Programme Information & PLOs			
Title of the new programme – including any year abroad/ in industry variants			
MPhys/BSc Physics and Philosophy			
Level of qualification			
Please select:	Level 7		
Please indicate if the programme is offered with any year abroad / in industry variants		**Year in Industry** Please select Y/N	No
		Year Abroad (BSc only) Please select Y/N	Yes
Department(s): Where more than one department is involved, indicate the lead department			
Lead Department	Physics		
Other contributing Departments:	Philosophy		
Programme Leaders			
Martin Smalley			
Purpose and learning outcomes of the programme			
Statement of purpose for applicants to the programme			
Physics and philosophy are two of the deepest subjects, investigating the fundamental nature of reality. Philosophers are fascinated by the conceptual issues raised by physics, and some of the greatest physicists have been concerned with philosophical questions. In our Joint Honours degree programme, you will receive a thorough grounding in both subjects and be given the opportunity to explore the interesting connections between them (for instance, the York Philosophy Department York is strong in the philosophy of time, resulting in natural synergies with research interests in the Physics Department). At the end of a programme carefully constructed to develop your skills in the techniques of physics, mathematics and philosophy, and your ability to solve complex problems, you will be able to appreciate the intellectual beauty and societal applications of physics and philosophy, and be inspired to lifelong learning. The degree is accredited by the leading professional body for physics education, the Institute of Physics, and will enable you to gain employment in all the fields accessible to physics graduates, who enjoy the third-highest postgraduate incomes, after law and medicine. Study in philosophy will, in addition, equip you with skills in communication, argument and critical analysis which are applicable in a wide range of work situations and attractive to prospective employers.			

Programme Learning Outcomes Please provide six to eight statements of what a graduate of the programme can be expected to do. Taken together, these outcomes should capture the distinctive features of the programme. They should also be outcomes for which progressive achievement through the course of the programme can be articulated, and which will therefore be reflected in the design of the whole programme.	
PLO	On successful completion of the programme, graduates will be able to:
1 BSc	Apply the techniques and results of physics and mathematics to independently solve complex problems, using core physics, mathematics and/or computational knowledge.
1 MPhys	Apply independent learning strategies that incorporate core and advanced physics, mathematics and/or computational knowledge, techniques and understanding to synthesise and evaluate physical world problems.
2 BSc	Apply the principles of physics to construct and execute a scientific investigation to evaluate a hypothesis and interpret the results.
2 Mphys	Plan and execute extended or complex scientific investigation using the principles of physics in investigating a hypothesis, and interpret outcomes.
3 BSc	Recognise and define key problems, issues, and debates across a range of areas of philosophy—including some at the forefront of contemporary work—and apply their understanding in approaching new problems.
3 Mphys	Recognise and define key problems, issues, and debates across a range of areas of philosophy—including some at the forefront of contemporary work—and apply a developed understanding of core philosophical issues in approaching new problems.
4 BSc	Develop and articulate solutions to problems and puzzles in philosophy, lay out what can be said for and against these solutions, and make a measured judgement about what is the best solution in each case, supporting that judgement with a sustained line of argument based on the considerations raised.
4 MPhys	Develop and articulate solutions to problems and puzzles in philosophy, lay out what can be said for and against these solutions, and make a measured judgement about what is the best solution in each case, working in a critically reflective and autonomous way and supporting their judgement with a sustained line of argument based on a sophisticated appreciation of the considerations raised.
5 BSc	Communicate complex and difficult ideas in clear, precise, and accessible terms to the general public and professional scientists and philosophers in a variety of formats.
5 MPhys	Communicate complex and difficult ideas in clear, precise, and accessible terms to the general public and professional scientists and philosophers in a variety of formats—in particular, articulating the interrelations between core areas and defending outcomes in physics, and explaining key problems, issues, and debates in philosophy.
6 BSc	Collaborate effectively with others, and work with a group to apply physics themes and concepts to open-ended problems.
6 MPhys	Collaborate effectively with others, and work with a group to apply physics themes and concepts to open-ended problems.
7 BSc	Critically evaluate scientific methods and theories from a philosophical viewpoint, and critically evaluate philosophical views and theories in the light of the findings of modern physics.

7 MPhys	Critically evaluate the merits and demerits of competing scientific and philosophical theories, and hence plan and execute an in-depth investigation of a particular area of physics.
8 BSc	Engage with a range of physical and philosophical theories, and the connections between them, in order to appreciate the intellectual beauty and societal applications of physics and philosophy, and be inspired to lifelong learning.
8 MPhys	Engage with a range of physical and philosophical theories, and the connections between them, in order to appreciate the intellectual beauty and societal applications of physics and philosophy, and be inspired to lifelong learning.

Programme Learning Outcome for year in industry (where applicable)

For programmes which lead to the title 'with a Year in Industry' – typically involving an additional year – please provide either a) amended versions of some (at least one, but not necessarily all) of the standard PLOs listed above, showing how these are changed and enhanced by the additional year in industry b) an additional PLO, if and only if it is not possible to capture a key ability developed by the year in industry by alteration of the standard PLOs.

Not applicable.

Programme Learning Outcome for year abroad programmes (where applicable)

For programmes which lead to the title 'with a Year Abroad' – typically involving an additional year – please provide either a) amended versions of some (at least one, but not necessarily all) of the standard PLOs listed above, showing how these are changed and enhanced by the additional year abroad or b) an additional PLO, if and only if it is not possible to capture a key ability developed by the year abroad by alteration of the standard PLOs.

The depth of the knowledge and skills acquired in the main programme will be enhanced by the breadth of education acquired by studying abroad. For such a fundamental degree, seeing how the subjects are viewed in another culture and language provides a substantial enhancement of all the PLOs stated for the main programme. No specific additional PLOs are required.

Explanation of the choice of Programme Learning Outcomes

Please explain your rationale for choosing these PLOs in a statement that can be used for students (such as in a student handbook). Please include brief reference to:

i) Why the PLOs are considered ambitious or stretching?

The PLOs are ambitious because they stress the value of independent learning, challenging students to develop and articulate solutions to problems and puzzles in physics and philosophy. To take on all the core aspects of a physics degree, together with the wider viewpoint provided by philosophy, is clearly a stretching programme.

ii) The ways in which these outcomes are distinctive or particularly advantageous to the student:

The outcomes are distinctive in that they combine the professional science qualification with the broader perspective of the humanities. They are of particular advantage to the student because they open up the possibilities offered by a science degree, together with the employment prospects offered by their enhanced skills in communication, argument and critical analysis.

iii) How the programme learning outcomes develop students' digital literacy and will make appropriate use of technology-enhanced learning (such as lecture recordings, online resources, simulations, online assessment, 'flipped classrooms' etc)?

