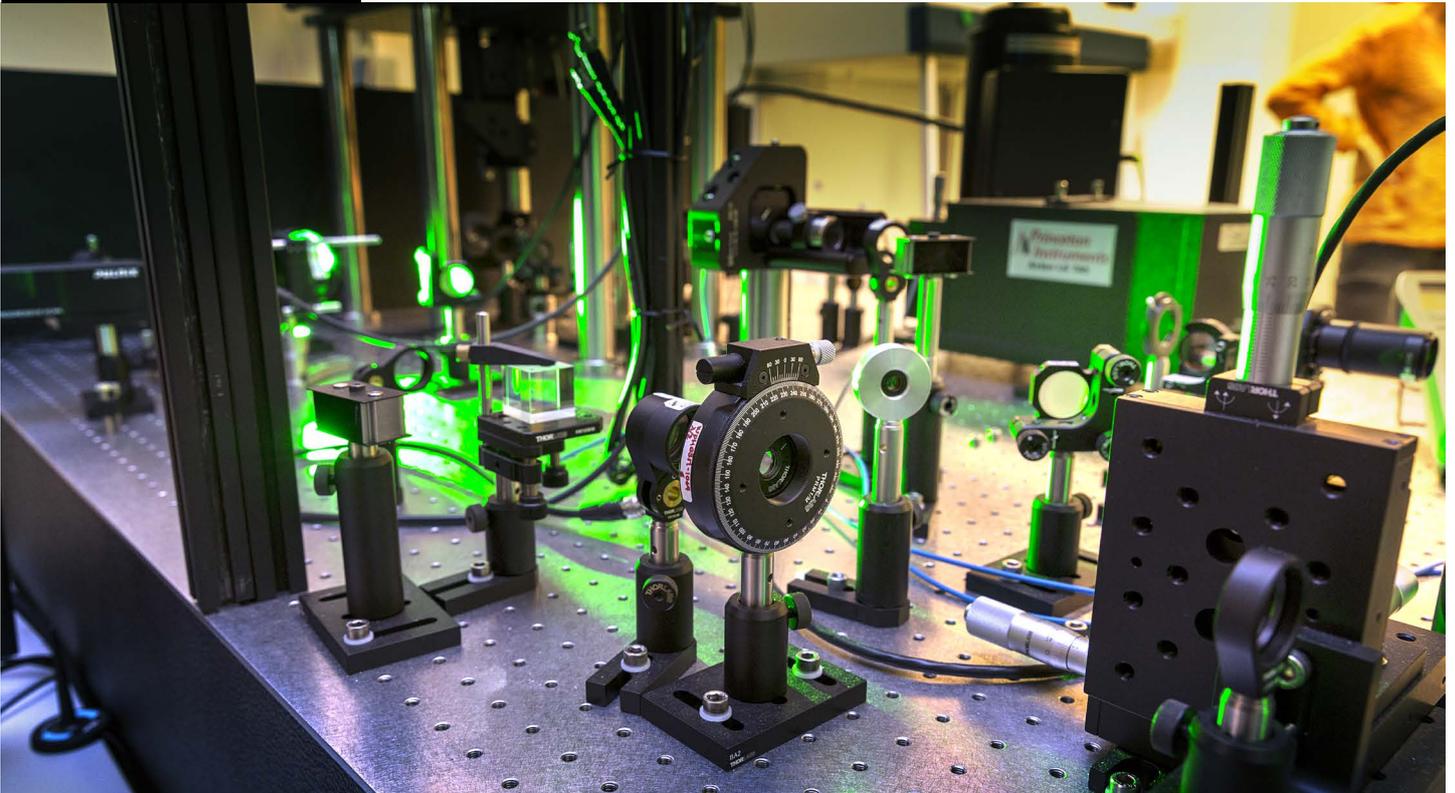


# Master Applied Physics

## MSc Programme



**Applied Physics covers phenomena ranging from the infinitesimally small - subatomic particles - to the unimaginably large - the universe. Somewhere between these two lies the reality of everyday life. Applied physics is about translating a deep understanding of the theoretical underpinnings of physics into concrete results to benefit society. The Applied Physics Master's programme is designed to educate students to be able to stay at the forefront of fundamental understanding, and to develop practical applications.**

<b>Degree</b>	Master of Science
<b>Starts</b>	September 2021*
<b>Type</b>	full-time
<b>Credits</b>	120 ECTS, 24 months
<b>Language</b>	English
<b>Application deadline</b>	Int. diploma: 1 April 2021 Dutch diploma: check admission.tudelft.nl
<b>Tuition fee</b>	€ 18.750 (non EU) € 2.168 (EU)
<b>Scholarships</b>	<a href="https://www.tudelft.nl/scholarships">scholarships.tudelft.nl</a>

\* (For applicants with a Dutch BSc degree a start in February is also possible).

