE PHYSICS
Director: G. BENEDEK
89th Course: *Shaping space and time for high resolution optical imaging*
Directors: A. BASSI – J.M. BUENO – G. CHIRICO
14 – 20 May 2025

- INTERNATIONAL SCHOOL OF SOLID STATE PHYSICS
 Director: G. BENEDEK
 90th Course: *Dynamics of electrons in atomic and molecular nanoclusters*
 Directors: K. HANSEN – V.V. KRESIN
 21 – 27 May 2025

- INTERNATIONAL SCHOOL OF CRYSTALLOGRAPHY
 Directors: T.L. BLUNDELL – now G. SCAPIN
 60th Course: *Electron crystallography*
 Directors: A. EGGEMAN – M. GEMMI – T. GORELIK
 30 May – 7 June 2025

- INTERNATIONAL SCHOOL OF CRYSTALLOGRAPHY
 Directors: T.L. BLUNDELL – now G. SCAPIN
 61st Course: *Quantum crystallography*
 Directors: J. CONTRERAS – P. DOMINIAK
 30 May – 7 June 2025

- INTERNATIONAL SCHOOL ON TREASURES OF ART AND SCIENCE
 Director: L. ZICHICHI
 21st Seminar: *Niki Berlinguer*
 Director: L. ZICHICHI
 7 – 8 June 2025

- INTERNATIONAL SCHOOL OF NEUROSCIENCES «SIR JOHN ECCLES»
 Directors: P.F. FERRARI – G. RIZZOLATTI
 16th Course: *The role of the autonomic nervous system in stress response and resilience*
 Directors: N. MONTANO – C. OTTAVIANI – A. SGOIFO
 8 – 13 June 2025

- INTERNATIONAL SCHOOL OF SUBNUCLEAR PHYSICS
 Directors: A. ZICHICHI – A. ZOCCOLI
 61st Course: *What accelerators, precision and cosmic messengers teach us on subnuclear physics*
 Directors: A. MASIERO – A. BÉTTINI
 14 – 23 June 2025

- INTERNATIONAL SCHOOL OF NONEQUILIBRIUM PHENOMENA
 Directors: A. LANZARA – M.G. PALMA – B. SPAGNOLO
 11th Course: *Neuromorphic approaches to quantum computing*
 Directors: M.G. PALMA – M. PATERNOSTRO
 26 – 30 June 2025

- INTERNATIONAL SCHOOL OF STATISTICAL PHYSICS
 Directors: P. HÄNGGI – F. MARCHESONI
 26th Course: *Frontiers in water biophysics*
 Directors: A. CESARO – L. COMEZ – G. FRANZESE
 2 – 7 July 2025

- INTERNATIONAL SCHOOL OF ATOMIC AND MOLECULAR SPECTROSCOPY
 Directors: B. DI BARTOLO – M. CESARIA
 39th Workshop: *Tracks on Photonics: Advanced materials, devices and methods*
 Director: M. CESARIA
 2 – 10 July 2025

- INTERNATIONAL SCHOOL OF MATERIALS FOR SUSTAINABLE DEVELOPMENT AND ENERGY
 Director: A. TERRASI
 5th Course: *Materials for renewable and sustainability*
 Director: D. CAHEN – D. GINLEY – R. O'HAYRE – A. SLAOUÏ – A. TERRASI – A. WEIDENKAFF
 8 – 15 July 2025

- INTERNATIONAL SCHOOL OF MATERIALS FOR SUSTAINABLE DEVELOPMENT AND ENERGY
 Director: A. TERRASI
 6th Course: *Sustainable food production under climate change*
 Directors: A. LEVY – H. PUCHTA
 10 – 15 July 2025

- INTERNATIONAL SCHOOL OF BIOLOGICAL MAGNETIC RESONANCE
 Director: J.D. PUGLISI
 21st Course: *Frontiers in biophysics*
 Directors: J.D. PUGLISI – E. VIANI PUGLISI
 17 – 24 July 2025

- INTERNATIONAL SCHOOL OF SCIENCE EDUCATION
 Directors: P. LÉNA – A. PASCUCCI
 4th Workshop: *Climate change education*
 Director: D. WILGENBUS
 17 – 24 July 2025

- INTERNATIONAL SCHOOL OF NANOMEDICINE
 Directors: M. FERRARI – M. MASSERINI
 8th Course: *Integrating biochemical insights to overcome clinical challenges in cancer nanomedicine*
 Directors: F. CHIARADONNA – F. RE
 25 – 29 July 2025