One of the Physics PLOs that was omitted from our list is concerned with digital literacy. Many of our lectures in the new programmes are being video-recorded, and we make extensive use of online resources and online assessment. Although this area is not stressed in the Physics with Philosophy PLOs, we are aware that developing a high degree of digital literacy in our students is important, particularly with regard to employment prospects.

iv) How the PLOs support and enhance the students' employability (for example, opportunities for students to apply their learning in a real world setting)?
The programme's employablity objectives should be informed by the University's Employability Strategy:

http://www.york.ac.uk/about/departments/support-and-admin/careers/staff/

We stress from the outset (PLO1) the importance of our students being able to employ their core knowledge to synthesize and evaluate physical world problems, and we stress as our final goal (PLO8) the importance of enabling our students to appreciate the societal applications of physics and philosophy. The degree is accredited by the leading professional body for physics education, the Institute of Physics, and enables our graduates to gain employment in all the fields accessible to physics graduates, who enjoy the third-highest postgraduate incomes, after law and medicine. Study in philosophy will, in addition, equip students with skills in communication, argument and critical analysis which are applicable in a wide range of work situations and highly attractive to prospective employers. The students' employment prospects are further enhanced by a carefully graded programme of professional skills development in the physics department, which has already led to a massive improvement in the employment statistics of our graduates. In the past two years, all of our PP graduates have gone on into either serious further professional training, or graduate-level jobs.

vi) How will students who need additional support for academic and transferable skills be identified and supported by the Department?

Physics won the departmental supervisor of the year award last year. Both departments take excellent pastoral care of our students, who have both a supervisor in Physics and a contact in Philosophy. This enables us to identify personal needs at an early stage. In addition to supervision tutorials (five in term 1), the physics department provides subject-specific tutorials at Stages 1 and 2, where difficulties with individual course are addressed; philosophy provides small group seminars that achieve the same function. In this respect, introduction of the PLOs merely serves as a focus for these efforts.

vii) How is teaching informed and led by research in the department/ centre/ University?

One of the main aims of the Pedagogy-inspired programme review in the physics department was to thoroughly prepare our students for exciting, high-level research projects in our main areas of funding; plasma physics, nuclear physics, and condensed matter physics. At the MPhys level, we expect students to contribute to published research. The philosophy department from the outset (PLO3) emphasize that issues will be covered at the forefront of contemporary work.

Stage-level progression
Please complete the table below, to summarise students' progressive development towards the achievement of PLOs, in terms of the characteristics that you expect students to demonstrate at the end of each year. This summary may be particularly helpful to students and the programme team where there is a high proportion of option modules.

Note: it is not expected that a position statement is written for each PLO, but this can be done if preferred (please add information in the 'individual statement' boxes). For a statement that applies across all PLOs in the stage fill in the 'Global statement' box.

Stage 0 (if your programme has a Foundation year, use the toggles to the left to show the hidden rows)							
Stage 1							
On progression from the first year (Stage 1), students will be able to:			*Global statement Do all the things outlined in PLOs 1-4, though their abilities will still be quite raw in areas 2 and 4. Preliminary abilities will be developed in the areas described in PLOs 5 and 6*				
PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8
Individual statements							
Stage 2							
On progression from the second year (Stage 2), students will be able to:			*Global statement do all the things outlined in PLOs 1-6, with strong reinforcement of PLOs 2 and 4, and major development in PLOs 5 and 6. Preliminary abilities will be developed in the areas described in PLOs 7 and 8.*				
PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8
Individual statements							
Stage 3							
(For Integrated Masters) On progression from the third year (Stage 3), students will be able to:			*Global statement do all the things outlined in PLOs 1-8, and will be able to enter society as fully formed adults with excellent potential for development. The MPhys is distinguished by a higher level of research, as outlined in PLO7.*				
PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8
Individual statements							
Programme Structure							

Module Structure and Summative Assessment Map

Please complete the summary table below which shows the module structure and the pattern of summative assessment through the programme.

'Option module' can be used in place of a specific named option. If the programme requires students to select option modules from specific lists these lists should be provided in the next section.

From the drop-down select 'S' to indicate the start of the module, 'A' to indicate the timing of each distinct summative assessment point (eg. essay submission/ exam), and 'E' to indicate the end of the module (if the end of the module coincides with the summative assessment select 'EA') . It is not expected that each summative task will be listed where an overall module might be assessed cumulatively (for example weekly problem sheets).

If summative assessment by exams will be scheduled in the summer Common Assessment period (weeks 5-7) a single 'A' can be used within the shaded cells as it is understood that you will not know in which week of the CAP the examination will take place.

Stage 0 (if you have modules for Stage 0, use the toggles to the left to show the hidden rows)

Stage 1

Credits	Module		Autumn Term										Spring Term										Summer Term									
	Code	Title	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
10	PHI00001C	Beginning Philosophy		S																	A	EA										
20	PHY00018C	Classical Mechanics and Relativity with Professional Skills		S									A														A					E
20	PHY00020C	Electromagnetism, Waves and Optics												S												E	A					
20	PHY00022C	Introduction to Thermal and Quantum Physics		S									A									E					A					
20	PHY00005C	Mathematics I		S									A													E	A					
10	PHI00003C or PHI00010C	Philosophy Options (List A)																					S			E		A				
20	PHI00005C	Reason and Argument A	S									EA	A																			

	Various	Year in Europe: Language Studies																													
	Note: In Philosophy, students take Beginning Philosophy in Autumn/Spring, Reason and Argument A in Autumn, and either Ancient Philosophy or Metaphysics in Summer.																														

Stage 2																															
Credits	**Module**		**Autumn Term**										**Spring Term**										**Summer Term**									
	Code	**Title**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
20	PHY00002I	Electromagnetism and Optics												S												E	A					
20	PHY00004I	Mathematics II		S									A									E					A					
20	PHY00031I	Quantum Physics II		S									A									E					A					
20	PHY00031I	Thermodynamics and Solid State II		S									A									E					A					
20	PHI00080I	Philosophy of Science Key Ideas (Compulsory)											S										A			E	A					
20	Various	Key ideas Autumn Term module (optional) - see List B		S							E	A																				
10	Various	Key ideas Autumn Term early exit module (optional) - see List C		S							E	A																				
10	Various	Philosophy Option module (optional)																				S				E		A				

	At Stage 2, students take Philosophy modules in one of the following combinations:	Key Ideas Philosophy of Science (20 Credit, Spring) and EITHER (i) Philosophy Key Ideas module in Autumn Term (20 credits) OR (ii) one Key Ideas, Short in Autumn Term (10 credits) *and* one Philosophy Year 2 Option module (10 credits), in any term, or an elective or LFA module																															

Stage 3																																
Credits	**Module**		**Autumn Term**										**Spring Term**										**Summer Term**									
	Code	**Title**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
20	PHY00047H	Atomic, Physics, Lasers and Modern Optics		S																		E					A					
40	PHY00052H	BSc Project Incorporating Professional Skills	S																				A			A					EA	
20	PHY00045H	Galaxies and the Intersteller Medium and Cosmology		S																		E					A					

