

## Organisation

### Director of Studies

**Jos Thijssen**

The director of studies has final responsibility for the Applied Physics master of science programme.

Dr. J.M. Thijssen

Applied Physics building, room F154

T: +31 (0)15 27 88457 ✉ [J.M.Thijssen@tudelft.nl](mailto:J.M.Thijssen@tudelft.nl)

### Programme coordinator

**Arno Haket**

The programme coordinator supervises the daily routine of the programme. Consult him for all programme related questions and problems.

Ir. A.J.W. Haket

Applied Physics building, room A206

T: +31 (0)15 27 85582 ✉ [A.J.W.Haket@tudelft.nl](mailto:A.J.W.Haket@tudelft.nl)

### Academic counsellor

**Alyssa van 't Hout**

The academic counsellor will advise you on all kinds of study-related matters and personal problems, such as planning, time management, illness and psychological problems. All private matters discussed are confidential.

Mw. Alyssa van 't Hout, MSc

Applied Physics building, room A204

T: +31(0)15 27 86621

✉ [academiccounsellor-ap@tudelft.nl](mailto:academiccounsellor-ap@tudelft.nl)

### Education & Student Affairs

Jaffalaan 9a (entrance Mekelweg) 2628 BX Delft

T: +31(0)15 27 88012

[www.tudelft.nl/en/student/administration](http://www.tudelft.nl/en/student/administration)

Administration of results, accountgroup Applied Sciences

T: +31(0)15 27 89826 ✉ [SPA-TNW@tudelft.nl](mailto:SPA-TNW@tudelft.nl)

### Board of Examiners

The Board of Examiners decides on whether you deserve a Master diploma for a set of successfully completed courses and projects. If you have followed the regular programme this decision is straightforward, but deviations are possible. To apply for acceptance of changes to the regular programme, a request should be submitted to the Board of Examiners. It is strongly advised to consult the programme coordinator in advance. Requests should be sent to the secretary of the board, Mrs. Helen Emmerink.

Applied Physics building, Room A216

T: +31 (0)15 27 89076

✉ [BoardOfExaminers-AP-AS@tudelft.nl](mailto:BoardOfExaminers-AP-AS@tudelft.nl)

### Board of Studies

The Board of Studies is an advisory body, consisting of students and teachers, which meets at least every quarter. The Board of Studies has three main responsibilities:

- To advise on the Teaching and Examination Regulations and the Implementation Regulations
- To annually evaluate the programme
- To advise on all matters concerning education

## Useful web addresses

### Brightspace

[brightspace.tudelft.nl](http://brightspace.tudelft.nl)

Brightspace is TU Delft's digital learning environment.

Students, instructors and staff use Brightspace for almost all communication for their courses. There is a Brightspace page for every course, but also for the master Applied Physics programme.

### Digital study guide

[ap.msc.studyguide.tudelft.nl](http://ap.msc.studyguide.tudelft.nl)

In the digital study guide you can find programme details, courses and course details related to your study programme.

### Timetables

[timetables.tudelft.nl](http://timetables.tudelft.nl)

Here you can find the timetables for courses and for the programme. For individual timetables see: [MyTimetable.tudelft.nl](http://MyTimetable.tudelft.nl)

### Register for exams

[examdesk.tudelft.nl](http://examdesk.tudelft.nl)

Written exams require registration! You have to register using Osiris which can be found via Brightspace. Students are required to register for written exams in the examination registration system no later than 14 days before the exam.

### Regulations

[www.tnw.tudelft.nl/regulations](http://www.tnw.tudelft.nl/regulations)

The regulations handle all possible issues concerning education and examinations. All rights and obligations of both students and teachers are explained in detail.

The Teaching & Examination Regulations and the Implementation Regulations are established by the Board of Studies. The Board of Examiners establishes the Rules and Guidelines regarding examinations. See the web page for an overview and archive of all regulations. In the Rules and Guidelines you will find the pass/fail regulations, the meaning of the marks, and the conditions for the predicate 'with distinction'.

### Faculty student portal

[tnw.students.tudelft.nl](http://tnw.students.tudelft.nl)

Within the student portal of the Faculty of Applied Sciences you can find lots of relevant information relating to student matters at TU Delft, such as timetables, internship, master thesis project, contact information and study facilities.