- INTERNATIONAL SCHOOL OF PHARMACOLOGY «GIAMPAOLO VELO»
 Directors: M. LINDQUIST – P. MINUZ – U. MORETTI
 95th Workshop: *Cancer and cardiovascular diseases: Common mechanisms and strategies of prevention*
 Directors: V. BRONTE – B. BRÛNE – P. MINUZ – P. PATRIGNANI – D. STEINHILBER
 27 – 30 July 2025

- INTERNATIONAL SCHOOL OF NONEQUILIBRIUM PHENOMENA
 Directors: A. LANZARA – M.G. PALMA – B. SPAGNOLO
 12th Course: *Understanding rare atmospheric events and their impacts*
 Directors: S. BOURDIN – G. CAZZANIGA – D. FARANDA – M. GINESTA – R. NOYELLE
 1 – 5 August 2025

- INTERNATIONAL SEMINARS ON PLANETARY EMERGENCIES
 Chairman: A. ZICHICHI
 57th Session – Co-Chairman: C. GALBIATI
 7 – 13 August 2025

- INTERNATIONAL SCHOOL ON TREASURES OF ART AND SCIENCE
 Director: L. ZICHICHI
 22nd Seminar
 Director: L. ZICHICHI
 14 – 24 August 2025

- INTERNATIONAL SCHOOL OF MUSICAL SCIENCES
 Director: R. GIULIANI
 6th Course: *Santa Cecilia in Erice. Conservatory talents in concert*
 14 – 24 August 2025

- INTERNATIONAL SCHOOL OF COMPLEXITY
 Directors: A. ZICHICHI – Co-Directors: G. BENEDEK – A. RAPISARDA – C. TSALLIS
 20th Workshop: *Higher-order interactions: Mechanisms, behaviours, and networks*
 Directors: G. BIANCONI – D. MARINAZZO – G. PETRI – A. SCHWARZE
 25 – 31 August 2025

- INTERNATIONAL SCHOOL OF NONEQUILIBRIUM PHENOMENA
 Directors: A. LANZARA – M.G. PALMA – B. SPAGNOLO
 13th Course: *Waveguide Quantum Electrodynamics – WQED*
 Directors: H. BARÄNGER – D. CHANG – F. CICCARELLO – P. RABL
 1 – 6 September 2025

- INTERNATIONAL SCHOOL OF NEUROSCIENCES «SIR JOHN ECCLES»
 Directors: P.F. FERRARI – G. RIZZOLATTI
 17th Course: *Neuromodulators of connection: Cutting-edge insights on oxytocin and vasopressin in social behaviour, cognition and therapy*
 Directors: P.F. FERRARI – A. GUASTELLA – K. PARKER
 9 – 14 September 2025

- INTERNATIONAL SCHOOL OF NUCLEAR PHYSICS
 Directors: A. FAESSLER – M. BUBALLA – now C. FISCHER
 46th Course: *QCD under extreme conditions – present and future*
 Directors: C. FISCHER – T. GALATYUK
 16 – 22 September 2025

- INTERNATIONAL SCHOOL OF GEOPHYSICS «ENZO BOSCHI»
 Director: F. FLORINDO
 43rd Workshop: *Frontiers in geophysics for the third millennium*
 Directors: M.E. BELARDINELLI – M. DRAGONI – P. GASPERINI – A. MICHELINI – D. PANTOSTI – M. POMPILIO – G. VALENSISE
 22 – 26 September 2025
- INTERNATIONAL SCHOOL OF STATISTICAL PHYSICS
 Directors: P. HÄNGGI – F. MARCHESONI
 27th Course: *Quantum technology from fundamental science to real world applications*
 Directors: D. BAJONI – S.L. PORTALUPI – R. TROTTA
 27 September – 2 October 2025
- INTERNATIONAL CONFERENCE ON FLAVOUR PHYSICS AND SPECTROSCOPY
 Director: V. VAGNONI
 3 – 10 October 2025
- INTERNATIONAL SCHOOL OF ETHOLOGY «DANILO MAINARDI»
 Directors: P. PALANZA – S. PARMIGIANI
 58th Course: *Epigenetics: From molecules to behaviour*
 Directors: P. PALANZA – S. PARMIGIANI – D. PONZI – M. TOGNON
 6 – 10 October 2025
- INTERNATIONAL SCHOOL OF SOLID STATE PHYSICS
 Director: G. BENEDEK
 91st Course: *Quantum complex matter superstripes*
 Directors: G. AEPPLI – A. BIANCONI – Y. UEMURA
 11 – 17 October 2025
- INTERNATIONAL SCHOOL OF SCIENTIFIC JOURNALISM AND COMMUNICATION
 Director: P. CAMPANA
 13th Course
 Directors
 12 – 16 October 2025
- INTERNATIONAL SCHOOL OF PRECISION MEDICINE AND LABORATORY
 Directors: M. CIACCIO – F. SALVATORE
 3rd Course: *Alzheimer's disease: From diagnosis to therapy*
 Directors: M. CIACCIO – F. SALVATORE
 17 October 2025
- INTERNATIONAL SCHOOL OF IUS COMMUNE
 Directors: M. BELLOMO – O. CONDORELLI – W. DECOCK – K. PENNINGTON
 44th Course: *Legal, cultural and religious pluralism: Aspects and problems in the tradition of the Ius Commune*
 Directors: O. CONDORELLI – W. DECOCK
 19 – 23 October 2025
- INTERNATIONAL SCHOOL ON MAGNETIC RESONANCE AND BRAIN FUNCTION
 Director: B. MARAVIGLIA
 14th Workshop: *Beyond the limits of magnetic resonance imaging for the study of human brain: Methodology and modeling*
 Director: F. GIOVE
 24 – 29 October 2025
- INTERNATIONAL SCHOOL ON PHYSICAL COMPUTING
 Directors: A. CALÀ LESINA – W. PERNICE
 1st Workshop: *Photonic computing and machine learning*
 Directors: A. CALÀ LESINA – W. PERNICE – B. STILLER
 30 October – 4 November 2025
- INTERNATIONAL SCHOOL OF NONEQUILIBRIUM PHENOMENA
 Directors: A. LANZARA – M.G. PALMA – B. SPAGNOLO
 14th Course: *Chaos and information dynamics in quantum many body systems*
 Directors: V. GRITSEV – A. POLKOVNIKOV – A. SILVA
 30 October – 4 November 2025