20	PHY00048H	Introductions to Plasma Science and Technology and Stellar Physics		S									A									E					A				
20	PHY00044H	Advanced Theoretical Techniques and Introduction to Quantum Computing		S																		E					A				
20	PHY00043H	Nanoscale and Magnetism		S																		E					A				
20	PHY00042H	Relativity and Particle Physics		S																		E					A				
20	PHI00013H	Philosophy of Physics (compulsory)		S								E		A																	
20	Various	Research Led Year 3 Taught Option Module - Autumn (optional)		S								E		A																	
20	Various	Research Led Year 3 Taught Option Module - Spring (optional)												S								E		A							
10	PHI00028H	Philosophy of Physics Advanced Module																					S			E		A			
20	PHY00050H	Quantum Physics III		S									A									E					A				
20	PHY00049H	Statical Mechanics and Solid State II		S									A									E					A				

	At Stage 3, students take Philosophy modules in one of the following combinations:	Philosophy of Physics (20c) and EITHER (i) a Research led Year 3 Taught Philosophy Option Module 20 Credits OR (ii) Philosophy of Physics Advanced Module (10c) and *either* a 10-credit Year 2 Philosophy Option module *or* an elective module (subject to timetable constraints)																																
Stage 4																																	
Credits	**Module**		**Autumn Term**										**Spring Term**										**Summer Term**										
	Code	**Title**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
60	PHY00025M	MPhys Project and Research Skills CORE	S																							A					EA	
20	PHY00030M	Advanced and Further Quantium Mechanics (Option)		S									A									E					A					
20	PHY00031M	Advanced Computational Physics (Option)		S									A									E					A					
20	PHY00032M	Advanced Nuclear Physics (Option)		S									A									E					A					
20	PHY00035M	Advanced Plasma Physics (Option)		S									A									E					A					

20	PHY00033M	Biophysics (Option)		S									A									E					A					
20	PHY00034M	Nanomaterials: From Graphene to Spintronics (options)		S									A									E					A					
20	PHY00036M	Light and Matter (Option)		S									A									E					A					
20	PHI00020M	Topics in Theoretical Philosophy CORE		S								E	A																			
20	Various	Philosophy 20-credit MA Module (See Option List D below)												S								E	A									
	Students take 120 credits in Stage 4, usually made up as follows: In Physics, the MPhys Project and Research Skills (60 credits) plus a 20-credit Physics option; In Philosophy, Topics in Theoretical Philosophy (20 credits) and one other 20-credit MA module. Students may vary this weighting with the approval of the Board of Studies governing the programme.																															
Optional module lists If the programme requires students to select option modules from specific lists these lists should be provided below. If you need more space, use the toggles on the left to reveal ten further hidden rows.																																

Option List A	Option List B (Indicative only: modules available may vary from year to year)	Option List C (Indicative only: modules available may vary from year to year)	Option List D (Indicative only: modules available may vary from year to year) NOTE: Students may *not* select any module marked with * if they have taken the undergraduate version of it in their third year	Option List E	Option List F	Option List G	Option List H
PHI00003C Metaphysics (10 credit)	PHI00082I Ethical Theory (20 credit)	PHI00083I Ethical Theory, Short (10 credit)	PHI00032M Foundations of Maths*				
PHI00010C Ancient Philosophy (10 credit)	PHI00073I Philosophy of Language (20 credit)	PHI00086I Philosophy of Language, Short (10 credit)	PHI00029M Merleau-Ponty & Phenomenology*				
	PHI00096I Intermediate Logic (20 credit)	PHI00095I Intermediate Logic, Short (10 credit)	PHI00043M Philosophy of the Emotions*				
	PHI00072I Religious Ethics (20 credit)	PHI00094I Religious Ethics, Short (10 credit)	PHI00039M German Idealism*				
	PHI00081I Hume (20 credit)		PHI00055M Analytic Aesthetics*				
	PHI00077I Spinoza & Leibniz (20 credit)		PHI00056M Wittgenstein and Philosophy*				
	PHI00076I History of Ethics (20 credit)		PHI00052M Value and the Meaning of Life*				
			PHI00051M Contemporary Issues in Bioethics*				
			PHI00057M Causation and Laws*				

			PHI00019M Topics in Practical Philosophy				
			PHI00019M Topics in P				

Management and Admissions Information

This document applies to students who commenced the programme(s) in:	2017/18

Interim awards available Interim awards available on undergraduate programmes (subject to programme regulations) will normally be: Certificate of Higher Education (Level 4/Certificate), Diploma of Higher Education (Level 5/Intermediate), Ordinary Degree and in the case of Integrated Masters the Bachelors with honours. Please specify any proposed exceptions to this norm.

Certificate of Higher Education (Level 4/Certificate) Generic
Diploma of Higher Education (Level 5/Intermediate) Generic
Ordinary Degree (Level 5/6) at least 60 credits at level 6
(For MPhys programme)
BSc (Hons) Level 6/Honours
Physics with Philosophy
Physics with Philosophy

Admissions Criteria

TYPICAL OFFERS
Typical offers may vary for
combined programmes
A levels AAA
IB Diploma Programme
36 points including HL 6
in essential subjects
BTEC Extended Diploma
DDD plus A at A level in
Mathematics and Physics

Length and status of the programme(s) and mode(s) of study

Programme	**Length (years)**	**Status (full-time/part-time)** Please select	**Start dates/months** (if applicable – for programmes that have multiple intakes or start dates that differ from the usual academic year)	**Mode**		
				Face-to-face, campus-based	**Distance learning**	**Other**

BSc (Hons) Physics with Philosophy Level 6/Honours MPhys(Hons) Physics with Philosophy Level 7/Masters	3/4	Full-time	n/a	Please select Y/N	Yes	Please select Y/N	No	n/a

Language(s) of study

English.

Language(s) of assessment

English.

Programme accreditation by Professional, Statutory or Regulatory Bodies (PSRB)

Is the programme recognised or accredited by a PSRB

Please Select Y/N:	Yes	if No move to next Section if Yes complete the following questions

Name of PSRB

BSc and MPhys: Programmes meet the requirements for accreditation by the Institute of Physics.

Are there any conditions on the approval/ accreditation of the programme(s)/ graduates (for example accreditation only for the full award and not any interim award)

Additional Professional or Vocational Standards

Are there any additional requirements of accrediting bodies or PSRB or pre-requisite professional experience needed to study this programme?

Please Select Y/N:		if Yes, provide details

(max 200 words)

University award regulations

The University's award and assessment regulations apply to all programmes: any exceptions that relate to this programme are approved by University Teaching Committee and are recorded at the end of this document.

Are students on the programme permitted to take elective modules?

(See: https://www.york.ac.uk/media/staffhome/learningandteaching/documents/policies/Framework%20for%20Programme%20Design%20-%20UG.pdf)

Please Select Y/N:		

Careers & Placements - 'With Placement Year' programmes

Students on all undergraduate and integrated masters programmes may apply to spend their third year on a work-based placement facilitated by Careers & Placements. Such students would return to their studies at Stage 3 in the following year, thus lengthening their programme by a year. Successful completion of the placement year and associated assessment allows this to be recognised in programme title, which is amended to include 'with Placement Year' (e.g. BA in XYZ with Placement Year'). The Placement Year also adds a Programme Learning Outcome, concerning employability. (See Careers & Placements for details).

