

# **TEACHING AND EXAMINATION REGULATIONS**

**(see Article 7.13 of the Higher Education and  
Research Act)**

## **MASTER'S DEGREE PROGRAMME APPLIED PHYSICS**

**2013-2014**

**DELFT UNIVERSITY OF TECHNOLOGY**

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**Most important changes in comparison with the teaching and examination regulations  
master Applied Physics 2012-2013**

<b>Article 2 – Definitions</b> Subsection 2p  (and other places)	(changed) Manual replaced by study guide.
<b>Article 8a - Honours programme</b>	(changed) The Honours programme will comprise at least 20 credits instead of 30 credits.
<b>Article 20 – Study progress checks</b>  (and other places)	(changed) Blackboard replaced by Osiris.
<b>Appendix to Article 17 – Adaptations to help students with a disability</b>	(added, TU wide proposal)

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## Section 1 - General

### Article 1 – Areas to which the regulations apply

1. These regulations apply to the teaching and the examinations related to the Master's degree programme in Applied Physics, hereafter to be referred to as the programme.
2. The teaching and organisation of the programme is the responsibility of the Faculty of Applied Sciences at Delft University of Technology, hereafter to be referred to as the faculty.
3. The programme is governed by Implementation Regulations which constitute part of these Teaching and Examination Regulations.

### Article 2 – Definitions of terms used

The terms used in these regulations should be interpreted as meaning the same as in the Higher Education and Scientific Research Act, insofar as they are defined in that Act.

The following terms are to be defined thus:

- |                           |  |
|---------------------------|--|
| a. the Act:               | the Higher Education and Scientific Research Act (in Dutch, the WHW), in the Dutch Bulletin of Acts, Orders and Decrees, number 593 and as amended since;  |
| b. the programme:         | the Master's degree programme as denoted in Article 7.3a paragraph 1, subparagraph b of the Act;   |
| c. student:               | anyone enrolled at Delft University of Technology as a student or extraneous student for the purpose of benefiting from education and/or for the purpose of sitting the examinations and undergoing the degree audit which form part of the programme;   |
| d. cohort:                | the group of students who have registered for a degree programme for the first time in a given academic year;  |
| e. teaching period:       | half a semester;   |
| f. subject:               | a teaching unit within the programme as intended in Article 7.3, paragraphs 2 and 3 of the Act;  |
| g. practical:             | a practical exercise, as a subject or as part of a subject, as intended in Article 7.13, paragraph 2, subparagraph d of the Act, taking one of the following forms: <ul style="list-style-type: none"><li>• writing a thesis;</li><li>• conducting a project or experimental design;</li><li>• completing a design or research assignment;</li><li>• conducting a literature review;</li><li>• completing a work placement;</li><li>• participating in fieldwork or an excursion;</li><li>• conducting tests and experiments;</li><li>• participating in other educational activities aimed at enabling participants to attain certain skills.</li></ul> |
| h. examination:           | an assessment of the knowledge, insight and skills of a student in relation to a subject, as well as the marking of that assessment by at least one examiner, appointed for that purpose by the board of examiners;  |
| i. component examination: | an assessment of the knowledge, insight and skills of a student in relation to a component within a subject, as well as the marking of that assessment by at least one examiner, appointed for that purpose by the board of examiners;   |



j. degree audit:	an assessment by which the board of examiners, in accordance with Article 7.10 of the Act, establishes whether all examinations in the various subjects that constitute the programme have been successfully completed;
k. board of examiners:	the programme's board of examiners, which has been installed in accordance with Article 7.12 of the Act;
l. examiner:	the individual who, in line with Article 7.12c, of the Act, has been appointed to set the examinations;
m. Implementation Regulations:	the Implementation Regulations which form part of these Teaching and Examination Regulations;
n. credit:	a credit awarded in line with the European Credit Transfer System (ECTS); one credit denotes a study load of 28 hours;
o. working day:	Monday to Friday with the exception of recognised national public holidays;
p. study guide:	a digital guide to the programme containing specific information pertaining to the various subjects;
q. institute:	Delft University of Technology;
r. Osiris:	the electronic system designed for the exchanging of student information;
s. disability:	all conditions which are (at least for the period in question) chronic or lasting in nature and which form a structural limitation for the student in receiving education and/or sitting examinations or taking part in practicals.

### **Article 3 – The programme objective**

The programme aims to educate students to become a Master of Science in Applied Physics, whereby the final attainment levels described in Article 4 must be achieved.

