

Curriculum master Applied Physics for students enrolled 2018/2019

First and second year (M1 en M2)	
Name	EC
M1	
Compulsory courses (20 EC)	
191411291 Applied Quantum Mechanics	5
191551150 Numerical Techniques for Partial Differential Equations	5
191470241 Heat and Mass Transfer	5
201800422 Small Signals and Detection	5
Specialization courses (20 EC)	20
Elective courses physics/technical	10/0
Elective courses free	10/0
M2	
Internship, 193599010 / 201700185	20/30
Master Thesis, General Aspects 201800345 / Physical Aspects 201800344	40
Total master	120

APH Chair Specialization courses		
Coursecode	Name	EC
BioElectronics group (BE), prof.dr. S.J.G. Lemay		
201300135	Soft and Biological Matter	5
201300137	Ions and Devices	5
193400121	Nano-fluidics	5
-	Course in consultation with chair	5
<i>Recommended elective courses:</i>		
193565000	Capillarity Phenomena	5
201800083	Advanced Colloids and Interfaces	5
201700187	Soft and Biological Techniques**	5
201800224	Capita Selecta BE*	5
BioMedical Photonic Imaging (BMPI), prof.dr.ir. W. Steenbergen		
201300141	Wave Optics	5
193500000	Biomedical Optics	5
193640020	Medical Acoustics	5
-	1 of the recommended elective courses	5
<i>Recommended elective courses:</i>		
193640020	Biophysical techniques and molecular imaging	5
191210910	Image Processing and Computer Vision	5
201100254	Advanced Computer Vision and Pattern Recognition	5
201500583	Machine Learning for Medical Applications	5
201600260	Capita Selecta BMPI*	5

Complex Photonic Systems group (COPS), prof.dr. W.L. Vos		
201300141	Wave Optics	5
193515000	Quantum Optics	5
201100074	Nano-photonics	5
201100075	Nanophotonic Experiments	5
<i>Recommended elective courses:</i>		
201300139	Laser Physics	5
201400196	Quantum emitters	5
193520030	Nonlinear Optics	5
193510040	Theoretical Solid State Physics	5
201500405	Theory of Complex Functions	3
201700034	Introduction to Partial Differential Equations	5
193570050	Advanced Quantum Mechanics	5
193500040	Experimental Laser Physics and Nonlinear Optics	5
193515900	Capita Selecta COPS*	-
Computational Chemical Physics group (CCP), prof.dr. C. Filippi & prof.dr. W.J. Briels		
193570050	Advanced quantum mechanics	5
193510040	Theoretical solid state physics	5
201700176	Computational physics 1	2,5
201700177	Computational physics 2	2,5
-	Course in consultation with chair	5
<i>Recommended elective courses:</i>		
201300135	Soft and biological matter	5
200900066	Introduction to the Physics of Correlated Electrons	5
193570040	Theory of General Relativity	5
201600262	Capita Selecta CCP*	-
Computational Materials Science group (CMS), prof.dr. P.J. Kelly		
193510040	Theoretical Solid State Physics	5
193510020	Electronic Structure Theory 1	5
193510030	Electronic Structure Theory 2	5
193530010	Nanophysics	5
<i>Recommended elective courses:</i>		
193570050	Advanced Quantum Mechanics	5
200900066	Introduction to the Physics of Correlated Electrons	5
201500405	Theory of Complex Functions	3
-	Optics Courses	-
193510900	Capita Selecta CMS*	-
Energy Materials Systems (EMS), prof.dr.ir. H.J.M. ter Brake		
193530000	Introduction to Superconductivity	5
201100214	Applications of Superconductivity	5
201100146	Cryogenic Science and Technology	5
-	Course in consultation with chair	5
<i>Recommended elective courses:</i>		
193570010	Advanced Fluid Mechanics	5
193510040	Theoretical Solid State Physics	5
193550020	Surfaces and Thin Layers	5
193530010	Nanophysics	5
193580020	Experimental Techniques in Physics of Fluids	5
201700026	Electrical Power Engineering and System Integration	5
201400037	Linear Solid Mechanics	5
200900059	Capita Selecta EMS*	-