In exceptional circumstances, UTC may approve an exemption from the 'Placement Year' initiative. This is usually granted only for compelling reasons concerning accreditation; if the Department already has a Year in Industry with criteria sufficiently generic so as to allow the same range of placements; or if the programme is less than three years in length.

Programme excluded from Placement Year?	No	If yes, what are the reasons for this exemption:

Study Abroad (including Year Abroad as an additional year and replacement year)

Students on all programmes may apply to spend Stage 2 on the University-wide North America/ Asia/ Australia student exchange programme. Acceptance onto the programme is on a competitive basis. Marks from modules taken on replacement years count toward progression and classification.

Does the programme include the opportunity to undertake other formally agreed study abroad activities? All such programmes must comply with the Policy on Study Abroad

https://www.york.ac.uk/staff/teaching/procedure/programmes/design/

Please Select Y/N:	No	

Additional information

Transfers out of or into the programme

ii) Transfers into the programme will be possible? (please select Y/N)	Yes	
Additional details:		

Students may transfer to the BSc/MPhys Physics with Philosophy programme at any time during Stages 1 and 2, subject to satisfactory academic progress. Students on the MPhys Physics with Philosophy programme may transfer to the BSc Physics with Philosophy programme at any time during Stages 1 and 2. Students on the BSc Physics with Philosophy programme may transfer to the MPhys Physics with Philosophy programme as follows: in Stage 1 or Stage 2 during the summer vacation period, subject to achieving a stage average of 55%. Stage 2, students who fail to achieve the progression requirements for Stage 3 of the MPhys programme will automatically be transferred to Stage 3 of the BSc programme.		
ii) Transfers out of the programme will be possible? (please select Y/N)	Yes	
Additional details:		
Students may transfer to the BSc/MPhys Physics with Philosophy programme at any time during Stages 1 and 2, subject to satisfactory academic progress. Students on the MPhys Physics with Philosophy programme may transfer to the BSc Physics with Philosophy programme at any time during Stages 1 and 2. Students on the BSc Physics with Philosophy programme may transfer to the MPhys Physics with Philosophy programme as follows: in Stage 1 or Stage 2 during the summer vacation period, subject to achieving a stage average of 55%. Stage 2, students who fail to achieve the progression requirements for Stage 3 of the MPhys programme will automatically be transferred to Stage 3 of the BSc programme.		

Exceptions to University Award Regulations approved by University Teaching Committee	
Exception Please detail any exceptions to University Award Regulations approved by UTC	**Date approved**

Date on which this programme information was updated:
13/09/2018

Please note:

The information above provides a concise summary of the main features of the programme and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if they take full advantage of the learning opportunities that are provided.

Detailed information on the learning outcomes, content, delivery and assessment of modules can be found in the module descriptions.

The University reserves the right to modify this overview in unforeseen circumstances, or where the process of academic development, based on feedback from staff, students, external examiners or professional bodies, requires a change to be made. Students will be notified of any substantive changes at the first available opportunity.

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Please note: the programme map below is in interim format pending the development of a University Programme Catalogue.

Stage	Module		Programme Learning Outcomes							
			PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
			Apply the techniques and results of physics and mathematics to independently solve complex problems, using core physics, mathematics and/or computational knowledge.	Apply the principles of physics to construct and execute a scientific investigation to evaluate a hypothesis and interpret the results.	Recognise and define key problems, issues, and debates across a range of areas of philosophy—including some at the forefront of contemporary work—and apply their understanding in approaching new problems.	Develop and articulate solutions to problems and puzzles in philosophy, lay out what can be said for and against these solutions, and make a measured judgement about what is the best solution in each case, supporting that judgement with a sustained line of argument based on the considerations raised.	Communicate complex and difficult ideas in clear, precise, and accessible terms to the general public and professional scientists and philosophers in a variety of formats.	Collaborate effectively with others, and work with a group to apply physics themes and concepts to open-ended problems.	Critically evaluate scientific methods and theories from a philosophical viewpoint, and critically evaluate philosophical views and theories in the light of the findings of modern physics.	Engage with a range of physical and philosophical theories, and the connections between them, in order to appreciate the intellectual beauty and societal applications of physics and philosophy, and be inspired to lifelong learning.
			Apply independent learning strategies that incorporate core and advanced physics, mathematics and/or computational knowledge, techniques and understanding to synthesise and evaluate physical world problems.	**Plan and execute extended or complex scientific investigation using the principles of physics in investigating a hypothesis, and interpret outcomes.**	**Recognise and define key problems, issues, and debates across a range of areas of philosophy—including some at the forefront of contemporary work—and apply a developed understanding of core philosophical issues in approaching new problems.**	**Develop and articulate solutions to problems and puzzles in philosophy, lay out what can be said for and against these solutions, and make a measured judgement about what is the best solution in each case, working in a critically reflective and autonomous way and supporting their judgement with a sustained line of argument based on a sophisticated appreciation of the considerations raised.**	**Communicate complex and difficult ideas in clear, precise, and accessible terms to the general public and professional scientists and philosophers in a variety of formats—in particular, articulating the interrelations between core areas and defending outcomes in physics, and explaining key problems, issues, and debates in philosophy.**	**Collaborate effectively with others, and work with a group to apply physics themes and concepts to open-ended problems.**	**Critically evaluate the merits and demerits of competing scientific and philosophical theories, and hence plan and execute an in-depth investigation of a particular area of physics. (Part deleted here)**	**Engage with a range of physical and philosophical theories, and the connections between them, in order to appreciate the intellectual beauty and societal applications of physics and philosophy, and be inspired to lifelong learning.**

Stage	Module		Programme Learning Outcomes							
			PLO1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**	**PLO7**	**PLO8**
			Apply the techniques and results of physics and mathematics to independently solve complex problems, using core physics, mathematics and/or computational knowledge.	**Apply the principles of physics to construct and execute a scientific investigation to evaluate a hypothesis and interpret the results.**	**Recognise and define key problems, issues, and debates across a range of areas of philosophy—including some at the forefront of contemporary work—and apply their understanding in approaching new problems.**	**Develop and articulate solutions to problems and puzzles in philosophy, lay out what can be said for and against these solutions, and make a measured judgement about what is the best solution in each case, supporting that judgement with a sustained line of argument based on the considerations raised.**	**Communicate complex and difficult ideas in clear, precise, and accessible terms to the general public and professional scientists and philosophers in a variety of formats.**	**Collaborate effectively with others, and work with a group to apply physics themes and concepts to open-ended problems.**	**Critically evaluate scientific methods and theories from a philosophical viewpoint, and critically evaluate philosophical views and theories in the light of the findings of modern physics.**	**Engage with a range of physical and philosophical theories, and the connections between them, in order to appreciate the intellectual beauty and societal applications of physics and philosophy, and be inspired to lifelong learning.**
Stage 1	Beginning Philosophy PHI00001C 10 Credits	Progress towards PLO			Students will develop a basic understanding of a range of problems and approaches in from 'applied' and 'theoretical' philosophy and its history	Students will (i) develop their ability to argue and assess arguments, and (ii) develop their argumentation skills and their ability to present a coherent line of argument to a definite conclusion in writing		Students will develop their ability to prioritise and self-motivate		Students will think about philosophical problems in moral and political philosophy, aesthetics, normative epistemology and the history of philosophy which raise, or are immediately, issues of value, and will approach them with the tools of philosophical analysis and reflection
		By working on (and if applicable, assessed through)			By attending and engaging with 'taster' lectures on a wide variety of philosophical topics	By (respectively) (i) completing the Critical Thinking element of the online module material and (ii) writing an essay on a chosen topic from the 'taster' lectures		By working independently on the online elements of the module, fitting in their work around other commitments to complete it not only by the deadline but also to ensure that relevant elements are completed at appropriate times (e. g. completing Writing Skills before submitting their first essays)		By attending and engaging with 'taster lectures' on relevant topics

