Ph.D course in Astrophysics and Cosmology

Head of the Ph.D course: **Prof. Carlo BACCIGALUPI**
Web site: **Astrophysics and Cosmology**
Research lines:

- Analysis of Astrophysical and Cosmological Datasets
- Astrochemistry
- Dark Matter and Dark Energy
- Galaxy Formation and Evolution
- Gravitational Waves
- High Energy Astrophysics
- Physical Cosmology
- Stellar Physics

Fellowships available: 5
Admission: Academic and scientific qualifications + oral exam (remotely/presence)
Beginning of the Courses: 1 October, 2026

Evaluation of academic and scientific qualifications: 30 points
Access to Oral Exam: minimum mark of 21/30 on academic and scientific qualifications (max. 15 candidates)
Evaluation of Oral Exam: 70 points
Total Evaluation: 100 points

To be considered eligible, candidates must pass all the phases (academic qualifications, and interview) with a minimum mark of 7/10 or equivalent.

Deadline for online submission of applications: 13th March, 2026

Oral Exam: 31st March and 1st April, 2026

Second Session (only if there should still be places available after the first one)

Deadline for online submission of applications: 21st August, 2026
Oral Exam: 8th and 9th September, 2026

Admission to the oral exam and results of all evaluations will be notified by email.

Ph.D course in Astroparticle and Gravitational Physics

Head of the Ph.D course: **Prof. Matteo VIEL**
Web site: **[Astroparticle and Gravitational Physics](#)**
Research lines:

- Classical and Semiclassical Gravity
- Early Universe Cosmology
- Dark Matter and Dark Energy
- Cosmic Rays and Particle Physics
- Gravitational Waves
- Structures in the Universe
- Astrophysics of Massive Black Holes

Fellowships available: **5**
Admission: **Academic and scientific qualifications + oral exam (remotely)**
Beginning of the Courses: 1st October, 2026

Evaluation of academic and scientific qualifications: 30 points
Access to Oral Exam: minimum mark of 21/30 on academic and scientific qualifications
Evaluation of Oral Exam: 70 points

To be considered eligible, candidates must pass all the phases (academic qualifications, and interview) with a minimum mark of 7/10 or equivalent.

Deadline for online submission of applications: 23rd February, 2026

Oral Exam: **16th – 20st March, 2026**

Results of all evaluations and the final ranking will be notified by email.

Ph.D course in Geometry and Mathematical Physics

Head of the Ph.D course: Prof. Marcello PORTA
Web site: Geometry and Mathematical Physics
Research lines:

- Asymptotic analysis of ordinary differential equations and applications to integrable systems and geometry
- Integrable systems and applications to Hamiltonian dispersive equations with random initial data
- Local and global study of algebraic stacks and of their morphisms and applications
- Low dimensional geometry and topology
- Quantum statistical mechanics and analysis of many-body quantum systems
- Real algebraic geometry and convex geometry
- Refined invariants of moduli spaces of sheaves and derived categories
- Toeplitz operators and determinants, quasiperiodic Schroedinger operators
- Random matrices, statistical mechanics, and Gaussian Multiplicative Chaos
- Representation theory, conformal field theory, integrable systems, and cluster algebras
- Stability in algebraic and complex differential geometry, applications to enumerative invariants
- Supersymmetric gauge theories, conformal field theories, topological strings and their applications to geometry of moduli spaces, integrable systems and general relativity

Fellowships available: 8
Admission: Academic and scientific qualifications + oral exam (remotely)
Beginning of the Courses: 1st October, 2026

Evaluation of academic and scientific qualifications: 30 points
Access to Oral Exam: minimum mark of 21/30 in the academic and scientific qualifications evaluation.
Evaluation of Oral Exam: 70 points

To be considered eligible, candidates must pass all the phases (academic qualifications, and interview) with a minimum mark of 7/10 or equivalent.

Deadline for online submission of applications: 19th January, 2026
Oral Exam: 23rd to 27th February, 2026

Admission to the oral exam and results of all evaluations will be notified by email.