On this webpage you also find links to the general TU Delft student information.

### E-service

[e-service.tudelft.nl](http://e-service.tudelft.nl)

Allows you to forward TU Delft e-mail to your personal e-mail address, and change your password.

### Student association

[www.vvtp.tudelft.nl](http://www.vvtp.tudelft.nl)

"Vereniging voor Technische Physica" is the study association of Applied Physics.

### TU Delft Library

[www.library.tudelft.nl](http://www.library.tudelft.nl)

TU Delft has an extended library where you can borrow books. The website gives access to many search portals, electronic journals etc.

## Core programme and orientations

The Applied Physics programme is a two-year master programme and comprises 120 EC.

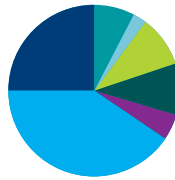
The programme has a core-orientation structure.

Within this structure, there is a choice of research tracks:

- Physics for Energy
- Physics for Fluids Engineering
- Physics for Health and Life
- Physics for Instrumentation
- Physics for Quantum Devices and Quantum Computing.

The core programme comprises 90 EC and has the same structure for all tracks and students:

- 12 EC of compulsory modules: Mathematical Methods for Physics (9EC) and Ethics and Engineering (3EC).
- 12 EC of G-list modules: choose two (out of four) general advanced physics courses. These modules aim at depth as well as breadth in general physics knowledge.
- 12 EC of T-list electives: technical and science subjects related to the tracks. T-list modules are more specialised than G-list modules. They are representative for the research areas of the physics departments.
- 6 EC chosen from subjects on the G-list, T-list or the list of General, not track-related, electives.
- 48 EC Master's Thesis Project: always done in a Research section of one of the physics departments or affiliated groups. The prior approval of the Board of Examiners should be obtained if at least three months of the thesis work is performed on a location outside the mentioned departments or affiliated groups.



Mathematical Methods for Physics	9
Ethics and Engineering	3
General Advanced Physics Modules	12
Track related Modules	12
G-list, T-list or General Elective	6
Thesis Project	48
Orientation	30

Combining the core programme with a **30 EC orientation completes the master programme**. Choose from:

- Research and Development (R&D) – an Industrial Internship (AP3911), or a group design project (AP3841) and/or 12 EC of additional electives, chosen from subjects on the G-list, T-list, the list of General electives, or (with a maximum of 6 EC) societal modules from the S-list.
- Casimir (Cas) – a special pre-PhD programme in collaboration with Leiden University, linked to the Physics for Quantum Devices and Quantum Computing track or research in bio-nanoscience department.
- Education (Ed1/Ed2) – get a Dutch secondary school qualification.
- Management of Technology (MoT) – consists of (either the first or) the second semester of the MSc MoT programme
- Study-abroad (SA) – a semester, 30 EC of modules, at a foreign university; optionally including a research project.

## Master programme – Orientation Research and Development

		1 <sup>st</sup> period								2 <sup>nd</sup> period								3 <sup>rd</sup> period								4 <sup>th</sup> period								Summer																			
Monday	month	30	6	13	20	27	7	11	18	25	1	8	15	22	29	6	13	20	27	3	10	17	24	31	7	14	21	28	7	14	21	28	4	11	18	25	2	9	16	23	30	6	13	20	27	4	11	18	25	1	8	15	22
week		1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	
EC		AP3001 Mathematical Methods for Physics								AP3001 Mathematical Methods for Physics 9								Elective								Elective 6																											
		Elective								Elective 6								Elective								Elective 6																											
		Elective								Elective 6								Elective								Elective 6																											
		Elective								Elective 6								Elective								Elective 6																											
		WM0320TU Ethics and Engineering 3																AP3902 Preparation of the Master Thesis								AP3902 Preparation of the Master Thesis 6																											
		Exam preparation / Exams								Christmas Holidays Exam preparation Exams								Exam preparation Exams								Exam preparation Exams								Exam preparation Exams Resit: Exams																			
																		Spring break																Summer Holidays																			

