

In this Applied master's programme the courses and planning of the courses in the Applied Physics of the academic year 2025-2026 programme are listed.

Among other things the curricula per cohort and the transitional arrangements are published on the website

[Curriculum master AP](#)

## Compulsory courses

Quartile	Course Code	Course Name	Contact	EC
1A	202200093	<a href="#">Quantum Mechanics 2</a>	Leppert	5.0
1B	201900080	<a href="#">Mathematical and Numerical Physics</a>	Stevens	5.0
2A	191470241	<a href="#">Heat and Mass Transfer</a>	Maass	5.0
2B	201900282	<a href="#">Small Signals and Detection</a>	Marpaung	4.0
2B	201900281	<a href="#">Ethical and Cultural Awareness</a>	Offerhaus	1.0
-	193599010 or 201700185	<a href="#">Internship</a> <a href="#">Internship</a>	Velthuis Velthuis	20 30
-	201800344	<a href="#">Master's Assignment, Physical Aspects</a>	AP programme	20
		<a href="#">Master's Assignment, General Aspects</a>	AP programme	20

## Specialisation courses Applied Physics

More and detailed information about the Applied Physics specialisations can be found on the website

<https://www.utwente.nl/en/education/master/programmes/applied-physics/specialisations/>

### Capita Selecta (CS) course

A Capita Selecta course offers students the opportunity to explore a fundamental or current topic in physics in case the subjects are not covered by a regular course at the same level. The emphasis is on theoretical depth; the application of physics or engineering skills is not part of the course. The content, learning objectives, and assessment are developed in consultation with a research group chair and/or chair of the master's assignment committee and submitted to the programme director for review and approval.

To formalise this process, the designated form must be used: [Grade Form Capita Selecta AP](#).

The Capita Selecta course can be used as course in the physics/technical electives part of the study programme.

## Quantum Physics

The Quantum Physics track consists of two tracks Quantum Electronics (QE) and Quantum Optics (QO)

Quartile	Code	Course	Contact	EC	Mandatory	Elective
1A	202100078	<a href="#">Quantum Information</a>	Renema	5	QE; QO	
1A	193530000	<a href="#">Introduction to Superconductivity</a>	Dhalle	5		QE
1A	193530010	<a href="#">Nanophysics</a>	Zandvliet	5		QE
1B	193570050	<a href="#">Advanced Quantum Mechanics</a>	Filippi	5	CCP	XUV
1B	193400141	<a href="#">Nano-Electronics</a>	Wiel, van der	5		QE
1B	202100083	<a href="#">Quantum Optics</a>	Pinkse	5		QO
1B	202200295	<a href="#">Laser Physics and Nonlinear Optics</a>	Slot, van der	5		QO
2A	191210880	<a href="#">Integrated Optics</a>	Garcia Blanco	5		QO
2A	193530040	<a href="#">Intro. to High Energy Physics</a>	Du Pree	5		QE
2B	202400780	<a href="#">Advanced Solid-State Physics</a> <sup>1</sup>	Leppert	5		QE

<sup>1</sup> Due to the leaving of the lecturer of this course, the course ASSP is not offered in quartile 4 (2B). A recommended replacement course is 202500546 Advanced Condensed Matter Physics.

Year	202100210	<a href="#">Electronic Structure Theory</a> <sup>2,3</sup>	Leppert	5	QE
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**Applied Nano-Photonics**

Quartile	Code	Course	Contact	E C	SC <sup>1)</sup>	RC <sup>1)</sup>
1A	202200044	<a href="#">Fundamentals of Photonics</a>	Saive	5. 0	All ANP spec.	
1A	202100078	<a href="#">Quantum Information</a>	Renema	5. 0	Quant.	Bio., Int., LM.
1B	202200295	<a href="#">Laser Physics Nonlinear Optics</a>	Slot, van der	5. 0	Bio, Int.	Quant., LM.
1B	202100083	<a href="#">Quantum Optics</a>	Pinkse	5. 0	Quant.	Bio., Int., LM.
2A	191210880	<a href="#">Integrated Optics</a>	Garcia Blanco	5. 0	Int., Quant.	Bio., LM.
2A	202200045	<a href="#">Integrated Photonic Sys. and Exp.</a>	Marpaung	5. 0	Int.	Bio., LM., Quant.
2A	202400632	<a href="#">Intro to Partial Differential Equations</a>	Pérez Arancibia	4. 0		Bio., Int., LM., Quant.
2B	193500000	<a href="#">Biomedical Optics</a>	Vellekoop	5. 0	Bio.	Quant., Int., LM.
2B	201500405	<a href="#">Complex Function Theory</a>	Zwart	3. 0		Bio., Int., LM., Quant.
2B	202400780	<del><a href="#">Advanced Solid-State Physics</a></del> <sup>4</sup>	Leppert	5. 0	LM	Bio., Int., Quant.
2B	202200047	<a href="#">NanoPlasmonics</a>	Lin	5. 0	LM	Bio., Int., Quant.