Ph.D course in Mathematical Analysis, Modelling, and Applications

Head of the Ph.D course: **Prof. Luca RIZZI**
Web site: **Mathematical Analysis, Modelling, and Applications**
Research lines:

- Conservation Laws
- Transport Problems
- Geometric PDEs
- Numerical Analysis of PDEs
- Nonlinear Analysis
- Dynamical Systems
- Hamiltonian and dispersive PDEs
- Calculus of Variations
- Gamma-Convergence and Multiscale Analysis
- Rate independent evolution problems
- Geometric Control Theory
- Sub-Riemannian Geometry
- Inelastic behavior of solids: plasticity, damage, fracture

- Mechanobiology of the cell and cell motility
- Mechanics of soft and active materials
- Reduced basis methods
- Boundary integral methods and isogeometric analysis
- Fluid-structure interaction problems
- Computational Fluid and Solid Mechanics
- Uncertainty quantification
- Shape optimization
- Flow control
- Machine Learning
- Stochastic Analysis
- Rough Paths and Regularity Structures

The research activities of candidates applying and selected for the FSE fellowships will be in the field of applied mathematics, including numerical analysis, scientific computing, continuum mechanics and mathematical modelling.

Fellowships available: **7 funded by SISSA**
4 funded by FSE +
Admission: Academic and scientific qualifications + written exam + oral exam (in presence – upon Committee discretion candidates domiciled beyond 200 km from Trieste will be allowed to attend remotely contemporaneously to the other candidates)
Beginning of the Courses: **1st October, 2026**

Evaluation of academic and scientific qualifications: 10 points
Access to Written Exam: minimum mark of 7/10 on academic and scientific qualifications
Evaluation of Written Exam: 40 points
Access to Oral Exam: minimum mark of 28/40 in the written exam evaluation
Evaluation of Oral Exam: 50 points

To be considered eligible, candidates must pass all the phases (academic qualifications, written test, and interview) with a minimum mark of 7/10 or equivalent.

Deadline for online submission of applications: **25th January, 2026**
Written Exam: **2nd March, 2026**
Oral Exam: **3rd March, 2026**

Second Session (only if there should still be places available after the first one)

Deadline for online submission of applications: **27th August, 2026**
Written Exam: **10th September, 2026**
Oral Exam: **11th September, 2026**

Admission to the oral exam and results of all evaluations will be notified by email.

Ph.D course in Molecular and Statistical Biophysics

Head of the Ph.D course: **Prof. Giovanni BUSSI**
Web site: **Molecular and Statistical Biophysics**
Research lines:

- Statistical mechanics of complex molecular systems
- Activity-driven biological processes
- Stochastic processes and biological noise
- Biomolecular simulations
- Simulations of rare events
- Soft Matter Physics

Fellowships available: **3**
Admission: **Academic and scientific qualifications + written exam + oral exam (remote)**
Beginning of the Courses: 1st October, 2026

Evaluation of academic and scientific qualifications: 10 points
Access to Written Exam: minimum mark of 7/10 on academic and scientific qualifications
Evaluation of Written Exam: 40 points
Access to Oral Exam: minimum mark of 28/40 on written exam
Evaluation of Oral Exam: 50 points

To be considered eligible, candidates must pass all the phases (academic qualifications, written test, and interview) with a minimum mark of 7/10 or equivalent

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Deadline for online submission of applications: 11th May, 2026

Written Exam: 25th May, 2026
Oral Exam: 26-27th May, 2026

Second Session (only if there should still be places available after the first one)

Deadline for online submission of applications: 18th August, 2026

Written Exam: 1st September, 2026
Oral Exam: 2nd – 3rd September, 2026

Admission to the oral exam and results of all evaluations will be notified by email.

Ph.D course in Statistical Physics

Head of the Ph.D course: **Prof. Gesualdo DELFINO**
Web site: **Statistical Physics**
Research lines:

- Statistical Field Theories and Applications
- Exactly Solved Models of Statistical Mechanics
- Classical and Quantum Statistical Physics out of Equilibrium
- Cold Atoms
- Quantum Quenches
- Entanglement in many-body systems
- Quantum Integrable Models
- Systems with Disorder
- Complex Systems
- Critical phenomena and renormalization group
- Two-dimensional conformal field theories
- Stochastic processes and applications

Fellowships available: 5
Admission: Academic and scientific qualifications + oral exam
Beginning of the Courses: 1st October, 2026

Evaluation of academic and scientific qualifications: 30 points
Access to Oral Exam: minimum mark of 21/30 on academic and scientific qualifications
Evaluation of Oral Exam: 70 points

To be considered eligible, candidates must pass both phases (academic qualifications and interview) with a minimum mark of 7/10 or equivalent

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Deadline for online submission of applications: 27th February, 2026

Oral Exam: 16th to 20th March, 2026

The results of the oral exams and the final ranking will be notified by email.