- INTERNATIONAL SCHOOL OF QUANTUM ELECTRONICS
Directors: A.N. CHESTER – D.S. WIERSMA
69th Course: *Progress in photoacoustic and photothermal phenomena: Focus on biomedical, nanoscale, NDE, gas sensing and thermophysical phenomena and technologies*
Directors: A. MANDELIS – R. LI VOTI
5 – 12 November 2025

- INTERNATIONAL SCHOOL OF ETHOLOGY «DANILO MAINARDI»
Directors: P. PALANZA – S. PARMIGIANI
59th Course: *Understanding and treating Autism Spectrum Disorders (ASD): Ethology, evolution and early development*
Directors: M. BRUNE – C. COLOMBI – P. PALANZA – S. PARMIGIANI
13 – 17 November 2025

- INTERNATIONAL SCHOOL OF MATHEMATICS «GUIDO STAMPACCHIA»
Directors: F. GIANNESI – now G. BUTTAZZO – M. THÉRA
80th Course: *The mathematics of scientific machine learning and digital twins*
Directors: H. ANTIL – E. ZUAZUA
19 – 25 November 2025

- INTERNATIONAL SCHOOL OF PARTICLE ACCELERATORS «KJELL JOHNSEN, GUSTAV VOSS AND EDMUND WILSON»
Directors: L. ROSSI – T.M. TAYLOR
5th Course: *Higgs factories for the post-HiLumi LHC era*
Directors M. FERRARIO – L. ROSSI – F. ZIMMERMANN
26 November – 1 December 2025

- INFN ELOISATRON PROJECT
Director: A. ZICHICHI
68th Workshop
Director: W.A. BARLETTA
30 November – 5 December 2025

- INTERNATIONAL SCHOOL OF BRAIN CELLS AND CIRCUITS «CAMILLO GOLGI»
Directors: E. D'ANGELO – C. GANDINI WHEELER-KINGSHOTT
10th Course: *A decade of discovery: The Erice Camillo Golgi School – Modeling the brain from neurons to large-scale signals and digital twins in health and disease*
Directors: E. D'ANGELO – C. GANDINI WHEELER-KINGSHOTT – V. JIRSA
2 – 7 December 2025

- INTERNATIONAL SCHOOL OF EPIDEMIOLOGY AND PREVENTIVE MEDICINE «GIUSEPPE D'ALESSANDRO»
Directors: G.M. FARA – G. GIAMMANCO – C. SIGNORELLI – M. SZKLO – F. VITALE
63rd Course: *Preparedness in emergencies (public health)*
Directors: S. CASTALDI – L. FABIANI
9 – 13 December 2025

- INTERNATIONAL SCHOOL OF NONEQUILIBRIUM PHENOMENA
Directors: A. LANZARA – M.G. PALMA – B. SPAGNOLO
15th Course: *Beyond linearity: Frontiers in non-Hermitian many-body physics*
Directors: F. BALDUCCI – P. BRIGHI – F. CICCARELLO – A. NUNNENKAMP – F. ROCCATI
14 – 18 December 2025

**More information about the activities of the Ettore Majorana Foundation
can be found on the WWW at the following address:
<https://ettoremajoranafoundation.it>**