

Master of Science (M.Sc.)

Physics (Fast Track)

Description of the course modules.

Version 2016/V1

Versions:

Version 2016	-Outcome oriented description of the objectives of the course modules.
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Name of university	Heidelberg University
Name of department	Physics & Astronomy
Name of subject	Physics
Name of degree course*	Master of Science (Physics)
Fomat of studies	Full time
Type of degree course*	Consecutive
Date of version	June 10th, 2016
Prescribed period of study	One year, i.e. two semesters
Establishment of degree course	YYYY-MM-DD
Subject-specific assignment	Physics
Location	Heidelberg
Total number of creditpoints	Sixty
University places	Unlimited
Fees	None
Target group	Bachelor of science with honours degree holders having majored in physics

Preamble: classification and overall view of the curriculum

Following its overall concepts and statute Heidelberg University's identity as a comprehensive university has grown out of its academic history, its commitment to the present, and its role in shaping the future. The research and educational efforts of the university are devoted to pursuing the central questions confronting humanity, concentrating on fundamental research and its application, and empowering Heidelberg's students to participate in this scientific and academic endeavour at an early stage. The intricate connection between research and teaching provides for an education that is academic, practical, and continuous.

The research oriented one year long master programme in physics is organised by the Department of Physics and Astronomy. It builds on the bachelor with honours degree and is designed to provide a deeper, more specialised knowledge of a specific field of physics, as well as to provide a general knowledge of methods used in physics' research in this field. In addition, the master degree is designed to prepare students to enter into a doctoral programme.

The one year long master degree in physics at the Department of Physics and Astronomy at the University of Heidelberg is in particular noted for the great flexibility and freedom of choice available to students in selecting the direction of research. This enables master students to follow their own specific research interests.

The curriculum consists of a research phase only, i.e. two preparatory and the master thesis module.

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1. Structure of the curriculum

The first semester of the master degree course is made up of two compulsory modules, “Scientific Specialization“ and “Methods and Project Planning“, each being assigned 15 CP. The second semester is dedicated to the master thesis itself, which counts 30 CP.

During the one year master course a master student is required to successfully pass the aforementioned course modules equivalent to a total of 60 credit points. Further details are laid down by the rules and regulations for master students (Prüfungsordnung).

In Table I, a schematic overview of the master programme is given that consists of a pure research phase only.

Table 1.1: Overview of the master degree programme

Module	Code	CP
Research phase		
Mandatory module “Field of Specialization“	MFS	15
Mandatory module “Methods and Project Planning“	MFP	15
Master Thesis	MFA	30
Total number of credit points – research phase		60
Total number of credit points – Master of Science		60

2. Mandatory research phase modules

The one year research phase comprises the following mandatory modules:

Module code	Module	LP/CP	Term
MFS	Scientific Specialization	15	WiSe/SuSe
MFP	Methods and Project Planning	15	WiSe/SuSe
MFA	Master Thesis	30	WiSe/SuSe

The module “Scientific Specialization“ introduces to a specific research field and might comprise specified lectures, seminars or journal clubs. The module “Methods and Project Planning“ prepares the specific research envisaged during the “Master Thesis“ module.

Code: MFS	Course title: Scientific Specialization
Type	Practice Course
Language	English
Credit points	15
Workload	450 h
Contents	<ul style="list-style-type: none"> • The content of the module is defined together with the supervisor and will vary depending on the chosen research field in which the master thesis is planned. • In addition to the work within the research group may comprise specified lectures, seminars or journal clubs as well as a substantial part of self-study.
Objectives	Upon completion of this module, the student has obtained advanced knowledge in the research field of the planned master thesis.
Module parts and teachings methods	<ul style="list-style-type: none"> • Preparation Course Master Thesis
Neccessary and useful knowledge	
Specialities	Work within a research group under supervision of the group leader; to pass this module, the student has to be part of a research group.
Usability	
Form of testing and examination	Oral report on the content of the module
Term	Winter semester/Summer semester
Duration	1 semester

Code: MFP	Course title: Methods and Project Planning
Type	Practice Course
Language	English
Credit points	15
Workload	450 h
Contents	<ul style="list-style-type: none"> • The content of the module is defined together with the supervisor and will vary depending on the chosen research field in which the master thesis is planned. • In addition to the work within the research group may comprise specified lectures, seminars or journal clubs as well as a substantial part of self-study.
Objectives	Upon completion of this course, the student is well prepared for the master thesis
Module parts and teachings methods	Work within a research group under supervision of the group leader; to pass this module, the student has to be part of a research group. Upon completion of this course, the student is well prepared for the master thesis.
Neccessary and useful knowledge	<ul style="list-style-type: none"> • Prerequisites are MFS and advanced knowledge in research area in which master thesis is planned. • Recommended literature is suggested by supervisor.
Specialities	Work within a research group under supervision of the group leader
Usability	
Form of testing and examination	Oral report on the content of the module
Term	Winter semester/Summer semester
Duration	1 semester

Code: MFA	Course title: Master Thesis
Type	Practice Course
Language	English
Credit points	30
Workload	900 h
Contents	Research work on a specific physics topic.
Objectives	After completing the master thesis, the student is familiar with scientific research and well positioned to pursue a successful career as physicist in academia or industry.
Module parts and teachings methods	<ul style="list-style-type: none"> • Master Thesis
Necessary and useful knowledge	<ul style="list-style-type: none"> • Prerequisites are: MFS and MFP and advanced knowledge on the research area of the master thesis • Useful literature is suggested by supervisor.
Specialities	work within a research group under supervision of the group leader.
Usability	
Form of testing and examination	written master thesis.
Term	Winter semester/Summer semester
Duration	

3. Model study plan

Students will receive detailed recommendations depending on the field of specialization by their thesis supervisor, since there are many possible combinations that may be considered in constructing the coursework sector of the master degree. Students should inform themselves of the options at an early stage in planning their degree.

The one year long master degree course in physics is focused on the research defined by the thesis topic. Table 3.1 give a schematic overview of the degree structure. The beginning of the studies may be a winter or a summer semester, respectively.

Table 3.1 MSc Model study plan
 [Beginning: winter or summer semester]

Study block	1st Semester	2nd Semester
Research modules	Scientific Specialization (15 CP MFS) Methods and Project Planning (15 CP MFP)	Master Thesis (30 CP MFA)

4. Classification

Module code	Meaning
MFS	Scientific Specialization
MFP	Methods and Project Planning
MFA	Master Thesis