Ph.D course in Theoretical Particle Physics

Head of the Ph.D course: **Prof. Francesco BENINI**
Web site: **Theoretical Particle Physics**
Research lines:

- Formal aspects of Quantum Field Theories
- Conformal Field Theories
- Supersymmetric Field Theories
- Quantum Gravity
- String Theory, AdS/CFT duality and applications
- Physics beyond the Standard Model and at the LHC
- Flavour Physics

Fellowships available: **6**
Admission: **Academic and scientific qualifications + oral exam**
Beginning of the Courses: 1st October, 2026

Evaluation of academic and scientific qualifications: 30 points
Access to Oral Exam: minimum mark of 21/30 on academic and scientific qualifications
Evaluation of Oral Exam: 70 points

To be considered eligible, candidates must pass both phases (academic qualifications, and interview) with a minimum mark of 7/10 or equivalent.

Deadline for online submission of applications: 6th March, 2026

Oral Exam: **9th, 10th, 13th, 14th April 2026**

Results of all evaluations and the final ranking will be notified by email.

Ph.D course in Theory and Numerical Simulation on the Condensed Matter

Head of the Ph.D course: **Prof. Alessandro SILVA**
Web site: **[Theory and Numerical Simulation on the Condensed Matter](#)**
Research lines:

- Non-equilibrium dynamics of correlated systems
- Theoretical Quantum Technologies
- Methods for many-body quantum systems: Tensor Networks, DMFT
- Mott Physics and topology from solids to heterostructures
- High-temperature superconductivity and strong correlations
- Optical and excited-state properties of complex molecular systems
- Theory and simulation of thermal transport in liquid and amorphous systems
- Relativistic effects in materials
- Validation of pseudopotentials for high throughput applications
- Beyond DFT: RPA and WdWDF
- Electronic simulation of realistic systems by advanced many-body techniques
- Software engineering and the Quantum ESPRESSO project
- Quantum Monte Carlo methods for lattice models and electronic systems
- Quantum algorithms for physics applications, sampling, optimization

Fellowships available: **7 funded by SISSA**
    1 funded by FSE +
Admission: **Academic and scientific qualifications + oral exam (remotely)**
Beginning of the Courses: **1st October, 2026**

Evaluation of academic and scientific qualifications: 30 points
Access to Oral Exam: minimum mark of 21/30 on academic and scientific qualifications
Evaluation of Oral Exam: 70 points

To be considered eligible, candidates must pass both phases (academic qualifications and interview) with a minimum mark of 7/10 or equivalent

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Deadline for online submission of applications: 27th February, 2026

Oral Exam: **16th to 20th March, 2026**

All results and the final ranking will be notified by email.

Ph.D course in Theoretical and Scientific Data Science

Head of the Ph.D course: **Prof. Guido SANGUINETTI**
Web site: **Theoretical and Scientific Data Science**
Research lines:

- Bayesian methods and machine learning
- Theory and applications of neural networks
- Information theory
- Simulation-Based Inference
- Unsupervised segmentation of high-dimensional data and dimensionality reduction
- Statistical modelling of biomedical data and bioinformatics
- Cosmological and astrophysical data analysis and model selection
- Applications of data science to statistical mechanics, neurosciences, and condensed matter physics
- Machine learning applied to Oncology
- Machine learning for materials science

Fellowships available: 5 funded by FSE +

Admission: **Academic and scientific qualifications + written exam + oral exam**
Beginning of the Courses: 1 October, 2026

Evaluation of academic and scientific qualifications: 10 points
Access to Written Exam: minimum mark of 7/10 on academic and scientific qualifications
Evaluation of Written Exam: 40 points
Access to Oral Exam: minimum mark of 28/40 in the written exam evaluation
Evaluation of Oral Exam: 50 points

To be considered eligible, candidates must pass all the phases (academic qualifications, written test, and interview) with a minimum mark of 7/10 or equivalent

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Deadline for online submission of applications: 27th February, 2026

Written Exam: **19th March, 2026**
Oral Exam: **23th March, 2026**

Admission to the written exam and results of all evaluations will be notified by email.