Stage	Module		Programme Learning Outcomes							
			PLO1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**	**PLO7**	**PLO8**
			Apply the techniques and results of physics and mathematics to independently solve complex problems, using core physics, mathematics and/or computational knowledge.	**Apply the principles of physics to construct and execute a scientific investigation to evaluate a hypothesis and interpret the results.**	**Recognise and define key problems, issues, and debates across a range of areas of philosophy—including some at the forefront of contemporary work—and apply their understanding in approaching new problems.**	**Develop and articulate solutions to problems and puzzles in philosophy, lay out what can be said for and against these solutions, and make a measured judgement about what is the best solution in each case, supporting that judgement with a sustained line of argument based on the considerations raised.**	**Communicate complex and difficult ideas in clear, precise, and accessible terms to the general public and professional scientists and philosophers in a variety of formats.**	**Collaborate effectively with others, and work with a group to apply physics themes and concepts to open-ended problems.**	**Critically evaluate scientific methods and theories from a philosophical viewpoint, and critically evaluate philosophical views and theories in the light of the findings of modern physics.**	**Engage with a range of physical and philosophical theories, and the connections between them, in order to appreciate the intellectual beauty and societal applications of physics and philosophy, and be inspired to lifelong learning.**
Stage 1	Classical Mechanics and Relativity with Professional Skills	Progress towards PLO	Apply a variety of mathematical techniques to solve physical problems	Solve a variety of simplified problems and interpret the results in both experimental and computational laboratories.			Labs - keep an accurate record of methodologies and results in lab books, communicate results of a core experiment via formal report. Mini conference - orally present and discuss an area of physics with peers.	Working with another student using a predefined methodology to achieve a specified result. This is preparation for longer and more complex experiments in later years.		Apply mathematical tools to solve a range of problems in business and society. Mini conference will hopefully enthuse students about areas of physics to be covered next year.
		By working on (and if applicable, assessed through)	Regular independent assignments (PPQs) and small-group problem solving in problem classes, supported computational assignments (in python), formal examination.	Working in pairs and following instructions to carry out an experiment and interpret data to arrive at a verifiable result			Formal scientific report, lab book record-keeping for assessment, presenting at mini-conference.	Working in pairs to effectively conduct practical work in experimental laboratory.		Research for and participation in mini conference. Engagement with the wider context of material covered in lectures and practical programming sessions.
Stage 1	EM, Waves and Optics	Progress towards PLO	Apply problem solving techniques and apply them to weekly problems in an independent way.							Understanding links between taught material and examples from research topics to stimulate the engagement of the students towards real applications. Recognise the broader applications of taught concepts beyond the scope of the course.

Stage	Module		Programme Learning Outcomes							
			PLO1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**	**PLO7**	**PLO8**
			Apply the techniques and results of physics and mathematics to independently solve complex problems, using core physics, mathematics and/or computational knowledge.	**Apply the principles of physics to construct and execute a scientific investigation to evaluate a hypothesis and interpret the results.**	**Recognise and define key problems, issues, and debates across a range of areas of philosophy—including some at the forefront of contemporary work—and apply their understanding in approaching new problems.**	**Develop and articulate solutions to problems and puzzles in philosophy, lay out what can be said for and against these solutions, and make a measured judgement about what is the best solution in each case, supporting that judgement with a sustained line of argument based on the considerations raised.**	**Communicate complex and difficult ideas in clear, precise, and accessible terms to the general public and professional scientists and philosophers in a variety of formats.**	**Collaborate effectively with others, and work with a group to apply physics themes and concepts to open-ended problems.**	**Critically evaluate scientific methods and theories from a philosophical viewpoint, and critically evaluate philosophical views and theories in the light of the findings of modern physics.**	**Engage with a range of physical and philosophical theories, and the connections between them, in order to appreciate the intellectual beauty and societal applications of physics and philosophy, and be inspired to lifelong learning.**
		By working on (and if applicable, assessed through)	Understanding links between taught material and examples from research topics to stimulate the engagement of the students towards real applications. Recognise the broader applications of taught concepts beyond the scope of the course. "Engagement with teaching materials and links to other modules. "							Engagement with teaching materials and links to other modules.

Stage	Module		Programme Learning Outcomes							
			PLO1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**	**PLO7**	**PLO8**
			Apply the techniques and results of physics and mathematics to independently solve complex problems, using core physics, mathematics and/or computational knowledge.	**Apply the principles of physics to construct and execute a scientific investigation to evaluate a hypothesis and interpret the results.**	**Recognise and define key problems, issues, and debates across a range of areas of philosophy—including some at the forefront of contemporary work—and apply their understanding in approaching new problems.**	**Develop and articulate solutions to problems and puzzles in philosophy, lay out what can be said for and against these solutions, and make a measured judgement about what is the best solution in each case, supporting that judgement with a sustained line of argument based on the considerations raised.**	**Communicate complex and difficult ideas in clear, precise, and accessible terms to the general public and professional scientists and philosophers in a variety of formats.**	**Collaborate effectively with others, and work with a group to apply physics themes and concepts to open-ended problems.**	**Critically evaluate scientific methods and theories from a philosophical viewpoint, and critically evaluate philosophical views and theories in the light of the findings of modern physics.**	**Engage with a range of physical and philosophical theories, and the connections between them, in order to appreciate the intellectual beauty and societal applications of physics and philosophy, and be inspired to lifelong learning.**
Stage 1	Intro to Thermal and QP	Progress towards PLO	Solve basic numerical problems by application of relevant mathematical and physical principles							Understanding links between taught material and examples from real research topics to stimulate the engagement of the students toward real applications. Recognise the broader applications of taught concepts beyond the scope of the course and the fundamental nature of thermal and quantum physics to more advanced physics topics.
		By working on (and if applicable, assessed through)	Regular independent assignments (PPQs), small-group problem solving in problem classes, tailored small-group sessions (tutorials), formal examination.							Engagement with teaching materials and links to other modules.