### **Article 4 – The programme's final attainment levels**

The aims of the master programme in Applied Physics are:

1. Mastery of Applied Physics at an advanced academic level. This means mastery of advanced general physics subjects (such as Quantum Mechanics, Solid State Physics, Fluid Dynamics, Quantum Electronics and Electrodynamics) and the necessary mathematics, in addition to a choice of advanced technical subjects (such as Linear System Theory, Computer Science, Materials Science, Electronics, Data Analysis, Process Management and Control), as well as skills in the field of experimental techniques, theoretical analysis, simulation and modelling. This knowledge and these skills should be mastered at a level that is considered at least equal to that of other comparable Master's degrees at international, top-quality, educational institutions.
2. In-depth knowledge of at least one area within Applied Physics, so that international research literature can be understood.
3. Thorough experience of research in (Applied) Physics and complete awareness of the applicability of research in technological developments.
4. Capable of understanding a wide variety of different problems and being able to formulate these at an abstract level, whilst being able to see the relation between diverse problems at this abstract level and to contribute creatively to their solution, focusing on practical applications.
5. Capable of creating innovative technical designs, taking feasibility issues into account.

6. Capable of working in a (possibly interdisciplinary) team of experts, performing the aforementioned activities and communicating easily in both written and spoken English.
7. Capable of working independently and taking initiatives where necessary. Identifying areas where expertise is lacking and resolving the situation.
8. Capable of making Dutch and/or English language presentations of personal research activities to varied audiences. Capable of adapting to the background and interest of the audience.
9. Knowledge of technology-related developments in society, such as sustainability issues. Capable of developing and defending opinions in this area.

#### **Article 5 – Admission to the programme**

1. All students possessing a certificate proving that they have successfully completed their Bachelor of Science studies in Applied Physics in 3TU, IDEA League and Groningen will be admitted to the programme.
2. Students who do not possess the degree mentioned in paragraph 1 are required to obtain proof of admission to the programme from the dean, who will seek the advice of the admissions officer on this matter.
3. In order to obtain proof of admission, the student must meet or, as the case may be, possess:
  - a. the general relevant criteria set by the executive board, laid down in Section 2 of the Student Charter (central part);
  - b. a certificate, together with the accompanying list of marks, proving that he/she possesses knowledge of a sufficiently high level and broad scope to successfully complete the programme within the allotted period.
  - c. Notwithstanding the general relevant criteria set by the executive board, laid down in Section 2 of the Student Charter (central part), students holding a Bachelor of Engineering degree in Physics Engineering are not obliged to do a preliminary exam 'VWO wiskunde B'.
4. Students in possession of
  - a. a Bachelor degree in Physics from a Dutch university can be admitted to the programme with a homologation programme of at most 6 credits.
  - b. a Bachelor of Engineering (HBO) degree in Applied Physics, having past the Applied Physics bridging minor programme at their school, will be admitted to the programme.
  - c. a Bachelor of Engineering (HBO) degree in Applied Physics, not having past the Applied Physics bridging minor programme at their school, will be admitted to the bridging programme provided he/she has a minimum Grade Point Average of 75% (guideline). Completion of the bridging programme guarantees admission to the programme.
  - d. a Bachelor degree in (Applied) Physics from a foreign university can be admitted to the programme provided that he/she has a minimum Grade Point Average of 75% (guideline).
  - e. Bachelor of Science degree in Aerospace Engineering, Applied Earth Sciences, Applied Mathematics, Electrical Engineering, Marine Technology, Mechanical Engineering, or Molecular Science and Engineering from a Dutch Technical University will be admitted to the programme if the extent of their deficiencies are limited to a maximum of 18 credits.
5. Students accepted by the Erasmus Mundus Optics in Science and Technology consortium will be admitted to the programme.

#### **Article 6 – Taking the programme on a full-time or part-time basis**

This programme is taught only on a full-time basis.



## **Article 7 – Language**

1. Classes are taught and examinations and degree audits take place in English.
2. Notwithstanding the provisions of paragraph 1, the dean can give permission for classes to be taught in Dutch if the particular nature of the subject, the organisation, the quality of the education or the origin of the students gives cause for this.
3. Should a student request permission to complete one or more parts of the examination or the degree audit in a language other than English, this will be subject to the stipulations of the board of examiners in this regard, as laid down in the Rules and Guidelines of the board of examiners.

