

# Curriculum master Applied Physics for students enrolled 2016/2017

First and second year (M1 en M2)	
Name	EC
Compulsory track courses	20
Chair specific courses	10
Elective courses physics/technical	10
Elective courses free	10
External training	20
Graduation assignment	50
<b>Total master</b>	<b>120</b>

Materials Physics Track		
Coursecode	Name	EC
<b>Track courses:</b>		
193510040	Theoretical solid state physics	5
193550020	Surfaces and thin layers	5
193530010	Nanophysics	5
193530020	Advanced materials	5
<b>Physics of Interfaces and Nanomaterials group (PIN), prof.dr.ir. H.J.W. Zandvliet</b>		
<i>Chair specific courses:</i>		
201500167	Modern topics in condensed matter physics	5
-	Course in consultation with chair	-
<i>Recommended courses:</i>		
191411291	Applied quantum mechanics	5
200900066	Introduction to the physics of correlated electrons	5
193565000	Capillarity phenomena	5
201000244	Capita Selecta PIN*	-
-	Course in consultation with chair	-
<b>Interfaces and Correlated Electron Systems (ICE), prof.dr.ir. J.W.M. Hilgenkamp</b>		
<i>Chair specific courses:</i>		
193530000	Introduction to superconductivity	5
-	Course in consultation with chair	-
<i>Recommended courses:</i>		
200900066	Introduction to the physics of correlated electrons	5
200900060	Capita Selecta ICE*	-
<b>Quantum Transport in Matter (QTM), prof.dr.ir. A. Brinkman</b>		
<i>Chair specific courses:</i>		
193530000	Introduction to superconductivity	5
-	Course in consultation with chair	-
<i>Recommended courses:</i>		
200900066	Introduction to the physics of correlated electrons	5
201000304	Capita Selecta QTM*	-
<b>Computational Materials Science group (CMS), prof.dr. P.J. Kelly</b>		
<i>Chair specific courses:</i>		
193510020	Electronic structure theory I	5
193510030	Electronic structure theory II	5
<i>Recommended courses:</i>		
191411291	Applied quantum mechanics	5
193570050	Advanced quantum mechanics	5
200900066	Introduction to the physics of correlated electrons	5
201500405	Theory of complex functions	3
191551150	Numerical techniques for partial differential equations	5
201400196	Quantum emitters	5
201300141	Wave optics	5
193515000	Quantum optics	5
193510900	Capita Selecta CMS*	-

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### Materials Physics Track

**Energy Materials Systems (EMS), prof.dr.ir. H.J.M. ter Brake**

*EMS concerns material aspects, fluid mechanics and mass/heat transfer. For that reason is chosen for courses from two tracks.*

*Track courses (15 EC):*

193530020	Advanced materials	5
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2 out of:

193570010	Advanced fluid mechanics	5
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193510040	Theoretical solid state physics	5
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193550020	Surfaces and thin layers	5
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193530010	Nanophysics	5
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*Chair specific courses:*

193530000	Introduction to superconductivity	5
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201100214	Applications of superconductivity	5
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201100146	Cryogenic science and technology	5
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*Recommended courses:*

193580020	Experimental techniques in physics of fluids	5
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191551150	Numerical techniques for partial differential equations	5
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195740100	Electrical power engineering and system integration	4
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195740020	Energy and economy	4
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195740060	Hydrogen technology	4
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201600019	Energy Conversion Technology	5
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201400037	Linear Solid Mechanics	5
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200900059	Capita Selecta EMS*	-
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<b>Fluid Physics Track</b>		
<b>Coursecode</b>	<b>Name</b>	<b>EC</b>
<b>General track courses:</b>		
193570010	Advanced fluid mechanics	5
193565000	Capillarity phenomena	5
<b>Specific track courses:</b>		
<b>For PoF:</b>		
193580020	Experimental techniques in physics of fluids	5
191551150	Numerical techniques for partial differential equations	5
<b>For NI and PCF:</b>		
193400121	Nano-fluidics	5
201300135	Soft and biological matter	5
<b>Physics of Fluids group (PoF), prof.dr. D. Lohse</b>		
<i>Chair specific courses:</i>		
10 EC out of:		
193580010	Turbulence	5
201400194	Granular matter	5
193572010	Physics of bubbles	2.5
201400195	Fluids and elasticity	2.5
<i>Recommended courses:</i>		
201500405	Theory of complex functions	3
193720040	Introduction to computational fluid dynamics	5
191560430	Nonlinear Dynamics	5
193542070	Medical acoustics	5
201300135	Soft and biological matter	5
193400121	Nano-fluidics	5
193580900	Capita Selecta PoF*	-
<b>Physics of Complex Fluids group (PCF), prof.dr. F.G. Mugele</b>		
<i>Chair specific courses:</i>		
193565900	Capita selecta PCF*	5
193735060	Colloids and interfaces	5
<i>Recommended courses:</i>		
193640020	Biophysical techniques and molecular imaging	5
193720040	Introduction to computational fluid dynamics	5
201300137	Ions and devices	5
<b>Nanolonics group (NI), prof.dr. S.J.G. Lemay</b>		
<i>Chair specific courses:</i>		
201300137	Ions and devices	5
201100190	Capita Selecta NI*	5
<i>Recommended courses:</i>		
-	Course in consultation with chair	-