<sup>2</sup> Participation in and scheduling of the *Electronic Structure Theory* course will be in consultation with the contact person/examiner.

<sup>3</sup> Cancelled in 25-26. Will be moved to quartile 4 (2B) in 26-27

<sup>4</sup> Due to the leaving of the lecturer of this course, the course ASSP is not offered in quartile 4 (2B). A recommended replacement course is 202500546 *Advanced Condensed Matter Physics*.

Nano-Electronic materials

Quartile	Code	Course	Contact	EC	SC <sup>1)</sup>	RC <sup>1)</sup>
1A	193700010	<a href="#">Characterization</a>	Wenderich	5.0	IMS, XUV	
1A	202000694	<a href="#">Classical Mechanics</a>	Filippi	4.0		CCP
1A	193530010	<a href="#">Nanophysics</a>	Zandvliet	5.0	ICE, PIN, QTM, XUV	EMS, IMS, CCP
1A	193530000	<a href="#">Intr. to Superconductivity</a>	Dhalle	5.0	EMS, ICE, QTM	IMS
1B	191210730	<a href="#">Fabrication of Micro- and Nanodevices</a>	Kovalgin	5.0		XUV
1B	201100214	<a href="#">Applications of Superconductivity</a>	Dhalle	5.0	EMS	
1B	193570050	<a href="#">Advanced Quantum Mechanics</a>	Filippi	5.0	CCP	XUV
1B	201700026	<a href="#">Electr. Power Eng. and Sys. Integr.</a>	Dhalle	5.0		EMS
2A	193700040	<a href="#">Inorganic Materials Science</a>	Beumer	5.0	IMS, XUV	
2A	202100223	<a href="#">Computational Physics</a>	Filippi	5.0		CCP
2A	202100224	<a href="#">Machine Learning</a>	Bokdam	3-5		CCP
2A	201700025	<a href="#">Solar Energy</a>	Saive	5.0	IMS	
2A	193530040	<a href="#">Introduct. to High Energy Physics</a>	Du Pree	5.0		EMS
2A	193550020	<a href="#">Surfaces and Thin Layers</a>	Wormeester	5.0	IMS, PIN, XUV	EMS
2A	201400037	<a href="#">Linear Solid Mechanics</a>	Rege	5.0		EMS
2B	202400780	<a href="#">Advanced Solid State Physics</a> <sup>5</sup>	Leppert	5.0	CCP, ICE	EMS, IMS, PIN, XUV, QTM
2B	201500167	<a href="#">MTCMP</a> <sup>6</sup>	Bampoulis	5.0	PIN	
2B	202500546	<a href="#">Advanced Condensed Matter Physics</a> <sup>4</sup>	Bampoulis	5.0	PIN	
2B	202300191	<a href="#">X-ray Characterization for S&amp;T</a>	Ackermann	5.0	XUV	
2B	201900042	<a href="#">Nanomaterials Research</a>	Van den Beld	5.0		XUV
2B	202400605	<a href="#">Cooling Science and Technology</a>	Vanapalli	5.0	EMS	
Year	202100210	<a href="#">Electronic Structure Theory (Self study)</a> <sup>7</sup>	Bokdam	5.0	CCP	

Physics of Fluids

Quartile	Code	Course	Contact	EC	SC <sup>1)</sup>	RC <sup>1)</sup>
1A	193570010	<a href="#">Advanced Fluid Mechanics</a>	Huisman	5.0	PoF	EMS,
1A	191560430	<a href="#">Nonlinear Dynamics</a>	Meijer	5.0		PoF
1B	193572010	<a href="#">Physics of Bubbles</a>	Versluis	2.5		PoF
1B	193580010	<a href="#">Turbulence</a>	Stevens	5.0		PoF
1B	193565000	<a href="#">Capillarity Phenomena</a>	Snoeijer	5.0		EMS, PoF
2A	193580020	<a href="#">Experimental Techniques in PoF</a>	Marin	5.0	PoF	EMS
2A	193400121	<a href="#">Nano-Fluidics</a>	Sîretanu	5.0		PoF
2A	193542070	<a href="#">Medical Acoustics</a>	Lajonie	5.0		PoF
2A	201400194	<a href="#">Granular Matter</a>	Meer, van der	5.0		PoF
2B	201500405	<a href="#">Complex Function Theory</a>	Zwart	3.0		ANP, CCP, PoF
2B	191154731	<a href="#">Computational Fluid Dynamics</a> <sup>2</sup>	Weide, van der	5.0		PoF
2B	201800131	<a href="#">Numerical Meth. for Engineers</a> <sup>8</sup>	Lamertink	5.0		PoF, EMS

<sup>5</sup> Due to the leaving of the lecturer of this course, the course ASSP is not offered in quartile 4 (2B). A recommended replacement course is 202500546 Advanced Condensed Matter Physics.

