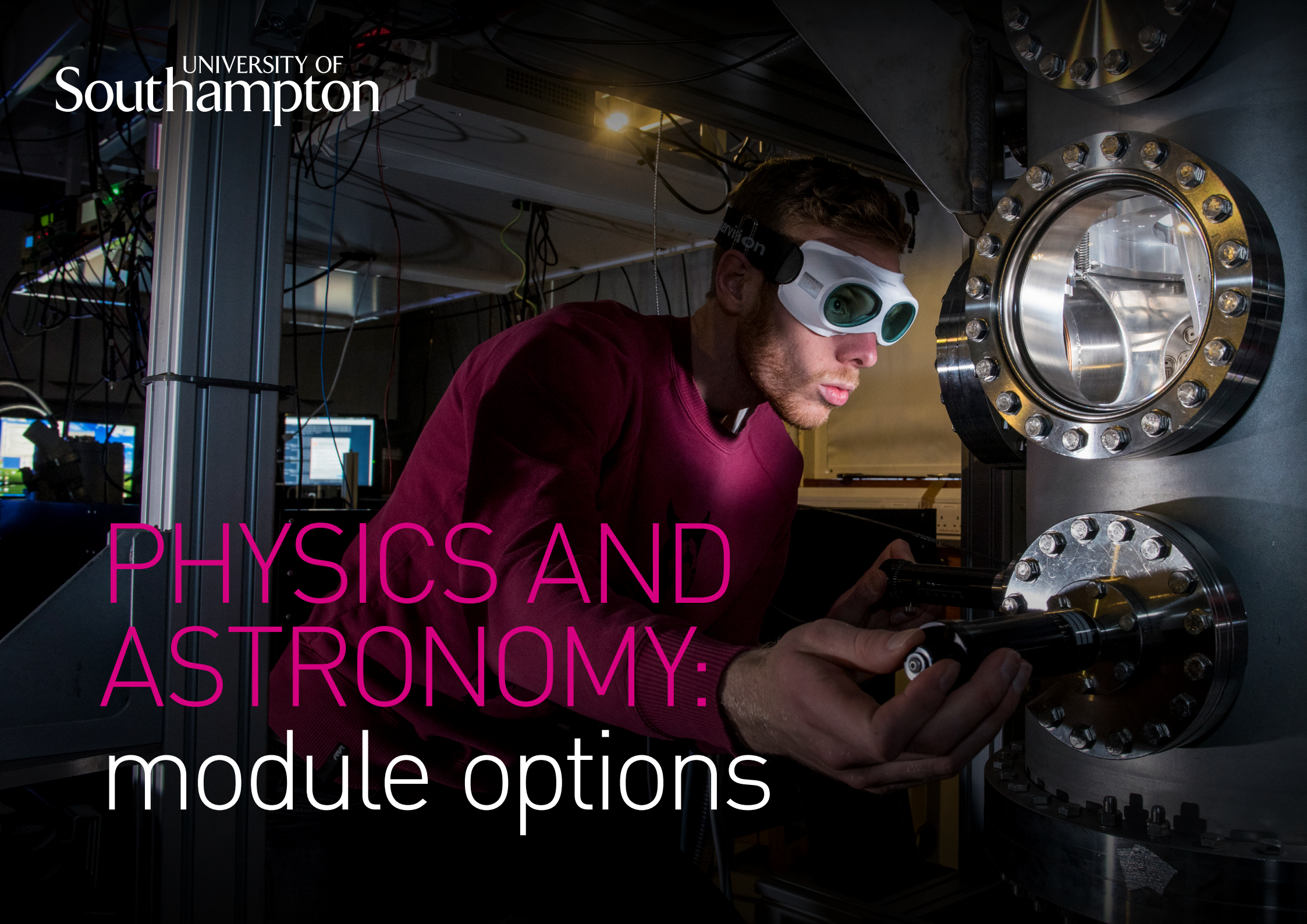


PHYSICS AND ASTRONOMY: module options



EXPLORE YOUR OPTIONS

Use this leaflet to discover the details of your chosen course. See which compulsory modules you'll study on your degree, and think about which optional modules you might like to take.

Not all optional modules are listed here; you'll also be able to enhance your knowledge outside of physics by studying optional modules from the wider University. In recent years our students have chosen to study modules in subjects including languages, business, law, engineering, oceanography, music, psychology and chemistry.

Some of these modules are included in the tables overleaf, but there are many more available for you to choose from.

