

Curriculum master Applied Physics for students enrolled 2019/2020

First and second year (M1 en M2)	
Name	EC
M1	
Compulsory courses (20 EC)	
191411291 Applied Quantum Mechanics	5
201900080 Mathematical and Numerical Physics	5
191470241 Heat and Mass Transfer	5
201900282 Small Signals and Detection	4
201900281 Ethics and Cultural Awareness	1
Specialization courses (20 EC)	20
Elective courses physics/technical	10
Elective courses free	10/0
M2	
Internship, 193599010 / 201700185	20/30
Master's Assignment, General Aspects 201800345 / Physical Aspects 201800344	40
Total master	120

AP 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
201800114	Imaging Technology in Radiology	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	Nanophotonics	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
193530040	Introduction to High Energy Physics	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
200900068	Capita Selecta Advanced X-ray Scattering	-
193770000	Capita Selecta IMS*	-
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), prof.dr. M.M.A.E. Claessens		
201300135	Soft and Biological Matter	5
193640020	Biophysical Techniques and Molecular Imaging	5
-	Courses in consultation with chair	10
<i>Recommended elective courses:</i>		
201400196	Quantum Emitters	5
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 (chair)		
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
191560430	Nonlinear Dynamics	5
201300135	Soft and Biological Matter	5
193400121	Nano-Fluidics	5
193580900	Capita Selecta PoF*	-
1 out of 2:		
201800131	Numerical Methods for Engineers	5
191154731	Computational Fluid Dynamics	5
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 [Grade form CS courses AP](#) to register course code, name, EC, subject, material used, assessment and a title.

** Soft and Biological Techniques can only be done in combination with Soft and Biological Matter. There is a maximum of student places. Please contact [Michel Duits](#).