## **Section 2 - Composition of the study programme and the degree audit**

### **Article 8 – Composition of the study programme and the degree audit**

1. The composition of the study programme and the relevant transitional regulations are laid down in the Implementation Regulations.
2. The Master's degree audit forms part of the programme. The programme has a total study load of 120 credits. If a student follows two Master's degree programmes at TU Delft at the same time, at least 60 extra unique credits must be obtained besides a complete Master's degree programme of 120 credits.
3. It is not permitted for any subject in the study programme to have been part of the Bachelor's degree programme on the basis of which the student was admitted to the programme. If a compulsory subject in the study programme was already completed in the aforementioned Bachelor's degree programme, the board of examiners will designate an alternative subject in its place. If an elective subject in the study programme was already completed in the aforementioned Bachelor's degree programme the student will choose an alternative elective subject.

### **Article 8a – Honours programme**

1. Students who meet the criteria referred to in the Implementation Regulations will be invited to register for the TU Delft Honours programme for outstanding Master's students.
2. Based on the criteria referred to in the Implementation Regulations, students will be selected and admitted to the Honours programme by the director of studies or an Honours committee established by the director of studies.
3. The Honours programme will comprise at least 20 credits:
  - a. 5 credits must be completed in the TU Delft-wide component of the Honours programme, which consists of the following parts:
    - the subject "Critical Reflection on Technology"
    - playing an active role within the Honours programme community
  - b. 15 credits may be completed in the faculty component of the Honours programme, the composition of which (including its content and options) is described in the Implementation Regulations.
4. Any student selected for participation in the Honours programme must submit his or her options for the faculty component to the director of studies or the Honours programme committee for approval.
5. The board of examiners will be responsible for assessing whether all the requirements of the Honours programme have been met.
6. Any student who has successfully completed the Honours programme will be awarded a certificate signed by the chair of the board of examiners and the director of the TU Delft Honours programme.

## Section 3 - Examinations

### Article 9 – Number, times and frequency of examinations

1. The opportunity to sit the course examinations is offered twice per year:
  - The first opportunity is in or immediately after the teaching period in which the subject is taught.
  - The second opportunity is before the start of the new academic year.
  - Prior to a third (or subsequent) course examination attempt the instructor is allowed to oblige the student to consult the instructor in order to obtain educational advice and help for thorough preparation.
  - The foregoing subsections also apply to practicals, provided that this may reasonably be expected from the programme. The Board of Examiners may, in accordance with subsection 5, decide on this.
2. The frequency of examinations is laid down in the Implementation Regulations. A timetable of all the opportunities for sitting written examinations is drawn up on an annual basis and distributed before the start of the academic year.
3. If there is no indication as to the number of times a particular examination can be taken in any one academic year because it relates to a subject not taught by the programme itself, the relevant stipulations in the Teaching and Examination Regulations of the other programme will apply. The board of examiners reserves the right to make decisions that deviate from the norm regarding this matter.
4. Notwithstanding the provisions of paragraph 1, there will be at least one chance in a year to sit examinations relating to subjects not taught in a given academic year.
5. In exceptional cases, the board of examiners may permit a deviation from the standard number of times that certain examinations can be taken.

### Article 10 – Sequence of examinations

1. The sequence in which students are required to sit examinations and participate in practicals is laid down in the Implementation Regulations.
2. In exceptional circumstances, the dean may permit a student to participate in one or more Master's programme subject examinations and/or practicals, prior to passing the Bachelor's audit and/or, if applicable, prior to completing the transition programme<sup>1</sup>. This permission is valid for a maximum of one year.

### Article 11 – Validity of examinations

1. The result of an examination is valid for an unlimited period. However, in cases where the examination result dates from over four years ago, the board of examiners may impose an additional or substitute examination.

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<sup>1</sup> Students can invoke the hardship clause if they want to obtain permission to start the Master's programme before fulfilling the admission requirements. They can direct a request to the "Harde Knip" committee of the faculty of Applied Sciences, using "Formulier Hardheidsclausule TNW" ([www.tnw.tudelft.nl/regulations](http://www.tnw.tudelft.nl/regulations)).



## **Article 12 – The form of examination and method of assessment**

1. Examinations are set as described in the Implementation Regulations or the study guide.
2. If there is no indication as to the way an examination is to be set because it relates to a subject not taught by the programme itself, the relevant stipulations in the Teaching and Examination Regulations or the study guide of the other programme will apply.
3. The board of examiners may, if it so wishes, deviate from the provisions of paragraphs 1 and 2, in favour of the student.