Stage	Module		Programme Learning Outcomes							
			PLO1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**	**PLO7**	**PLO8**
			Apply the techniques and results of physics and mathematics to independently solve complex problems, using core physics, mathematics and/or computational knowledge.	**Apply the principles of physics to construct and execute a scientific investigation to evaluate a hypothesis and interpret the results.**	**Recognise and define key problems, issues, and debates across a range of areas of philosophy—including some at the forefront of contemporary work—and apply their understanding in approaching new problems.**	**Develop and articulate solutions to problems and puzzles in philosophy, lay out what can be said for and against these solutions, and make a measured judgement about what is the best solution in each case, supporting that judgement with a sustained line of argument based on the considerations raised.**	**Communicate complex and difficult ideas in clear, precise, and accessible terms to the general public and professional scientists and philosophers in a variety of formats.**	**Collaborate effectively with others, and work with a group to apply physics themes and concepts to open-ended problems.**	**Critically evaluate scientific methods and theories from a philosophical viewpoint, and critically evaluate philosophical views and theories in the light of the findings of modern physics.**	**Engage with a range of physical and philosophical theories, and the connections between them, in order to appreciate the intellectual beauty and societal applications of physics and philosophy, and be inspired to lifelong learning.**
Stage 1	Mathematics I	Progress towards PLO	Being able to inspect and understand the meaning of an equation and apply it in familiar contexts.	Learn foundational mathematical tools in order to be able to carry out valid scientific investigations and draw valid scientific conclusions						To stimulate students in the use of mathematial approaches to to the interpretation of real-world applications. Recognise the broader applications of taught concepts beyond the scope of the course.
		By working on (and if applicable, assessed through)	Regular independent assignments (PPQs), small-group problem solving in problem classes, examples given in lectures, tailored small-group sessions (tutorials) formal examination.	Engagement with teaching materials.						Engagement with teaching materials, looking at idealised applications of foundational mathematical principles.

Stage	Module		Programme Learning Outcomes							
			PLO1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**	**PLO7**	**PLO8**
			Apply the techniques and results of physics and mathematics to independently solve complex problems, using core physics, mathematics and/or computational knowledge.	**Apply the principles of physics to construct and execute a scientific investigation to evaluate a hypothesis and interpret the results.**	**Recognise and define key problems, issues, and debates across a range of areas of philosophy—including some at the forefront of contemporary work—and apply their understanding in approaching new problems.**	**Develop and articulate solutions to problems and puzzles in philosophy, lay out what can be said for and against these solutions, and make a measured judgement about what is the best solution in each case, supporting that judgement with a sustained line of argument based on the considerations raised.**	**Communicate complex and difficult ideas in clear, precise, and accessible terms to the general public and professional scientists and philosophers in a variety of formats.**	**Collaborate effectively with others, and work with a group to apply physics themes and concepts to open-ended problems.**	**Critically evaluate scientific methods and theories from a philosophical viewpoint, and critically evaluate philosophical views and theories in the light of the findings of modern physics.**	**Engage with a range of physical and philosophical theories, and the connections between them, in order to appreciate the intellectual beauty and societal applications of physics and philosophy, and be inspired to lifelong learning.**
Stage 1	Introduction to Ancient Philosophy PHI00010C 10 Credits	Progress towards PLO			Students will be able to understand and explain some key debates about the nature of the world and our experience and knowledge of it	Students will develop their abilities to identify candidate solutions to philosophical problems, construct and evaluate arguments for these candidates, and arrive at a judgement on which is the best based on consideration of the cases assembled	Students will develop their ability to express themselves (i) orally and (ii) in writing	Students will develop their ability to engage in fruitful discussion—making clear, concise, and relevant contributions, listening carefully to others, and giving and receiving constructive critical comment in a tactful and friendly way	By reflecting on seminar discussions and other feedback on their work, students will be able to identify some key strengths and weaknesses in their capacities and seek help for improvement on that basis	By engaging with the work of philosophers from a different period with different scientific and religious views (and making appropriate use of secondary and contextualizing material), students will be able to demonstrate some sensitivity to cultural and historical context in understanding the work and ideas of others
		By working on (and if applicable, assessed through)			By engaging in close reading of some carefully selected texts in Ancient Philosophy (in English translation) which debate key questions, and by participating in extended seminar discussions of these texts	By engaging in close reading of texts, engaging in critical discussion of ideas, theories and arguments in seminars, and by preparing essay-style written assignments	By (respectively) (i) presenting their responses to the texts in extended seminar discussions, and (ii) preparing for seminars and producing written assessments	By actively engaging in extended seminar discussions		

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			PLO1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**	**PLO7**	**PLO8**
			Apply the techniques and results of physics and mathematics to independently solve complex problems, using core physics, mathematics and/or computational knowledge.	**Apply the principles of physics to construct and execute a scientific investigation to evaluate a hypothesis and interpret the results.**	**Recognise and define key problems, issues, and debates across a range of areas of philosophy—including some at the forefront of contemporary work—and apply their understanding in approaching new problems.**	**Develop and articulate solutions to problems and puzzles in philosophy, lay out what can be said for and against these solutions, and make a measured judgement about what is the best solution in each case, supporting that judgement with a sustained line of argument based on the considerations raised.**	**Communicate complex and difficult ideas in clear, precise, and accessible terms to the general public and professional scientists and philosophers in a variety of formats.**	**Collaborate effectively with others, and work with a group to apply physics themes and concepts to open-ended problems.**	**Critically evaluate scientific methods and theories from a philosophical viewpoint, and critically evaluate philosophical views and theories in the light of the findings of modern physics.**	**Engage with a range of physical and philosophical theories, and the connections between them, in order to appreciate the intellectual beauty and societal applications of physics and philosophy, and be inspired to lifelong learning.**
Stage 1	Metaphysics PHI00003C 10 Credits	Progress towards PLO			Students will be able to demonstrate a critical awareness of some central metaphysical issues such as change, causation, and persistence through time	Students will develop their abilities to identify, elaborate and evaluate candidate solutions on the basis of careful logical argument	Students will develop their ability to express themselves orally and in writing	Students will develop their abilities to collaborate in seeking solutions to problems	Students will develop their ability to correct their understandings and modify their practice in response to constructive criticism	
		By working on (and if applicable, assessed through)			By tackling some key puzzles and problems	By tackling puzzles and problems concerning some key metaphysical issues	By presenting careful and insightful explanations of ideas, theories, and arguments in seminar discussions and written work	By discussing and evaluating fundamental questions in metaphysics in seminars and lectures	By noting and assimilating the responses of their tutors and colleagues in seminar work	