If you decide you'd like to switch degrees, we try to make this as easy as possible and you can often do this up until the end of your second year. However, the ability to change onto some degrees will depend on whether you have studied prerequisite modules.

“

I really enjoyed studying physics at Southampton; the core modules were very engaging with excellent teaching - and some great characters - and the labs complemented the core learning well. There was always plenty of choice for optional modules; I took some modules from the maths, chemistry and engineering departments, which supplemented my core physics knowledge and I believe made me a better, more-rounded scientist.”

James Gray

MPhys Physics, 2015

Clinical Scientist, Royal Surrey County Hospital



CHOOSE YOUR DEGREE

Channel your curiosity and investigate the beautiful concepts that underpin our understanding of space, time and matter. Our Physics and Astronomy degrees offer a rigorous scientific training based on the latest research, and will enable you to develop key transferable skills. With module choices in every year, you can build your degree to suit your interests and career aspirations.

BSc Physics (three years): Gain a deep and thorough understanding of physics in three years, before taking your next steps in employment or academia.

MPhys Physics (four years): From quantum mechanics to the evolution of the universe, our most flexible degree enables you to explore the topics that interest you at a profound level.

Our specialised degrees provide the opportunity to focus on your chosen field.

MPhys Physics with Astronomy (four years): Enter the realm of extreme physics and gain the skills and knowledge of a professional astronomer.

MPhys Physics with Space Science (four years): Examine phenomena in the space environment and equip yourself for a role in the fast-growing space economy.

MPhys Physics with Mathematics (four years): By studying mathematics in more depth alongside physics, you'll develop high-level analytical, modelling and computing skills.

MPhys Physics with Nanotechnology (four years): Study matter down to the scale of single atoms and gain the expertise and skills to join the next wave of nanotechnology innovation.

MPhys Physics with Photonics (four years): Discover the world-changing field of photonics – the science of light – and apply your physics knowledge to the next generation of technologies.

Our flagship degrees give you the chance to work on a cutting-edge research project, here in the UK or abroad.

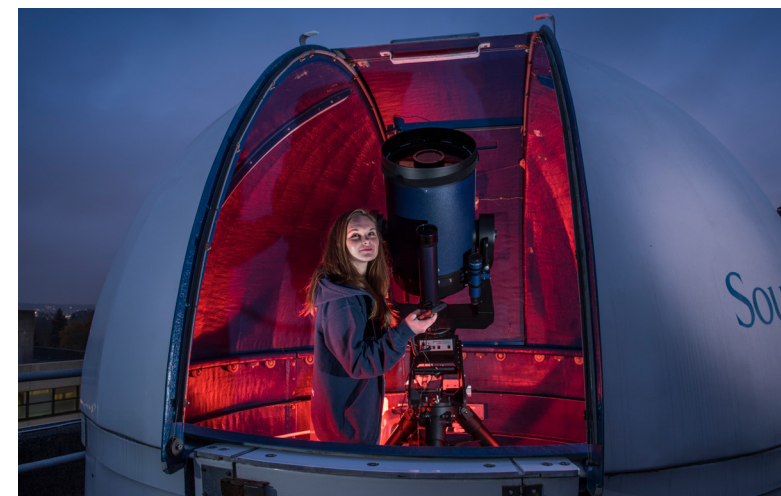
MPhys Astrophysics with a Year Abroad (four years): Undertake a research project at the Harvard-Smithsonian Center for Astrophysics, in Boston, USA.

MPhys Astrophysics with a Year in Research (four years): Work on a research project alongside our academics within the Astronomy Group here at Southampton.

MPhys Particle Physics with a Research Year Abroad (four years): Become part of the international research team at CERN and spend a year working on a project at the Large Hadron Collider.

MPhys Physics with Industrial Placement (four years): See how physics makes a difference in a high-tech world on a six-month industry placement.

MPhys Physics with a Year of Experimental Research (four years): Join one of our research groups and undertake an in-depth, year-long experimental research project.



