

Welcome Day - Theoretical physics

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Curriculum Theoretical Physics

Study paths ([click here](#))

Five Compulsory Core Courses – 30 ECTS = 6 ECTS × 5

- ▶ General Relativity
- ▶ Quantum Field Theory I
- ▶ Theoretical Physics I
- ▶ Theoretical Physics II
- ▶ Quantum Field Theory II

One Core Course – 10 ECTS

- ▶ Laboratory of Theoretical Computational Physics
- ▶ Laboratory of Biophotonics I
- ▶ Laboratory of Nuclear and Subnuclear Measurements I
- ▶ Laboratory of Plasma Physics I
- ▶ Laboratory of Quantum Technologies, Materials and Sensors I

Three Related Courses – 18 ECTS = 6 ECTS $\times$ 3

- ▶ Statistical Mechanics
- ▶ Theory and Phenomenology of Fundamental Interactions
- ▶ Effective Field Theories and Non-Perturbative Methods for Particle Physics
- ▶ Quantum Gravity
- ▶ Mathematical Methods for Physics
- ▶ Quantum Information and Quantum Computing
- ▶ Geometric Methods for Theoretical Physics
- ▶ Computational Materials Science
- ▶ Experimental Methods in High Energy Physics
- ▶ Introduction to Cosmology
- ▶ Machine Learning Applications
- ▶ Particle Physics II
- ▶ Particle Physics III
- ▶ Quantum Materials
- ▶ Statistics and Data Analysis
- ▶ Theory of Condensed Matter

Master thesis

Theoretical physics group offers theses in three broad research areas

For each area, the relevant suggested courses are listed below

Group webpage ([click here](#))

→ names of professors/researchers for each research area

→ further details on the research programs

Statistical Mechanics is recommended for all areas.

Non-perturbative quantum field theories: aka lattice QFTs

Laboratory of Theoretical Computational Physics

Effective Field Theories and Non-Perturbative Methods ...

Perturbative quantum field theories: aka collider pheno

Theory and Phenomenology of Fundamental Interactions

String theory and Planck-scale physics: aka Strings

Quantum Gravity

Geometric Methods for Theoretical Physics

Questions? Domande?

- ▶ for any question do not hesitate to write to `mattia.bruno at unimib.it`