Ph.D course in Cognitive Neuroscience

Head of the Ph.D course: **Prof. Mathew E. DIAMOND**
Web site: **Cognitive Neuroscience**
Research lines:

- Main topics in cognitive neuroscience
- Neuronal bases of Visual perception
- Neuronal bases of Time perception
- SISSA Explorations into the Neuronal foundations of Sensory Experience (SENSEx)
- Neuronal bases of multimodal communication
- Neural computation approaches to memory and brain organization
- Computational bases of perception and cognition

Fellowships available: **6 funded by SISSA**

Admission: **Academic and scientific qualifications + written exam + oral exam (remote)**
Beginning of the Courses: 1 October, 2026

Evaluation of academic and scientific qualifications + essay: 50 points
Access to Oral Exam: minimum mark of 35/50
Evaluation of Oral Exam: 50 points
Total Evaluation: 100 points

To be considered eligible, candidates must pass both phases (academic qualifications and interview) with a minimum mark of 35/50.

First Session

Deadline for online submission of applications: **20 March, 2026**
Oral Exam: **13th – 14th April, 2026**

Second Session (only if there should still be places available after the first one)

Deadline for online submission of applications: **20th August, 2026**
Oral Exam: **7th – 8th September, 2026**

Results of all evaluations and the final ranking will be notified by email.

Ph.D course in Functional and Structural Genomics

Head of the Ph.D course: **Prof. Giuseppe LEGNAME**
Web site: **Functional and Structural Genomics**
Research lines:
- Functional genomics
- Cerebral cortex development
- Prion biology
- Computational genomics
- Neurodevelopmental and neurodegenerative disorders
- Bioinformatics
- Neurogenomics
- Structural biology
- Molecular and cellular biology
- Evolutionary and comparative genomics
- Drug discovery
- Invertebrates neurogenetics
- Epitranscriptomic modulation of CNS development and function
- Aging

Fellowships available: **5 funded by SISSA**

Admission: **Academic and scientific qualifications + oral exam (remotely/presence)**
Beginning of the Courses: **4th November, 2026**

Evaluation of academic and scientific qualifications: 30 points
Access to Oral Exam: minimum mark of 21/30 on academic and scientific qualifications (max. 15 candidates)
Evaluation of Oral Exam: 70 points
Total Evaluation: 100 points

To be considered eligible, candidates must pass both phases (academic qualifications, and interview) with a minimum mark of 7/10 or equivalent.

Deadline for online submission of applications: **2nd April, 2026**

Oral Exam: **22nd – 23rd April, 2026**

Second Session (only if there should still be places available after the first one)

Deadline for online submission of applications: **21th August, 2026**
Oral Exam: **14th - 15th September, 2026**

Admission to the oral exam and results of all evaluations will be notified by email.

Ph.D course in Neurobiology

Head of the Ph.D course: **Prof. Laura BALLERINI**
Web site: **Neurobiology**
Research lines:
- Peripheral Nervous System
- Pain, touch and itch
- Synaptic Neurophysiology and Neuronal Networks
- Optogenetic and electrophysiological approaches to Neuronal Networks
- Neurotoxicity and calcium signalling
- Spatiotemporal dynamics of calcium signalling in neuroglia
- Neurophysiology of Motor control
- Spinal networks patho-physiology and locomotion
- Respiratory physiology
- Neurophysiology and neuropharmacology of spinal motoneurons
- Visual systems and feature detection
- Simultaneous acquisition of neural activity and behavior
- Innate behaviors and their underlying circuits
- Functional imaging approaches to neural circuits
- Neuroecology
- Auditory system and multisensory integration
- Computational neuroscience and modelling
- Brain states and neuromodulation
- Sensory information processing abnormalities in psychiatric disorders

Fellowships available: **2 funded by SISSA**
                                3 funded by FSE +

Admission: **Academic and scientific qualifications + oral exam (remotely/presence)**
Beginning of the Courses: **4 November, 2025**

Evaluation of academic and scientific qualifications: 30 points
Access to interview Exam: minimum mark of 21/30 on academic and scientific qualifications
Evaluation of Oral Exam: 70 points

To be considered eligible, candidates must pass both phases (academic qualifications and interview) with a minimum mark of 7/10 or equivalent

Deadline for online submission of applications: **25th March, 2026**

Oral Exam: **22nd – 23rd April, 2026**

Admission to the oral exam and results of all evaluations will be notified by email.