

# Physics

## Master of Science

The Physics master's programme offers you a research intensive tailor-made study path on current topics in experimental and theoretical physics at an institute of international renown.

The Physics master's programme is intimately related to the scientific research carried out at the Leiden Institute of Physics. You will spend approximately 50% of your time on research, as a member of one of our international research groups. Each of our specialisations provides a combination of research independence and content proficiency that fully prepares you for a successful career.

### Why study Physics at Leiden University?

- The programme offers a wide choice of individual study paths that take into account individual needs and interests. You can either build a purely academic profile, or you may combine physics research with education, business studies or science communication.
- You will carry out at least one research project with a research group at the Leiden Institute of Physics. Research at this department is at the forefront of fundamental modern Physics at an internationally competitive level. For example, four of our current physicists have won a Spinoza Prize--the highest Dutch scientific honour.
- At our institute, you experience an open, inclusive, and collegial atmosphere. You are always welcome at our frequently organized colloquia and symposia. For instance our Ehrenfest colloquium has been running since 1912 and attracted speakers such as Einstein, Bohr, Schrödinger and many recent Nobel Prize winners.



**Universiteit  
Leiden**  
The Netherlands

### Facts and figures

Language	English
Duration	2 years
Degree	Master of Science
Start	September
Admission	1 April non-EU / 15 June EU
Tuition fee	€ 2,078 EU/18,300 non-EU

### More information

For more information about the programme, entry requirements, admissions procedures, tuition fees and scholarships, please visit our website:

[masters.universiteitleiden.nl/physics](https://masters.universiteitleiden.nl/physics)

Discover the world at Leiden University

# MSc Physics: specialisations, programme and courses

## Specialisations

The MSc Physics programme offers eight specialisations:

- Research in Physics, Theoretical
- Research in Physics, Biological and Soft Matter Physics
- Research in Physics, Quantum Matter and Optics
- Research in Physics, Cosmology
- Research in Physics, pre-PhD ('Casimir')
- Physics and Business Studies (BS)
- Physics Science Communication and Society (SCS)
- Physics and Education (in Dutch)

## Programme research specialisations

Depending on your specialisation, the programme of the research master's consists of:

- Compulsory courses (15-39 EC)
- Electives (27-45 EC)
- One or two research projects (48-60 EC)

## Programme BS, SCS and Education

The programme of these society-oriented specialisations consists of:

- Compulsory courses (15 EC)
- Electives (9-29 EC)
- Research Project in Physics (36 EC)
- Specialisation specific programme (40-60 EC in 2nd year)

## Courses

All Physics master's specialisations have their own curriculum with a wide variety of courses to tailor your own study path. Elective courses can also be selected from other specialisations.

### Compulsory courses all specialisations (15 EC)

- Academic and Professional Skills
- Quantum Theory
- Statistical Physics A<sup>1</sup>

### Additional compulsory courses

#### Theoretical (15 EC)

- Quantum Information
- Effective Field Theory
- Statistical Physics B
- Topics in Theoretical Physics

### Additional compulsory courses

#### Cosmology (24 EC)

- Large Scale Structure and Galaxy Formation
- Origin and Evolution of the Universe
- Origin and Structure of the Standard Model
- Particle Physics and Early Universe
- Theory of General Relativity

### Physics courses / Electives

- Advanced Biophysics
- Advanced Optics
- Advanced Topics in Theoretical Physics I + II
- Black Holes and Gravitational Waves
- Complex networks
- Computational Astrophysics
- Computational Physics
- Condensed Matter Physics
- Databases and Data Mining in Astronomy
- Evolution and Engineering of Living Systems<sup>2</sup>
- Frontiers of Measurements Techniques
- Imaging Systems<sup>2</sup>
- Magnetic Resonance Physics
- Mechanical Metamaterials
- Molecular Electronics
- Quantum Field Theory
- Quantum Optics
- Single Molecule Optics
- Soft and Biomatter Theory
- Theoretical Biophysics
- The Origins of Life<sup>2</sup>
- Theory of Condensed Matter

<sup>1</sup> Not compulsory for Cosmology

<sup>2</sup> Courses at Delft University of Technology