Our top students can choose to transfer onto one of our flagship degrees at the end of the second year

YEAR 1 MODULES

Number of options			Year 1									
Year of study	Year 1		Module code	Semester	Module title	BSc Physics	MPhys Physics	MPhys Physics with Astronomy	MPhys Physics with Maths	MPhys Physics with Nanotechnology	MPhys Physics with Photonics	MPhys Physics with Space Science
Degree	Semester 1	Semester 2										
Number of optional modules per semester												
BSc Physics	1	0	MATH1006	1	Mathematical Methods for Physical Scientists 1a	■	■	■	■	■	■	■
MPhys Physics	1	0	MATH1007	2	Mathematical Methods for Physical Scientists 1b	■	■	■	■	■	■	■
MPhys Physics with Astronomy	0	0	PHYS1011	2	Wave, Light and Quanta	■	■	■	■	■	■	■
MPhys Physics with Mathematics	0	0	PHYS1013	2	Energy and Matter	■	■	■	■	■	■	■
MPhys Physics with Nanotechnology	0	0	PHYS1015	1	Motion and Relativity	■	■	■	■	■	■	■
MPhys Physics with Photonics	0	0	PHYS1017	1	Physics Skills 1	■	■	■	■	■	■	■
MPhys Physics with Space Science	0	0	PHYS1017	1	Physics Skills 2	■	■	■	■	■	■	■
MPhys Particle Physics with a Research Year Abroad	NA		PHYS1022	1	Electricity and Magnetism	■	■	■	■	■	■	■
MPhys Physics with Industrial Placement	NA		PHYS1201	2	Physics Skills Programming and Data Analysis	■	■	■	■	■	■	■
Astrophysics with a Year Abroad/ Year in Research	NA		MATH1048	1	Linear Algebra I	R	R		○			
MPhys Physics with a Year of Experimental Research	NA		PHYS1004	1	Introduction to Photonics	R	R			○	○	
			PHYS1005	1	Introduction to Astronomy and Space Science	R	R	○				○
			HUMA2013	1	How the Arts Work							
			CHEM1012	1	Introduction to Chemistry							
			MUS1015	1	Music: First Year Performance Tuition							
			LANGXXXX	1	Any modern language							
			There are many other modules available for you to choose from, from across the University.									

KEY

- Compulsory
- Course-specified option
- R Recommended option

- Some modules require you to have already taken certain other modules.
- Our programmes are regularly reviewed and updated, so changes are likely to occur. For the most up-to-date information, please visit our website.
- We can't guarantee all optional modules will run every year, but the optional modules shown here have been taken by our students in recent years.

YEAR 2 MODULES

Number of options			Year 2									
Year of study	Year 2											
	Semester 1	Semester 2										
Degree	Number of optional modules per semester		PHYS2001	2	Electromagnetism	■	■	■	■	■	■	■
			PHYS2003	2	Quantum Physics	■	■	■	■	■	■	■
			PHYS2006	1	Classical Mechanics	■	■	■	■	■	■	■
			PHYS2022	1	Physics from Evidence I	■	■	■	■	■	■	■
			PHYS2023	1	Wave Physics	■	■	■	■	■	■	■
			PHYS2024	2	Statistical Mechanics	■	■	■	■	■	■	■
			PHYS2013	1	Galaxies	R	R	O			R	
			PHYS2031	1	Introduction to the Nano World					■		
			MATH2038	2	Partial Differential Equations	R	R	R	O			
			MATH2045	1	Vector Calculus and Complex Variable				O			
			PHYS2009	2	Practical Photonics	R	R	R		O	O	
			BIOL1010	1	Macromolecules of Life					O		
Degree			PHYS2030	1 & 2	European Dimension in Space							O
			SESA2024	1	Astronautics							O
			MATH2015	1	Mathematical Methods for Scientists	R	R				R	
			PHYS2007	2	Medical Physics	R	R					
			PHYS2011	2	Design & Observation in Astronomy			R				
			PHYS2015	2	Introduction to Energy and the Environment	R	R					
			PHYS3019	2	Communicating and Teaching and The Undergraduate							
			PHIL2014	2	Logic							
			ANTH2001	2	Cosmology, Ritual and Belief							
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YEAR 3 MODULES