## **Article 13 – Oral examinations**

1. Only one student at a time will sit an oral examination, unless the examiner in question specifies otherwise.
2. A second examiner will be present during oral examinations, unless determined otherwise by the board of examiners.
3. Oral examinations will be held in public, unless determined otherwise by the board of examiners in a special case or unless the student has formally objected to the public nature of the examination.
4. Prior to an oral examination, the examiner must ask the student to provide proof of identity.

## **Article 14 – Determining and announcing the results**

1. The examiner is required to determine the result of an oral examination as soon as it is finished and to supply the student with a written statement of the result.
2. In the case of written examinations, the examiner is required to determine the result as soon as possible after the examination but within 15 working days at most. The examiner forwards the necessary details to the student administration. Taking due account of the student's right to privacy, the student administration then ensures that the results are registered and published within 20 working days of the examination date. If the examiner is not able to meet these requirements due to exceptional circumstances, he or she must inform the board of examiners, stating the reasons for the delay. The student administration will then pass this information on to the students.
3. Regarding any examinations that are not taken orally or in writing, the board of examiners will determine beforehand precisely how and within what period of time the student will be notified of the results.
4. When receiving the result of an examination, the student will be made aware of his or her right to inspect the results as referred to in Article 15, as well as the opportunity to lodge an appeal with the Examination Appeals Board.

## **Article 15 – The right to inspect the results**

1. For a period of at least 20 working days after notification of the results of any written examination, the student has the right to inspect his or her marked work, on request. If a student intends to lodge an appeal regarding the marking of his or her work, he or she will be supplied with a copy of the marked work at cost price.
2. During the period referred to in paragraph 1, all interested individuals may acquaint themselves with the questions and assignments set in the examination, as well as with the criteria used for marking.
3. The board of examiners may determine that the right to inspection or perusal referred to in paragraphs 1 and 2 will take place at a location specified beforehand and at no less than two specific times, also decided on beforehand. If the student can prove that he/she is or was unable to be present at the location at the set time due to circumstances beyond his or her control, then another opportunity will be provided, if possible within the period stated in paragraph 1. The location and times mentioned in the first sentence will be announced well in advance.

## **Article 16 – Discussing the examination results**

1. As soon as possible after the results of an oral examination have been announced, an opportunity can be arranged for the examiner to discuss the results with the student, either at the student's request or at the instigation of the examiner. At this meeting, the reasons behind the marks awarded will be explained.
2. For a period of 20 working days after the results have been announced, students who have taken a written examination may submit a request to discuss the results with the relevant examiner. The discussion will take place within a reasonable time span and at a place and time determined by the examiner.
3. In cases where a collective discussion is organised by or on the instructions of the board of examiners, a student may only submit a request, as described in the preceding paragraph, if he/she was present at the collective discussion and if he/she provides a good reason for the request or if, due to circumstances beyond his/her control, he/she was unable to attend the collective discussion.
4. The provisions of paragraph 3 are similarly applicable if either the board of examiners or the examiner first gives the student the opportunity to compare his/her answers with model answers.
5. The board of examiners may permit departures from the provisions of paragraphs 2 and 3.

## **Section 4 - Studying with a disability**

### **Article 17 – Adaptations to help students with a disability**

1. Students who have a physical or sensory disability are entitled to adaptations in teaching, examinations and practicals, on written request. These changes will be geared as much as possible to a student's individual needs, but they must not affect the quality or the degree of difficulty of a subject or an examination programme. The facilities provided to this end may involve adapting the form or duration of examinations and/or practicals to the student's individual situation or making practical aids available.
2. The request referred to in paragraph 1 should be accompanied by a recent medical certificate from a doctor or a psychologist. If there is evidence of dyslexia, the request should be accompanied by a document issued by a recognised dyslexia-testing bureau (i.e. registered with BIG, NIB, or NVO). If possible, this certificate should also estimate the extent to which the disability forms an obstacle to study progress.
3. Requests for the adaptation of teaching facilities will be decided upon by the dean or by the director of studies acting on the dean's behalf. The board of examiners will decide on requests for adaptations to examinations.

## **Section 5 - Exemptions**

### **Article 18 – Exemption from examinations or practicals**

After having been advised by the relevant examiner, the board of examiners may decide to exempt students from an examination or practical on the grounds of:

- a. an examination, degree audit or practical completed within the Dutch higher education system or elsewhere which, as regards content and study load, corresponds with the subject for which exemption is sought, or
- b. knowledge and/or skills acquired outside the higher education system.



