

Organisation

Director of Studies

Aurele Adam

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

Dr. A.J.L. Adam

Physics building, room E006

T: +31 (0)15 27 82455

✉ A.J.L.Adam@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

Physics building, room A206

T: +31 (0)15 27 85582

✉ A.J.W.Haket@tudelft.nl

Academic counsellor

Alyssa van 't Hout & Gertjan Broekman

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

Ir. G.J. Broekman

Physics building, room A204

room A210

T: +31(0)15 27 86621

T: +31(0)15 27 82128

✉ 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

Administration of results, accountgroup Applied Sciences

T: +31(0)15 27 89826

✉ 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 projEC. 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, Kirsten van den Berg

Physics building, room A255

T: +31 (0)15 27 88180

✉ 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

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

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

Timetables

timetables.tudelft.nl

Here you can find the timetables for courses and for the programme. For individual timetables: **MyTimetable.tudelft.nl**

Register for exams

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

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

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

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

Student association

www.vvtp.tudelft.nl

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

TU Delft Library

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.

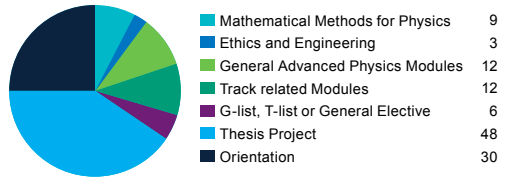
The programme has a core-orientation structure.

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 subjEC 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 subjEC 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.



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 subjEC 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.

For additional information see the study guide:

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

Master programme – Orientation Research and Development

1st year

| | 1 st period | | | | | | | | 2 nd period | | | | | | | | 3 rd period | | | | | | | | 4 th period | | | | | | | | Summer | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--------|--|----|----|----|-----|----|----|----|------------------------|----|----|----|-----|---|----|----|---|---|---|----|-----|----|---|----|---------------------------|----|---|----|-------|----|---|----|---------------------------|----|---|---|------|----|----|----|---------|----|----|---|-----|----|----|----|---|----|----|----|---|---|---|---|---|---|---|----|
| Monday | 5 | 12 | 19 | 26 | 3 | 10 | 17 | 24 | 31 | 7 | 14 | 21 | 28 | 5 | 12 | 19 | 26 | 2 | 9 | 16 | 23 | 30 | 6 | 13 | 20 | 27 | 6 | 13 | 20 | 27 | 3 | 10 | 17 | 24 | 1 | 8 | 15 | 22 | 29 | 5 | 12 | 19 | 26 | 3 | 10 | 17 | 24 | 31 | 7 | 14 | 21 | 28 | | | | | | | | |
| month | Sept | | | | Oct | | | | Nov | | | | Dec | | | | Jan | | | | Feb | | | | March | | | | April | | | | May | | | | June | | | | July | | | | Aug | | | | | | | | | | | | | | | |
| week | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| | AP3001 Mathematical Methods for Physics | | | | | | | | 9 EC | | | | | | | | Elective | | | | | | | | 6 EC | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Elective | | | | | | | | 6 EC | | | | | | | | Elective | | | | | | | | 6 EC | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Elective | | | | | | | | 6 EC | | | | | | | | Elective | | | | | | | | 6 EC | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Elective | | | | | | | | 6 EC | | | | | | | | Elective | | | | | | | | 6 EC | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | WM0320TU Ethics and Engineering 3 EC | | | | | | | | | | | | | | | | AP3902 Preparation of the Master Thesis | | | | | | | | 6 EC | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Exam preparation / Exams | | | | | | | | Christmas Holidays | | | | | | | | Exam preparation Exams | | | | | | | | Exam preparation Exams | | | | | | | | Exam preparation Exams | | | | | | | | Results | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | Spring Holidays | | | | | | | | | | | | | | | | Summer Holidays | | | | | | | | | | | | | | | | | | | | | | | | | | | |

2nd year

| | 1 st period | | | | | | | | 2 nd period | | | | | | | | 3 rd period | | | | | | | | 4 th period | | | | | | | | Summer | | | | | | | | | | | | | | | | | | | |
|--------|---------------------------------|----|----|----|-----|----|----|----|------------------------|----|----|----|-----|---|----|----|------------------------|---|---|----|-----|----|---|----|---|----|---|----|-------|----|---|----|-----------------|----|---|---|------|----|----|----|------|----|----|---|-----|----|----|----|---|----|----|----|
| Monday | 5 | 12 | 19 | 26 | 3 | 10 | 17 | 24 | 31 | 7 | 14 | 21 | 28 | 5 | 12 | 19 | 26 | 2 | 9 | 16 | 23 | 30 | 6 | 13 | 20 | 27 | 6 | 13 | 20 | 27 | 3 | 10 | 17 | 24 | 1 | 8 | 15 | 22 | 29 | 5 | 12 | 19 | 26 | 3 | 10 | 17 | 24 | 31 | 7 | 14 | 21 | 28 |
| month | Sept | | | | Oct | | | | Nov | | | | Dec | | | | Jan | | | | Feb | | | | March | | | | April | | | | May | | | | June | | | | July | | | | Aug | | | | | | | |
| week | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | | |
| | AP3902 Master Thesis Project | | | | | | | | Xmas | | | | | | | | 42 EC | | | | | | | | AP3911 Internship in Industry 18 EC | | | | | | | | 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