### Programme

The curriculum contains five tracks related to the main research topics of the Faculty of Applied Sciences, ranging from nanoscale phenomena to processes in industrial plants, reactors or climate issues.

The programme contains general courses covering topics that every well-educated physicist should know about, departmental courses supplementing basic knowledge with topics that every specialist should be familiar with, and additional electives that reflect topics in our professors' fields of specialisation. In addition, you will work on a Master's thesis project in a research group of your choice in order to develop hands-on experience with the processes of discovery,

explanation and application of knowledge. Students have the opportunity to draw on the resources of a number of outstanding facilities. The research is internationally embedded, as is manifested from the many collaborations we have with institutions and companies all over the world. In this programme you will gain knowledge and hands-on experience in experimental techniques, theoretical analysis, simulation and modelling.

You will work on research projects, together with fellow students and professionals from the university, industry and research institutes, learning to translate the abstract into the practical, and to effectively communicate your insights as an applied physicist in a global context.

# Master Applied Physics

FIRST YEAR	SECOND YEAR
MATHEMATICAL METHODS FOR PHYSICS (9 EC)	MASTER THESIS PROJECT (42 EC)
ETHICS AND ENGINEERING (3 EC)	
GENERAL ADVANCED PHYSICS (G-LIST) ELECTIVES (12 EC)	
TRACK RELATED (T-LIST) ELECTIVES (12 EC)	
G-LIST, T-LIST OR GENERAL ELECTIVES (A18 EC)	INDUSTRIAL INTERNSHIP (18 EC)
PREPERATION FOR THE MASTER THESIS (6 EC)	

**Remark:** this scheme applies to students doing the orientation 'Research and Development' with an industrial internship.

The programme has a core - orientation structure, is very flexible and offers many possibilities to tailor it to your own interests. The actual programme you follow is determined by selecting electives from one of the tracks as well as additional orientations. Roughly speaking, the first year comprises course work, while the second year is primarily devoted to thesis work and often an industrial internship or a group designproject. The programme and all modules are described in detail on:

<http://ap.msc.studyguide.tudelft.nl>.

## Programme Tracks

Within the Master's programme, students choose one of the following five tracks:

- **Physics for Energy** focuses on physics to develop new energy materials and devices that efficiently generate and harvest, convert or store energy.
- **Physics for Fluids Engineering** considers flow and transport phenomena over a wide range of time and length scales and their interdependence. This includes the interplay between chemical reactions, turbulent eddies, bubbles, flow and convective transport on the scale of the vessel or at a long length scales such as climate modelling.
- **Physics for Health and Life** uses physical phenomena such as sound, light or particles for producing images with resolutions down to the subcellular scale, nanotechnology to explore and engineer biology, and studies radiation for medical therapies.

- **Physics for Instrumentation** applies physics knowledge to develop high tech scientific instruments, detectors and telescopes.
- **Physics for Quantum Devices and Quantum Computing** studies quantum phenomena and exploits novel principles in nanostructured devices. The unusual behaviour of the quantum world is revealed in delicate experiments, geared towards developing building blocks for devices with unprecedented functionality and scale.

## Graduation projects

Some examples of recent graduation projects are:

- Development of a photoswitchable fluorescent probe for super-resolution microscopy.
- Majorana fermions in InSb-nanowires with superconducting and normal contacts.
- Droplet dynamics in swirling flow.
- Terahertz radiation from optical antennas embedded in copper(I)oxide.
- Uncertainty quantification of radionuclide release models using non-intrusive polynomial chaos.

## Career prospects

Job prospects for graduates of the Applied Physics programme are very good. Graduates of the programme find work in both the private and public sectors, in such fields as research and development, consultancy, management and education. Some also choose to pursue doctoral studies at TU Delft or other leading universities.



42<sup>th</sup>

Physics & Astronomy in the world (10<sup>th</sup> in continental Europe)



57<sup>th</sup>

University ranking in the world (15<sup>th</sup> Engineering and Technology)



22<sup>nd</sup>

Industry collaboration in the world.

## Career perspective



90%

Job within 3 months



37<sup>th</sup>

Graduate Employability Ranking in the world (1<sup>st</sup> in The Netherlands)