Industrial Focus Group XUV Optics (XUV), prof.dr. F. Bijkerk		
193530010	Nanophysics	5
193550020	Surfaces and Thin Layers	5
193700040	AMM-Inorganic Materials Science	5
-	Course in consultation with chair	5
<i>Recommended elective courses:</i>		
193510040	Theoretical Solid State Physics	5
193570050	Advanced quantum mechanics	5
191210730	Technology	5
201300141	Wave Optics	5
201600261	Capita Selecta XUV*	-
Inorganic Materials Science Group (IMS), prof.dr.ing. A.J.H.M. Rijnders		
193550020	Surfaces and Thin Layers	5
193700010	AMM-Characterization	5
193700040	AMM-Inorganic Materials Science	5
-	Course in consultation with chair	5
<i>Recommended elective courses:</i>		
193510040	Theoretical Solid State Physics	5
193530010	Nanophysics	5
193770000	Capita Selecta IMS*	-
200900068	Capita Selecta Advanced X-ray Scattering	-
Interfaces and Correlated Electron Systems (ICE), prof.dr.ir. J.W.M. Hilgenkamp		
193510040	Theoretical Solid State Physics	5
193530010	Nanophysics	5
193530000	Introduction to Superconductivity	5
-	Course in consultation with chair	5
<i>Recommended elective courses:</i>		
200900066	Introduction to the Physics of Correlated Electrons	5
200900060	Capita Selecta ICE*	-
Laser Physics and Nonlinear Optics group (LPNO), prof.dr. K.J. Boller		
201300139	Laser Physics	5
201300141	Wave Optics	5
193520030	Nonlinear Optics	5
193520040	Experimental laser Physics and Nonlinear Optics	5
<i>Recommended elective courses:</i>		
193515000	Quantum Optics	5
193570050	Advanced Quantum Mechanics	5
201500405	Theory of Complex Functions	3
193520900	Capita Selecta LPNO*	-
Nano BioPhysics group (NBP), dr. M.M.A.E. Claessens (chair)		
201300135	Soft and Biological Matter	5
193640020	Biophysical techniques and molecular imaging	5
-	Courses in consultation with chair	10
<i>Recommended elective courses:</i>		
193400111	Bionanotechnology	5
201700187	Soft and Biological Techniques**	5
201300141	Wave Optics	5
193400131	Nano-optics	5
201300139	Laser Physics	5
193500040	Experimental Laser Physics and Nonlinear Optics	5
193700010	AMM-Characterization	5
200900058	Capita Selecta NBP*	-

Optical Sciences group (OS), dr.ir. H.L. Offerhaus		
201300141	Wave Optics	5
191210880	Integrated Optics	5
-	1 of the recommended elective courses	5
1 out of:		
201300139	Laser Physics	5
193520030	Nonlinear Optics	5
<i>Recommended elective courses:</i>		
193500040	Experimental Laser Physics and Nonlinear Optics	5
193400131	Nano-optics	5
193400141	Nano-electronics	5
201500405	Theory of Complex Functions	3
201600180	Molecular Structure and Spectroscopy (part of AT module 9)	2.5
193540900	Capita Selecta OS*	-
Physics of Complex Fluids group (PCF), prof.dr. F.G. Mugele		
193565000	Capillarity Phenomena	5
193400121	Nano-fluidics	5
201300135	Soft and Biological Matter	5
-	Course in consultation with chair	5
<i>Recommended elective courses:</i>		
201800083	Advanced Colloids and Interfaces	5
201700187	Soft and Biological Techniques**	5
193570010	Advanced Fluid Mechanics	5
193565900	Capita Selecta PCF*	-
Physics of Fluids group (PoF), prof.dr. D. Lohse		
193570010	Advanced Fluid Mechanics	5
193580020	Experimental Techniques in Physics of Fluids	5
10 EC out of:		
193565000	Capillarity Phenomena (recommended)	5
193580010	Turbulence (recommended)	5
201400194	Granular Matter	5
201400195	Fluids and Elasticity	2.5
193572010	Physics of Bubbles	2.5
193542070	Medical Acoustics	5
<i>Recommended elective courses, all of the above plus:</i>		
201500405	Theory of Complex Functions	3
193720040	Introduction to Computational Fluid Dynamics	5
191560430	Nonlinear Dynamics	5
201300135	Soft and Biological Matter	5
193400121	Nano-fluidics	5
193580900	Capita Selecta PoF*	-
Physics of Interfaces and Nanomaterials group (PIN), prof.dr.ir. H.J.W. Zandvliet		
193530010	Nanophysics	5
193550020	Surfaces and Thin Layers	5
201500167	Modern Topics in Condensed Matter Physics	5
-	Course in consultation with chair	5
<i>Recommended elective courses:</i>		
193510040	Theoretical Solid State Physics	5
200900066	Introduction to the Physics of Correlated Electrons	5
201000244	Capita Selecta PIN*	-

Quantum Transport in Matter (QTM), prof.dr.ir. A. Brinkman

193510040	Theoretical Solid State Physics	5
193530010	Nanophysics	5
193530000	Introduction to Superconductivity	5
-	Course in consultation with chair	5

Recommended elective courses:

200900066	Introduction to the Physics of Correlated Electrons	5
201000304	Capita Selecta QTM*	-

* The Capita Selecta course is used for activities done in the chair not belonging to regular courses. The content, form and size is in agreement with the chair. There is a special registration form (see APH site – General Education - Forms APH) where beside course code, name, and EC, the subject, the material used, the assessment and a title is registered.

** Soft and Biological Techniques can only be done in combination with Soft and Biological Matter. It is open for master students when the maximum of student places for the minor participants is not reached. Please contact Michel Duits.