Number of options			Year 3													
Year of study	Year 3		Module code	Semester	Module title	BSc Physics	MPhys Physics	MPhys Physics with Astronomy	MPhys Physics with Maths	MPhys Physics with Nanotechnology	MPhys Physics with Photonics	MPhys Physics with Space Science	MPhys Particle Physics with Year Abroad	MPhys Physics with Industrial Placement	Astrophysics with a Year Abroad/ Year in Research	MPhys Physics with a Year of Experimental Research
Number of optional modules per semester	Semester 1	Semester 2														
Degree																
BSc Physics	2	1	PHYS3002	2	Nuclei and Particles	■	■	■	■	■	■	■	■	■	■	■
MPhys Physics	2	2	PHYS3004	2	Crystalline Solids	■	■	■	■	■	■	■	■	■	■	■
			PHYS3008	1	Atomic Physics	■	■	■	■	■	■	■	■	■	■	
MPhys Physics with Astronomy	0	1	PHYS3017	2	BSc Final Year Synoptic Exam	■										
			PHYS3018	1	BSc Project	■										
MPhys Physics with Mathematics	0	1	PHYS3007	1	Theories of Matter, Space and Time		■	■	■	■	■	■	■	■	■	■
MPhys Physics with Nanotechnology	0	2	PHYS6009	1	Dissertation		■	■	■	■	■	■		■		
MPhys Physics with Photonics	0	2	MATH3006	2	Relativity, Blackholes and Cosmology				○							
MPhys Physics with Space Science	0	1	MATH3018	1	Numerical Methods	R	R		○				R	R		R
			PHYS3003	1	Light and Matter	R	R			○		R	R		R	
MPhys Particle Physics with a Research Year Abroad	1	0	PHYS3010	2	Stellar Evolution			○			R				○	
			PHYS3011	1	Photons in Astrophysics			○					○			
			PHYS6003	1	Advanced Quantum Physics	R	R					○	R		○	
			PHYS6004	2	Space Plasma Physics							○				
MPhys Physics with Industrial Placement	1	2	PHYS6005	1	Cosmology		R							○		
			PHYS6011	2	Particle Physics					R	R		○			
Astrophysics with a Year Abroad/ Year in Research	0	0	PHYS6008	2	Physics from Evidence II	R	R	R	R	R	R		R		R	
			OR													
MPhys Physics with a Year of Experimental Research	1	2	PHYS6017	2	Computer Techniques in Physics	R	R	R	R	R	R	○	R	○	R	
Note: Modules PHYS6008 and PHYS6017 are paired, so you can only take one of these modules. For MPhys Physics, MPhys Physics with Astronomy, MPhys Physics with Space Science, MPhys Physics with Maths, MPhys Physics with Photonics and MPhys Physics with Nanotechnology, it's compulsory to take one of these options.																

Note: Modules PHYS6008 and PHYS6017 are paired, so you can only take one of these modules. For MPhys Physics, MPhys Physics with Astronomy, MPhys Physics with Space Science, MPhys Physics with Maths, MPhys Physics with Photonics and MPhys Physics with Nanotechnology, it's compulsory to take one of these options.

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YEAR 3 MODULES CONTINUED

Number of options			Year 3													
Year of study	Year 3		Module code	Semester	Module title	BSc Physics	MPhys Physics	MPhys Physics with Astronomy	MPhys Physics with Maths	MPhys Physics with Nanotechnology	MPhys Physics with Photonics	MPhys Physics with Space Science	MPhys Particle Physics with Year Abroad	MPhys Physics with Industrial Placement	Astrophysics with a Year Abroad/ Year in Research	MPhys Physics with a Year of Experimental Research
Number of optional modules per semester	Semester 1	Semester 2														
Degree																
BSc Physics	2	1	SESA3039	1	Advanced Astronautics							○				
			PHYS2007	2	Medical Physics											
MPhys Physics	2	2	PHYS2009	2	Practical Photonics	R	R							R		R
			PHYS2015	2	Introduction to Energy and the Environment	R	R							R		R
MPhys Physics with Astronomy	○	1	PHYS3009	2	Applied Nuclear Physics	R	R			R	R			R		R
MPhys Physics with Mathematics	○	1	PHYS3019	2	Communicating and Teaching and The Undergraduate	R	R			R	R			R		R
MPhys Physics with Nanotechnology	○	2	PHYS6012	1	Coherent Light, Coherent Matter	R	R					R		R		R
			PHYS6014	2	Nanoscience: Technology and Advanced Materials											
MPhys Physics with Photonics	○	2	PHYS6024	1	Lasers	R	R							R		R
MPhys Physics with Space Science	○	1	CHIN9026	1	Chinese Language Stage 2A											
			ISVR3063	2	Musical Instrument Acoustics											
MPhys Particle Physics with a Research Year Abroad	1	○	FREN8085	1 or 2	French Language Stage 1A											
			UOSM2011	2	The Management of Risk and Uncertainty											
			UOSM2022	1	Social Enterprise											
MPhys Physics with Industrial Placement	1	2	There are many other modules available for you to choose from, from across the University.													
Astrophysics with a Year Abroad/ Year in Research	○	○														
MPhys Physics with a Year of Experimental Research	1	2														