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			PLO1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**	**PLO7**	**PLO8**
			Apply the techniques and results of physics and mathematics to independently solve complex problems, using core physics, mathematics and/or computational knowledge.	**Apply the principles of physics to construct and execute a scientific investigation to evaluate a hypothesis and interpret the results.**	**Recognise and define key problems, issues, and debates across a range of areas of philosophy—including some at the forefront of contemporary work—and apply their understanding in approaching new problems.**	**Develop and articulate solutions to problems and puzzles in philosophy, lay out what can be said for and against these solutions, and make a measured judgement about what is the best solution in each case, supporting that judgement with a sustained line of argument based on the considerations raised.**	**Communicate complex and difficult ideas in clear, precise, and accessible terms to the general public and professional scientists and philosophers in a variety of formats.**	**Collaborate effectively with others, and work with a group to apply physics themes and concepts to open-ended problems.**	**Critically evaluate scientific methods and theories from a philosophical viewpoint, and critically evaluate philosophical views and theories in the light of the findings of modern physics.**	**Engage with a range of physical and philosophical theories, and the connections between them, in order to appreciate the intellectual beauty and societal applications of physics and philosophy, and be inspired to lifelong learning.**
Stage 1	Reason and Argument A PHI00005C 20 Credits	Progress towards PLO			KEY: Students will (i) be able to demonstrate a critical awareness of the workings of language—e.g. in relation to (a) forms of ambiguity and (b) the distinction between what a speaker succeeds in conveying by using words on a particular occasion, and what those words mean, and (ii) acquire the basic logical literacy (abilities with concepts, terminology, and notation of logic) required for understanding philosophical texts and discussions in the remainder of the programme	Students will (i) develop their abilities to produce candidate solutions to problems and (ii) students will develop their ability to produce a structured response to a technical question		Students will develop their abilities to collaborate in seeking solutions to problems	By noting the responses of their tutors and colleagues in seminar work, students will develop their ability to correct their understandings and modify their practice in response to constructive criticism	
		By working on (and if applicable, assessed through)			By tackling puzzles and problems concerning the meaning of and logical relations between claims, and by working to express claims and arguments expressed in natural language in logical terms	By (respectively) (i) tackling puzzles and problems concerning the meaning of and logical relations between claims, and (ii) working to produce an essay responding to a structured question on a detailed logical issue		By discussing and evaluating answers to weekly set questions in seminars	By noting the responses of their tutors and colleagues in seminar work	

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			PLO1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**	**PLO7**	**PLO8**
			Apply the techniques and results of physics and mathematics to independently solve complex problems, using core physics, mathematics and/or computational knowledge.	**Apply the principles of physics to construct and execute a scientific investigation to evaluate a hypothesis and interpret the results.**	**Recognise and define key problems, issues, and debates across a range of areas of philosophy—including some at the forefront of contemporary work—and apply their understanding in approaching new problems.**	**Develop and articulate solutions to problems and puzzles in philosophy, lay out what can be said for and against these solutions, and make a measured judgement about what is the best solution in each case, supporting that judgement with a sustained line of argument based on the considerations raised.**	**Communicate complex and difficult ideas in clear, precise, and accessible terms to the general public and professional scientists and philosophers in a variety of formats.**	**Collaborate effectively with others, and work with a group to apply physics themes and concepts to open-ended problems.**	**Critically evaluate scientific methods and theories from a philosophical viewpoint, and critically evaluate philosophical views and theories in the light of the findings of modern physics.**	**Engage with a range of physical and philosophical theories, and the connections between them, in order to appreciate the intellectual beauty and societal applications of physics and philosophy, and be inspired to lifelong learning.**
Stage 2	Mathematics II	Progress towards PLO	Be able to select and apply a range of mathematical tools to evaluate suitable physics problems. Vector calculus component feeds very strongly into Yr2 Electromagnetism and Optics. Y							Appreciate the beauty and rigour of mathematical techniques, and understand their importance within modern physics To stimulate students in the more advanced use of mathematial approaches to the interpretation of real-world applications. Understand and be able to exploit the broader applications of taught concepts beyond the scope of the course.
		By working on (and if applicable, assessed through)	Regular independent assessed assignments (PPQs), engagement with lecture material, independent suported problem-solving sessions (maths practicals), formal examination.							Engagement with teaching materials, investigating applications of taught mathematical principles.

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			PLO1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**	**PLO7**	**PLO8**
			Apply the techniques and results of physics and mathematics to independently solve complex problems, using core physics, mathematics and/or computational knowledge.	**Apply the principles of physics to construct and execute a scientific investigation to evaluate a hypothesis and interpret the results.**	**Recognise and define key problems, issues, and debates across a range of areas of philosophy—including some at the forefront of contemporary work—and apply their understanding in approaching new problems.**	**Develop and articulate solutions to problems and puzzles in philosophy, lay out what can be said for and against these solutions, and make a measured judgement about what is the best solution in each case, supporting that judgement with a sustained line of argument based on the considerations raised.**	**Communicate complex and difficult ideas in clear, precise, and accessible terms to the general public and professional scientists and philosophers in a variety of formats.**	**Collaborate effectively with others, and work with a group to apply physics themes and concepts to open-ended problems.**	**Critically evaluate scientific methods and theories from a philosophical viewpoint, and critically evaluate philosophical views and theories in the light of the findings of modern physics.**	**Engage with a range of physical and philosophical theories, and the connections between them, in order to appreciate the intellectual beauty and societal applications of physics and philosophy, and be inspired to lifelong learning.**
Stage 2	Electromagnetism and Optics	Progress towards PLO	Use a range of mathematical tools and physical principles to evaluate physics problems of increasing complexity. Understand the wide-ranging applicability of electromagnetism to solving problems from a variety of other fields of physics. Y							Appreciate the wider applications and beauty of EMO by learning about technology and implications. Gain a deeper understanding of the links between taught material and examples from research topics and stimulate the engagement of the students towards real applications. Recognise the broader applications of electromagnetism and the underlying concepts beyond the scope of the course.
		By working on (and if applicable, assessed through)	Regular independent assignments (PPQs), small-group problem solving in problem classes, engagement with lecture material, formal examination.							Lectures & additional reading

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			Apply the techniques and results of physics and mathematics to independently solve complex problems, using core physics, mathematics and/or computational knowledge.	**Apply the principles of physics to construct and execute a scientific investigation to evaluate a hypothesis and interpret the results.**	**Recognise and define key problems, issues, and debates across a range of areas of philosophy—including some at the forefront of contemporary work—and apply their understanding in approaching new problems.**	**Develop and articulate solutions to problems and puzzles in philosophy, lay out what can be said for and against these solutions, and make a measured judgement about what is the best solution in each case, supporting that judgement with a sustained line of argument based on the considerations raised.**	**Communicate complex and difficult ideas in clear, precise, and accessible terms to the general public and professional scientists and philosophers in a variety of formats.**	**Collaborate effectively with others, and work with a group to apply physics themes and concepts to open-ended problems.**	**Critically evaluate scientific methods and theories from a philosophical viewpoint, and critically evaluate philosophical views and theories in the light of the findings of modern physics.**	**Engage with a range of physical and philosophical theories, and the connections between them, in order to appreciate the intellectual beauty and societal applications of physics and philosophy, and be inspired to lifelong learning.**
Stage 2	Thermo and Solid State Physics	Progress towards PLO	Apply and adapt a range of basic tools, models, and physical principles to evaluate physics problems of increasing complexity							Appreciate the wider applications of thermodynamics as a topic which underpins much of modern physics. Understand the application of underlying scientific principles (including thermodynamics and quantum mechanics) to describing solid state systems.
		By working on (and if applicable, assessed through)	Regular independent assignments (PPQs), small-group problem solving in problem classes, engagement with lecture material, formal examination.							Engaging with teaching materials
Stage 2	Quantum Physics II	Progress towards PLO	Use a range of mathematical tools and physical principles to evaluate physics problems of increasing complexity							Appreciate the wider applications and beauty of quantum physics by discovering its applications within atomic, particle and nuclear physics