		1 <sup>st</sup> period								2 <sup>nd</sup> period								3 <sup>rd</sup> period								4 <sup>th</sup> period								Summer																			
Monday	month	30	6	13	20	27	7	11	18	25	1	8	15	22	29	6	13	20	27	3	10	17	24	31	7	14	21	28	7	14	21	28	4	11	18	25	2	9	16	23	30	6	13	20	27	4	11	18	25	1	8	15	22
week		1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	
		AP3902 Master Thesis Project								Xmas								AP3902 Master Thesis Project 42								AP3911 Internship in Industry 18								Summer Holidays																			

### Remarks:

- Ethics and Engineering can also be done in the third period.
- The second year is flexible. Internship in Industry can also be done before the Master Thesis Project.
- See Brightspace organization 'master Applied Physics' for the schemes of other variants of the programme

<b>Obligatory core modules</b>			
<b>Module Code</b>	<b>Module title</b>	<b>EC</b>	<b>Period</b>
AP3001	Mathematical Methods for Physics	9	1+2
AP3902	Master Thesis	6+42	-
WM0320TU	Ethics and Engineering	3	1 or 3
<b>G-list modules</b>			
<b>Module Code</b>	<b>Module title</b>	<b>EC</b>	<b>Period</b>
AP3021	Advanced Statistical Mechanics	6	1+2
AP3032	Continuum Physics	6	1+2
AP3051	Advanced Quantum Mechanics	6	3+4
AP3071	Advanced Electrodynamics	6	1+2
<b>Recommended T-list modules Physics for Energy track</b>			
<b>Module Code</b>	<b>Module title</b>	<b>EC</b>	<b>Period</b>
AP3082	Computational Physics	6	3+4
AP3141	Environmental Physics	6	3+4
AP3211	Advanced Solid State Physics	6	3+4
AP3271	Molecular Electronics	6	3+4
AP3311	Neutrons, X-Rays and Positrons for Studying Structures & Dyn.	6	3+4
AP3333	Physics of Energy Materials	6	1+2
AP3341	Nuclear Reactor Physics	6	3+4
AP3352	Introduction to Nuclear Science and Engineering	6	1+2
CH3222	Energy Storage in Batteries	4	3
CH3632	Chemistry and Physics of Solar Cells	6	3
CH3672	Computational Materials Science	3	3
CH3783	Materials Chemistry for the Nuclear Fuel Cycle	3	3
ME45203	Electrochemical Energy Storage 2: Analytical Modelling	4	4
<b>Recommended T-list modules Physics for Fluids Engineering track</b>			
<b>Module Code</b>	<b>Module title</b>	<b>EC</b>	<b>Period</b>
AP3082	Computational Physics	6	3+4
AP3141	Environmental Physics	6	3+4
AP3171	Advanced Physical Transport Phenomena	6	3
AP3181	Applied Multiphase Flow	6	3+4
AP3551	Computational Multiphase Flow	6	3+4
AE4180	Flow Measurement Techniques	3	3+4
AE4W02TU	Introduction to Wind Turbines: Physics and Technology	4	2
CH3053	Applied Physical Transport Phenomena	6	2
CH3152	Molecular Transport Phenomena	5	1
CH3421	Computational Transport Phenomena	6	3
CIE4601	Physics of the Earth and Atmosphere	5	1
CIE4708	Water in the Atmosphere	5	4
ME45001	Advanced Heat Transfer	4	1
ME45030	Turbulence	5	3+4
ME45041	Advanced Fluid Dynamics	6	1+2
ME45160	Advanced Applied Thermodynamics	5	3
ME45190	Chaos in Dynamical Systems	3	2
WI4011	Computational Fluid Dynamics	6	3+4
<b>Recommended T-list modules Physics for Health and Life track</b>			
<b>Module Code</b>	<b>Module title</b>	<b>EC</b>	<b>Period</b>
AP3061	Acoustic, Elastic and Electromagnetic Waves	6	1+2
AP3082	Computational Physics	6	3+4
AP3122	Advanced Optical Imaging	6	1+2
AP3132	Advanced Digital Image Processing	6	3+4
AP3162	Physics of Biological Systems: Mathematical Modelling in S.B.	6	3+4
AP3232	Medical Imaging Signals and Systems	6	1+2
AP3352	Introduction to Nuclear Science and Engineering	6	1+2
AP3371	Radiological Health Physics	6	Different
AP3511/NB4070	Biophysics / Soft Matter Physics	6	1+2
AP3531	Acoustical Imaging	6	3+4
AP3582	Medical Physics of Photon and Proton Therapy	6	3+4
CH3763	Nuclear Medicine	3	3
CH3771	Nuclear Chemistry	6	3
NB4020	High Resolution Imaging	4	1
NB4150	The Origin and Synthesis of Life	6	3+4
NB4160	Engineering of Living Systems	3	4