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<b>Optics and BioPhysics Track</b>		
<b>Coursecode</b>	<b>Name</b>	<b>EC</b>
<b>Track courses:</b>		
201300139	Laser physics	5
193515000	Quantum optics	5
201300141	Wave optics	5
201400196	Quantum emitters	5
<b>Laser Physics and Nonlinear Optics group (LPNO), prof.dr. K.J. Boller</b>		
<i>Chair specific courses:</i>		
193520030	Nonlinear optics	5
193520040	Experimental laser physics and nonlinear optics	5
<i>Recommended courses:</i>		
191411291	Applied quantum mechanics	5
193400131	Nano-optics	5
193520900	Capita Selecta LPNO*	-
<b>Nano BioPhysics group (NBP), dr. M.M.A.E. Claessens (chair)</b>		
<i>Chair specific courses:</i>		
193640020	Biophysical techniques and molecular imaging	5
1 out of:		
193640080	Biophysics	5
193400111	Bionanotechnology	5
201300135	Soft and biological matter	5
<i>Recommended courses:</i>		
193400131	Nano-optics	5
193500040	Experimental laser physics and nonlinear optics	5
193700010	AMM - Characterization	5
200900058	Capita Selecta NBP*	-
<b>Optical Sciences group (OS), prof.dr. J.L. Herek</b>		
<i>Chair specific courses:</i>		
193400131	Nano-optics	5
193500040	Experimental laser physics and nonlinear optics	5
<i>Recommended courses:</i>		
193400141	Nano-electronics	5
193540900	Capita Selecta OS*	-
191210880	Integrated Optics	5
201500405	Theory of complex functions	3
193520030	Nonlinear optics	5
201600180	Molecular Structure and Spectroscopy (part of AT module 9)	2.5
	Spectroscopy (part of 201600043)	2
<b>Complex Photonic Systems group (COPS), prof.dr. W.L. Vos</b>		
<i>Chair specific courses:</i>		
201100074	Nanophotonics	5
201100075	Nanophotonic experiments	5
<i>Recommended courses:</i>		
191411291	Applied quantum mechanics	5
193510040	Theoretical solid state physics	5
201500405	Theory of complex functions	3
193570050	Advanced quantum mechanics	5
193500040	Experimental laser physics and nonlinear optics	5
193515900	Capita Selecta COPS*	-
<b>Computational Chemical Physics group (CCP), prof.dr. C. Filippi &amp; prof.dr. W.J. Briels</b>		
<i>For CCP is chosen for a more interdisciplinary approach. For that reason the track courses are a combination of courses of all the three tracks.</i>		
<i>Track courses:</i>		
193515000	Quantum optics	5
201400196	Quantum emitters	5
193510040	Theoretical solid state physics	5
201300135	Soft and biological matter	5
<i>Chair specific courses:</i>		
191411291	Applied quantum mechanics	5
193570050	Advanced quantum mechanics	5
<i>Recommended courses:</i>		
201100189	Capita Selecta BES*	5

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<b>Optics and BioPhysics Track</b>		
<b>Biomedical Photonic Imaging group (BMPI), prof.dr.ir. W. Steenbergen</b>		
<i>Chair specific courses:</i>		
193500000	Biomedical Optics	5
201400281	Advanced Medical Imaging & Therapy Systems	5
<i>Recommended courses:</i>		
193542070	Medical acoustics	5
193640020	Biophysical Techniques & Molecular Imaging	5
201400268	Capita selecta BMPI*	-

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