| Obligatory core modules | | | |
|--|---|-----------|---------------|
| Module Code | Module title | EC | Period |
| AP3001 | Mathematical Methods for Physics | 9 | 1+2 |
| AP3902 | Master Thesis | 6+42 | - |
| WM0320TU | Ethics and Engineering | 3 | 1 or 3 |
| G-list modules | | | |
| Module Code | Module title | EC | Period |
| 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 |
| Recommended T-list modules Physics for Energy track | | | |
| Module Code | Module title | EC | Period |
| 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 |
| Recommended T-list modules Physics for Fluids Engineering track | | | |
| Module Code | Module title | EC | Period |
| 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 |
| AP3412 | Biological Transport Phenomena | 4 | 3 |
| AP3551 | Computational Multiphase Flow | 6 | 3+4 |
| AP3563 | Water in the Atmosphere | 5 | 3 |
| AE4180 | Flow Measurement Techniques | 3 | 3+4 |
| AE4W02TU | Introduction to Wind Turbines: Physics and Technology | 4 | 2 |
| CH3051 | Applied Physical Transport Phenomena | 4 | 2 |
| CH3153 | Molecular Transport Phenomena | 4 | 1 |
| CH3421 | Computational Transport Phenomena | 6 | 3 |
| ME45001 | Advanced Heat Transfer | 4 | 1 |
| ME45030 | Turbulence | 5 | 3+4 |
| ME45043 | Advanced Fluid Dynamics | 6 | 1+2 |
| ME45190 | Chaos in Dynamical Systems | 3 | 2 |
| WI4011 | Computational Fluid Dynamics | 6 | 3+4 |
| Recommended T-list modules Physics for Health and Life track | | | |
| Module Code | Module title | EC | Period |
| 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 |
| AP3412 | Biological Transport Phenomena | 4 | 3 |
| 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 |
| AP3113 | Quantum Optics | 6 | 3+4 |
| AP3122 | Advanced Optical Imaging | 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 |
| AP3242 | Lasers and Photodetectors | 3 | 2 |
| AP3311 | Neutrons, X-Rays and Positrons for Studying Structures & Dynamics | 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 nd Year |
| AP3701 | Submm and Terahertz Physics and Applications | 3 | 3 |
| AE4880 | Space Instrumentation | 4 | 3 |
| EE4745 | Terahertz Superconducting Astronomical Instrumentation | 5 | 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 |
| AP3113 | Quantum Optics | 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 nd Year |
| AP3652 | Electronics for Physicists | 3 | 2 nd Year |
| AP3663 | Special Topics in Quantum Technology | 4 | 4 |
| AP3681 | Fairy Tales of Theoretical Physics | 6 | 3+4 |
| CESE4080 | Quantum Computing Architecture and Electronics | 5 | 3 |
| CS4090 | Quantum Communication and Cryptography | 5 | 2 |

General Electives (examples, see studyguide)

| | |
|-------------|---------------------------------------|
| AP3831 | Systems Engineering |
| 4403TGR64 | Theory of General Relativity (Leiden) |
| CS4195 | Modeling and Data Analysis in Complex |
| CS4220 | Machine Learning |
| IFEEMCS4205 | Statistical Learning for Engineers |
| IN4049TU | Introduction to High Performance |
| LM3691 | iGEM |
| WI4201 | Scientific Computing |
| WI4260TU | Scientific Programming for Engineers |

Societal Modules (examples, see studyguide)

| | |
|--------------|--------------------------------------|
| AS3111 | Athens |
| AS3121 | Scientific Writing and Argumentation |
| TPM301B | Spoken English for Academic Purposes |
| TPM305A | Writing a Master's Thesis in English |
| TPM412A | Idea to Startup Health & Life |
| TPM413A | Idea to Startup Energy & Sust |
| TPM414A | Idea to Startup Deep Tech |
| WM0203TU-Eng | Oral Presentations |
| WM1115TU | Dutch Elementary |