Recommended T-list modules Physics for Instrumentation track			
Module Code	Module title	EC	Period
AP3061	Acoustic, Elastic and Electromagnetic Waves	6	1+2
AP3082	Computational Physics	6	3+4
AP3091	Elementary Particles	6	3+4
AP3112	Quantum Optics and Lasers	6	3+4
AP3122	Advanced Optical maging	6	1+2
AP3132	Advanced Digital Image Processing	6	3+4
AP3152	Optics for Lithography	6	3+4
AP3222	Nanotechnology	6	3+4
AP3252	Electron Microscopy Characterization of the Nanoscale	3	4
AP3311	Neutrons, X-Rays and Positrons for Studying Structures & Dyn.	6	3+4
AP3352	Introduction to Nuclear Science and Engineering	6	1+2
AP3382	Advanced Photonics	6	3+4
AP3391	Geometrical Optics	6	4
AP3401	Introduction to Charged Particle Optics	6	3+4
AP3531	Acoustical Imaging	6	3+4
AP3652	Electronics for Physicists	3	2 <sup>nd</sup> Year
AP3701	Submm and Terahertz Physics and Applications	3	3
AE4880	Space Instrumentation	4	3
EE4635	Terahertz Superconducting Astronomical Instrumentation	4	4
ME46310	Opto-Mechatronics	4	1+2
SC42030	Control for High Resolution Imaging	3	4
SC42065	Adaptive Optics Design Project	3	4

Recommended T-list modules Physics for Quantum Devices and Quantum Computing track			
Module Code	Module title	EC	Period
AP3082	Computational Physics	6	3+4
AP3101	The Interpretation of Quantum Mechanics	3	4
AP3112	Quantum Optics and Lasers	6	3+4
AP3211	Advanced Solid State Physics	6	3+4
AP3222	Nanotechnology	6	3+4
AP3252	Electron Microscopy Characterization of the Nanoscale	3	4
AP3261	Mesoscopic Physics	6	1+2
AP3271	Molecular Electronics	6	3+4
AP3281	Quantum Transport	6	3+4
AP3303	Applications of Quantum Mechanics	3	2
AP3421	Fundamentals of Quantum Information	4	1
AP3421-PR	Quantum Information Project	2	2
AP3432	Quantum Hardware 1 - Theoretical Concepts	4	3
AP3442	Quantum Hardware 2 - Experimental State of the Art	4	4
AP3472	Modelling of Superconducting Devices	4	2 <sup>nd</sup> Year
AP3652	Electronics for Physicists	3	2 <sup>nd</sup> Year
AP3663	Special Topics in Quantum Technology	4	4
AP3681	Fairy Tales of Theoretical Physics	6	3+4
CH3672	Computational Materials Science	3	3
CS4090	Quantum Communication and Cryptography	5	2
IE4575	Quantum Computing Architecture and Electronics	5	3

General Electives (examples, see studyguide)	
4403TGR64	Theory of General Relativity (Leiden)
CS4195	Modeling and Data Analysis in Complex Netw.
CS4220	Machine Learning
EE4C02	System Engineering
IFEEMCS4205	Statistical Learning for Engineers
IN4049TU	Introduction to High Performance Computing
LM3691	iGEM
NB4130TU	Biologic
WI4201	Scientific Computing
WI4260TU	Scientific Programming for Engineers

Societal Modules (examples, see studyguide)	
AS3111	Athens
AS3121	Scientific Writing and Argumentation
TPM301A	Spoken English for Group Work
TPM412A	Idea to Startup Health & Life
TPM413A	Idea to Startup Energy & Sust
TPM414A	Idea to Startup Deep Tech
WM0939TU	Techn. in Sustainable Development
WM0203TU-Eng	Oral Presentations
WM1115TU	Dutch Elementary
WM1139TU	Thesis Writing in English

A more detailed description of the core programme, orientations and courses can be found in the studyguide [ap.msc.studyguide.tudelft.nl](http://ap.msc.studyguide.tudelft.nl)