## **Section 6 - Degree audit**

### **Article 19 – The times and frequency of the degree audit**

Three times a year there is an opportunity to undergo the Master's degree audit. The dates set by the board of examiners are published before the start of the academic year.

## **Section 7 - Study progress checks**

### **Article 20 – Study progress checks**

The student administration is responsible for ensuring that each student is able to see and check his/her own results via Osiris.

## **Section 8 - Contravention, changes and implementation**

### **Article 21 – Contravening the regulations**

If the study guide and/or any other regulations relating to the study programme and/or the examination programme prove to contravene these Teaching and Examination Regulations and the accompanying Implementation Regulations, precedence will be given to the provisions of these Teaching and Examination Regulations in combination with the Implementation Regulations.

### **Article 22 – Changes to the regulations**

1. Any changes made to these regulations will be made by special resolution of the dean.
2. No changes made will affect the current academic year unless it is reasonable to suppose that the interests of students will not be adversely affected.
3. None of the changes may, to the detriment of the student, influence any decisions concerning a student that are made by the board of examiners on the basis of these regulations.

### **Article 23 – Transitional regulations**

1. If the composition of the study programme undergoes intrinsic changes or if these regulations are amended, the dean will draw up transitional regulations that will be incorporated into the Implementation Regulations.
2. Such transitional regulations are required to include:
  - a. a provision concerning the exemptions that can be given on the basis of the examinations already passed;
  - b. a provision specifying the period of validity of the transitional regulations.
3. If a subject is removed from the study programme, four opportunities to sit an examination in this subject will be granted after the last classes have been taught: an examination following on from the classes, a resit in the same academic year, and two resits in the subsequent academic year.
4. Students who were registered as a pre-master student on 31 August 2012, will have the opportunity to undertake Master's subjects for one subsequent academic year. After 1 September 2013, all students must have finished the Bachelor's degree programme, on which the admission is based, and/or completed the bridging programme that he/she had to complete, prior to continuing the Master's degree programme.



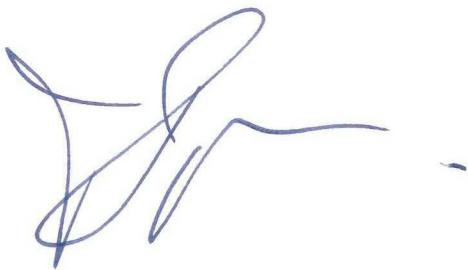
**Article 24 – Publication of the regulations**

1. The dean is responsible for finding a suitable way of publicising these regulations and the relevant Implementation Regulations, as well as any changes to the regulations.
2. The Teaching and Examination Regulations, together with the accompanying Implementation Regulations, will always be published on the programme's website.

**Article 25 – Entry into force**

This ruling will come into effect on 1 September 2013.

**Drawn up by the Dean of the faculty of Applied Sciences 4 July 2013**

A handwritten signature in blue ink, consisting of several loops and a long horizontal stroke at the end.

Prof.dr.ir. T.H.J.J. van der Hagen  
Dean Faculty of Applied Sciences

## **Appendix to Article 17 – Adaptations to help students with a disability**

Adjustments to the assessment procedure, including examinations and other forms of assessment, may concern the following matters, among others:

- the content (offering alternative but equivalent subject material);
- the course material (making available course material that is more easily accessible, for example);
- the form of assessment (e.g. replacing a written examination by an oral one, or vice versa, testing knowledge of the studied material by way of interim examinations, or granting an exemption from attendance);
- time-related matters (such as granting more time during examinations, spreading out examinations over the examination period, granting exemptions from admission requirements, or extending the period within which a component must be completed);
- the resources that candidates are allowed to use during examinations (such as an English-Dutch dictionary for candidates with dyslexia);
- the location (taking examinations in a separate distraction-free room).

Adjustments to the educational facilities may concern the following matters, among others:

- making modified furniture available in the classrooms and examination rooms;
- making special equipment available (such as magnifying or Braille equipment for blind or partially sighted students, or audio induction loops and solo equipment for students who are deaf or hard of hearing);
- making more easily accessible course material available;
- making special computer facilities available (such as voice recognition or speech synthesis software);
- making a separate distraction-free room available for a student to take an examination;
- making a quiet room available.