<sup>6</sup> The course MTCMP is replaced by the course 202500546 Advanced Matter Physics.

<sup>7</sup> Cancelled in 25-26. Will be moved to quartile 4 (2B) in 26-27

<sup>8</sup> Due to overlap, these courses cannot be followed both.

**Materials Science & Engineering Multidisciplinary Specialisation AP-CSE-ME**

Quartile	Code	Course	Contact	EC	SC <sup>1)</sup>	RC <sup>1)</sup>
1A	193700010	<a href="#">Characterization</a>	Wenderich	5.0	MS&E	
1B						
2A	193700040	<a href="#">Inorganic Materials Science</a>	Baeumer	5.0	MS&E, IMS, XUV	
2A	193550020	<a href="#">Surfaces and Thin Layers</a>	Wormeester	5.0	MS&E, IMS, PIN, XUV	EMS
2B	202100319	<a href="#">Phase transformations in manufacturing</a>	Bor	5.0	MS&E	

**Fluid Mechanics Multidisciplinary Specialisation AP-ME**

Quartile	Code	Course	Contact	EC	SC <sup>1)</sup>	RC <sup>1)</sup>
1A	193570010	<a href="#">Advanced Fluid Mechanics</a> <sup>9</sup>	Huisman	5.0	FM	
1A	201500136	<a href="#">Fluid Mechanics II</a> <sup>7</sup>	Ströer	5.0	FM	
1A	201800083	<a href="#">Advanced colloids and interfaces</a>	Wood	5.0		FM
1A	191157750	<a href="#">Engineering Acoustics</a>	Wijnant	5.0		FM
1A		<a href="#">Experimental methods in Fluid and Thermal Engineering</a>	Sanders	5.0		FM
1A	202000245	<a href="#">Fundamentals of Numerical Methods</a>	Weide, van der	5.0		FM
1A	202200103	<a href="#">Image processing and computer vision</a>	Abayazid	5.0		FM
1A	191560430	<a href="#">Nonlinear dynamics</a>	Meijer	5.0		FM
1B	193572010	<a href="#">Physics of Bubbles</a>	Versluis	2.5		FM
1B	193580010	<a href="#">Turbulence</a>	Stevens	5.0		FM
1B	201500024	<a href="#">Advanced Thermodynamics</a>	Otter, den	5.0		FM
1B	201900091	<a href="#">Advanced Topics in Finite Element Meth.</a>	Perdahcioglu	5.0		FM
1B	191154720	<a href="#">Fluid Mechanics of Turbomachines 1</a>	Withag	5.0		FM
1B	202200266	<a href="#">Hydrogen Technology</a>	Rajamani	5.0		FM
1B	201800327	<a href="#">Ion Transport in Fluids</a>	Wood	2.5		FM
1B	193565000	<a href="#">Capillarity Phenomena</a>	Snoeijer	5.0		FM
2A	193580020	<a href="#">Experimental Techniques in PoF</a>	Marin	5.0	FM	
2A	201800371	<a href="#">Aeroacoustics</a>		5.0		FM
2A	202000244	<a href="#">Aircraft &amp; Wind Turbine Aerodyn.s</a>	Garrel, van	5.0		FM
2A	202001436	<a href="#">Biofluid Dynamics: Th. &amp; Analysis</a>	Jain	5.0		FM
2A	201400194	<a href="#">Granular Matter</a>	Meer, v.d.	5.0		FM
2A	193400121	<a href="#">Nano-Fluidics</a>	Sîretanu	5.0		FM
2A	191155730	<a href="#">Tribology</a>	Osara	5.0		FM
2A	201700218	<a href="#">Turbulent Combustion</a>	Kok	5.0		FM
2B	201500405	<a href="#">Complex Function Theory</a>	Zwart	3.0		FM
2B	191154340	<a href="#">Gasdynamics</a>	Hirschberg	5.0		FM
	191154731	<a href="#">Computational Fluid Dynamics</a> <sup>10</sup>	Weide, v.d.	5.0		FM
	201800131	<a href="#">Numerical Meth. for Engineers</a> <sup>4</sup>	Lammertink	5.0		FM
	201100254	<a href="#">Adv. Comp. Vision and Pattern Recogn.</a>	Spreeuwiers	5.0		FM
	201400300	<a href="#">Multiphase Flows</a>	Jarray	5.0		FM
	201700024	<a href="#">Wind Energy</a>	Garrel, van	5.0		FM

<sup>1)</sup> SC is Specialization courses, RC is Recommended elective courses, see also [Curriculum AP](#).

<sup>2)</sup> Students who want to participate in this course, please contact the teaching staff.

<sup>9</sup> Due to overlap, this course cannot be followed in combination with each other

<sup>10</sup> Due to overlap, this course cannot be followed in combination with each other