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Appendices to the Teaching and Examination Regulations

2020-2021

Master's degree programme in Applied Physics



Appendix I Teaching outcomes of the degree programme (art. 3.1)

1. Knowledge and understanding

The master graduate in Applied Physics

- 1.1. understands the advanced concepts of physics, including the necessary mathematics and computer science, at a level which permits admission to a PhD programme;
- 1.2. is familiar with the advanced quantitative character of physics and with the relevant research methods;
- 1.3. has operational knowledge and design skills in the field of applied physics;
- 1.4. has a thorough understanding the current state of the art in materials science, more specifically of structure, functional properties and characterisation of advanced materials;
- 1.5. has basic knowledge in the present field of business and management;

2. Application of knowledge and understanding

The master graduate in Applied Physics

- 2.1. is capable of carrying out research, aimed at understanding of physical phenomena that are potentially usable in applications, or is capable of developing applications of physical phenomena;
- 2.2. is capable of analyzing a (new) complex applied problem, and to use modelling skills to develop a structured and well-planned research approach;
- 2.3. is capable of applying his/her specific knowledge and mathematical, experimental, and computer skills to solve physical problems in his/her own and related subject areas and fields;
- 2.4. has developed an attitude aimed at seeking new applications;
- 2.5. has experience with the use of complicated apparatus and/or with the use of advanced programming tools;
- 2.6. has experience in application of applied physics in an industrial environment or in an applied physics research environment abroad;
- 2.7. is capable of collaborate in a (multi-disciplinary) research and design team;

3. Judgement

The master graduate in Applied Physics

- 3.1. is capable of obtaining relevant information using modern information channels, and to interpret this information critically;
- 3.2. is capable of managing and judging his/her and others' actions within a highly scientific and professional context, taking societal and ethical aspects into account;
- 3.3. is able to draw conclusions on the basis of limited or incomplete information, and is able to realize and formulate the limitations of such conclusions;

4. Communication skills

The master graduate in Applied Physics

- 4.1. is capable of communicating clearly in English, both verbally and in writing, on his/her subject and relevant applications, at a level which is understandable to experts and non-experts, and using modern communication tools;

5. Learning skills

The master graduate in Applied Physics

- 5.1. is capable of addressing issues inside as well as outside his/her main subject area, therefore and thereby gaining new knowledge and skills;
- 5.2. is able to recognize potential applications of recent advances in physics.



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Appendix II Tracks of the degree programme (art. 3.5)

The degree programme of the Applied Physics master offers no separate tracks.



Appendix III Content of the degree programme (art. 3.6)

The assessment method(s) of the courses below can be found in the assessment plan of the degree programme and on Ocasys.

Course unit	ECTS	Practical	Entry Requirements
Characterisation of Materials	5		
Computational Physics	5	X	
Cross-disciplinary Materials Science	5		
Functional Properties	5		
Mechanical Properties	5		
Mesosopic Physics	5		
Structure at Macro, Meso and Nano Scale	5		
Physics with Industry	5		
Optional courses in Applied Physics	20	See app. IV	See appendix IV
Courses in Business and Management	5	See app. IV	See appendix IV
Industrial Internship	20		Passed 45 ECTS of the masters's degree programme
Master's Research Project (Applied Physics)	40	X	Passed 45 ECTS of the masters's degree programme



Appendix IV Electives (art. 3.7)

The assessment method(s) of the courses below can be found in the assessment plan of the degree programme and on Ocasys.

Optional courses in Applied Physics

Course unit	ECTS	Practical	Entry Requirements
Surfaces and Interfaces	5		
Ultrafast Time-resolved Spectroscopy	5	X	
Opto-electronic Devices	5		
Theoretical Condensed Matter Physics	5		
Robotics for IEM	5		
Bio-inspired Designer Materials	5		
Memristive Devices	5		
Neuromorphic Circuit Design	5		
Micromechanics	5		
Surface Interactions in Electromechanical Systems	5		
Smart Materials for Engineering	5		
Polymer Physics	5		



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Appendix V Entry requirements and compulsory order of examinations (art. 4.4)

For students admitted to the degree programme the conditional entry requirements for individual modules and order of examinations are listed on Ocasys.



Appendix VI Admission to the degree programme and different tracks/specializations (art. 2.1.1 + art. 2.2)

Graduates of the Bachelor's degree programme in Applied Physics of the University of Groningen are considered to have adequate knowledge and skills to be admissible into the Master's degree programme in Applied Physics.

- A dedicated 15 ECTS pre-master programme is composed for graduates of the Bachelor's degree programme in Physics of the University of Groningen and consists of the following three course units:
 - Device Physics
 - Physics of Fluids
 - Solid State Physics

Bachelor Physics graduates who successfully complete this programme are considered admissible into the Master's degree programme in Applied Physics.

- A dedicated 30 ECTS pre-master programme is composed for graduates of the Bachelor's degree programme in Astronomy of the University of Groningen and consists of the following three course units:
 - Electronics and Signal Processing
 - Structure of Matter 2
 - Physics Laboratory 3 *or* Physics Laboratory 4
 - Device Physics
 - Physics of Fluids
 - Solid State Physics

Bachelor Astronomy graduates who successfully complete this programme are considered admissible into the Master's degree programme in Applied Physics.



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Appendix VII Transitional provisions (art. 7.1)

There are no transitional provisions for Applied Physics students.



Appendix VIII Admission

Application deadlines for admission (art. 2.6.1)

Deadline of Application	Non-EU students	EU students
Applied Physics	May 1st 2020	May 1st 2020

Decision deadlines (art. 2.6.3)

Deadline of Decision	Non-EU students	EU students
Applied Physics	June 1st 2020	June 1st 2020