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YEAR 4 MODULES

Number of options			Year 4												
Year of study	Year 4		Module code	Semester	Module title	MPhys Physics	MPhys Physics with Astronomy	MPhys Physics with Maths	MPhys Physics with Nanotechnology	MPhys Physics with Photonics	MPhys Physics with Space Science	MPhys Particle Physics with Year Abroad	MPhys Physics with Industrial Placement	Astrophysics with a Year Abroad/Year in Research	MPhys Physics with a Year of Experimental Research
Degree	Semester 1	Semester 2													
BSc Physics	NA		PHYS6006	1 & 2	MPhys Project	■	■	■	■	■	■				
			PHYS6015	2	MPhys Final Year Synoptic Exam	■	■	■	■	■	■		■		
MPhys Physics	3	2	PHYS6016	1 & 2	Particle Physics Research Project							■			
			PHYS6027	1	R&D Project for MPhys Industrial Placement								■		
MPhys Physics with Astronomy	2	1	PHYS6013	1 & 2	Research Thesis - Astrophysics									■	
MPhys Physics with Mathematics	3	1	PHYS6018	1 & 2	Research & Thesis on Experimental Physics										■
MPhys Physics with Nanotechnology	1	1	PHYS6071	2	Physics of the Early Universe	R									
MPhys Physics with Photonics	1	2	MATH6149	2	Modelling with Differential Equations	R	R	O							
MPhys Physics with Space Science	3	1	MATH6172	1	Gravitational Waves	R	R	O			R				
			PHYS6012	1	Coherent Light, Coherent Matter	R		R	O	O					
MPhys Particle Physics with a Research Year Abroad	O	O	PHYS6014	2	Nanoscience: Technology and Advanced Materials	R		R	O						
			PHYS6003	1	Advanced Quantum Physics	R	R	R	O		R				
MPhys Physics with Industrial Placement	O	3	PHYS6024	1	Lasers	R		R	R	O					
			PHYS6004	2	Space Plasma Physics	R	O	R			R				
Astrophysics with a Year Abroad/Year in Research	O	O	PHYS6005	1	Cosmology	R	O	R			R				
			MATH3006	2	Relativity, Blackholes and Cosmology	R	R	R			R				
MPhys Physics with a Year of Experimental Research	O	O	MATH3018	1	Numerical Methods	R	R	R	R	R	R				
			SESA6076	2	Spacecraft Orbit Mech & Control						R				

KEY

■ Compulsory

○ Course-specified option

R Recommended option

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YEAR 4 MODULES CONTINUED

Number of options			Year 4											
Year of study	Year 4		Module code	Semester	Module title									
Degree	Semester 1	Semester 2												
Number of optional modules per semester														
BSc Physics	NA		PHYS3003	1	Light and Matter	R	R	R	R	R				
			PHYS3009	2	Applied Nuclear Physics	R	R	R	R					
MPhys Physics	3	2	PHYS3010	2	Stellar Evolution									
			PHYS3011	1	Photons in Astrophysics								R	
MPhys Physics with Astronomy	2	1	PHYS3019	2	Communicating and Teaching and The Undergraduate	R	R	R	R	R				
MPhys Physics with Mathematics	3	1	PHYS6011	2	Particle Physics	R	R	R	R	R				
			PHYS6017	2	Computer Techniques in Physics	R	R	R	R	R				
MPhys Physics with Nanotechnology	1	1	OPTO6010	2	Advanced Fibre Telecommunication					R				
MPhys Physics with Photonics	1	2	OPTO6011	2	Optical Fibre Sensors					R				
			OPTO6007	1	An Introduction to Silicon Photonics				R	R				
MPhys Physics with Space Science	3	1	ELEC6201	1	Microfabrication				R					
MPhys Particle Physics with a Research Year Abroad	0	0	ARCH6119	2	Applied Maritime Archaeology									
			MANG3048	1	Management Science for Engineers									
MPhys Physics with Industrial Placement	0	3	SPAN9071	1	Spanish Language Stage 1A									
			PSYC3059	2	Psychology of Advertising									
Astrophysics with a Year Abroad/Year in Research	0	0	SOES6014	1	Introduction to Physical Oceanography									
			SOES6016	1	Introduction to Marine Geology									
MPhys Physics with a Year of Experimental Research	0	0	There are many other modules available for you to choose from, from across the University.											

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