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			Apply the techniques and results of physics and mathematics to independently solve complex problems, using core physics, mathematics and/or computational knowledge.	**Apply the principles of physics to construct and execute a scientific investigation to evaluate a hypothesis and interpret the results.**	**Recognise and define key problems, issues, and debates across a range of areas of philosophy—including some at the forefront of contemporary work—and apply their understanding in approaching new problems.**	**Develop and articulate solutions to problems and puzzles in philosophy, lay out what can be said for and against these solutions, and make a measured judgement about what is the best solution in each case, supporting that judgement with a sustained line of argument based on the considerations raised.**	**Communicate complex and difficult ideas in clear, precise, and accessible terms to the general public and professional scientists and philosophers in a variety of formats.**	**Collaborate effectively with others, and work with a group to apply physics themes and concepts to open-ended problems.**	**Critically evaluate scientific methods and theories from a philosophical viewpoint, and critically evaluate philosophical views and theories in the light of the findings of modern physics.**	**Engage with a range of physical and philosophical theories, and the connections between them, in order to appreciate the intellectual beauty and societal applications of physics and philosophy, and be inspired to lifelong learning.**
		By working on (and if applicable, assessed through)	Regular independent assignments (PPQs), small-group problem solving in problem classes, engagement with lecture material, formal examination.							Lectures & additional reading
Stage 2	Key Ideas: Philosophy of Science [Code TBC] 20 Credits (Compulsory) [Other Key Ideas modules serve PLOs 3, 4, 5, and 6 in generalized ways] [Key Ideas Early Exit versions (10 credits) serve PLOs 3, 4, 5, and 6 subject to the noted restrictions]	Progress towards PLO			Students will (i) come to understand and be able to explain these debates, and apply their understanding in addressing novel problems, and (ii) develop their ability to form and deploy a broad view of a subject area	Students will: (i) enhance their ability to identify potential solutions by extrapolation and analogy; (ii) develop their ability to construct and critically evaluate arguments; (iii) develop their ability to make judgements on what to believe with regard to a difficult problem based on careful weighing of arguments, objections, and responses	Students will: (i) improve their ability to express complex ideas clearly and precisely orally and in writing; (ii) develop their ability to present an extended discussion of a difficult issue; (iii) develop their ability to identify express key points of a debate in clear and concise terms	Students will develop their ability to carry through a detailed investigation in concert with others	[KEY IDEAS PHIL SCI ONLY] Students will develop their ability to grasp and articulate the ways in which Physics and Philosophy constrain one another	[KEY IDEAS PHIL SCI ONLY] Students will develop an appreciation of the complex relations between theories in Physics and Philosophy

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			PLO1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**	**PLO7**	**PLO8**
			Apply the techniques and results of physics and mathematics to independently solve complex problems, using core physics, mathematics and/or computational knowledge.	**Apply the principles of physics to construct and execute a scientific investigation to evaluate a hypothesis and interpret the results.**	**Recognise and define key problems, issues, and debates across a range of areas of philosophy—including some at the forefront of contemporary work—and apply their understanding in approaching new problems.**	**Develop and articulate solutions to problems and puzzles in philosophy, lay out what can be said for and against these solutions, and make a measured judgement about what is the best solution in each case, supporting that judgement with a sustained line of argument based on the considerations raised.**	**Communicate complex and difficult ideas in clear, precise, and accessible terms to the general public and professional scientists and philosophers in a variety of formats.**	**Collaborate effectively with others, and work with a group to apply physics themes and concepts to open-ended problems.**	**Critically evaluate scientific methods and theories from a philosophical viewpoint, and critically evaluate philosophical views and theories in the light of the findings of modern physics.**	**Engage with a range of physical and philosophical theories, and the connections between them, in order to appreciate the intellectual beauty and societal applications of physics and philosophy, and be inspired to lifelong learning.**
		By working on (and if applicable, assessed through)			By (respectively) (i) studying a representative range of debates in the philosophy of science, reading, dissecting, and discussing key texts, and (ii) engaging with teaching across the module in preparation for the short-form exam element of assessment	By (respectively): (i) considering, discussing, and comparing ranges of solutions presented in lectures, seminar materials, and additional readings, and trying to develop their own ideas; (ii) discussing arguments for and against solutions, identifying potential objections to those solutions, and investigating how those objections might be responded to; (iii) preparing an essay addressing a specific question in the area addressed by the module	By (respectively): (i) engaging in seminar discussions and preparing written assignments; (ii) working to prepare an essay on a specific topic; (iii) preparing for and taking the short-answer exam	By engaging in an extended and sustained study in a particular area involving regular seminar discussions	By investigating philosophical puzzles and problems concerning science in the light of reflection on the nature of real-life scientific theories and scientific practice	By studying deep philosophical puzzles concerning science, and considering the nature of the physical world and our examination of it in science

Stage	Module		Programme Learning Outcomes							
			PLO1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**	**PLO7**	**PLO8**
			Apply the techniques and results of physics and mathematics to independently solve complex problems, using core physics, mathematics and/or computational knowledge.	**Apply the principles of physics to construct and execute a scientific investigation to evaluate a hypothesis and interpret the results.**	**Recognise and define key problems, issues, and debates across a range of areas of philosophy—including some at the forefront of contemporary work—and apply their understanding in approaching new problems.**	**Develop and articulate solutions to problems and puzzles in philosophy, lay out what can be said for and against these solutions, and make a measured judgement about what is the best solution in each case, supporting that judgement with a sustained line of argument based on the considerations raised.**	**Communicate complex and difficult ideas in clear, precise, and accessible terms to the general public and professional scientists and philosophers in a variety of formats.**	**Collaborate effectively with others, and work with a group to apply physics themes and concepts to open-ended problems.**	**Critically evaluate scientific methods and theories from a philosophical viewpoint, and critically evaluate philosophical views and theories in the light of the findings of modern physics.**	**Engage with a range of physical and philosophical theories, and the connections between them, in order to appreciate the intellectual beauty and societal applications of physics and philosophy, and be inspired to lifelong learning.**
Stage 2	Philosophy Year 2 Option Modules - Lecture-based 10 Credits (Options will vary slightly from year to year; students on Physics and Philosophy will be able to take Philosophy Options in Summer Term)	Progress towards PLO			By studying some specific and interrelated problems in a specialist area of philosophy, students will develop their ability to form a clear view of a topic which can be exploited to develop solutions	By forming their own views of proposals presented in primary texts and discussing their nature, relations, and possible elaboration in seminar reading groups, students will enhance their ability to articulate and develop solutions By discussing arguments for and against solutions, identifying potential objections to those solutions, and investigating how those objections might be responded to, students will develop their ability to construct and critically evaluate arguments By preparing for and answering an essay-style exam on a specific question in the area addressed by the module, students will develop their ability to make judgements on what to believe with regard to a difficult problem based on careful weighing of arguments, objections, and responses	By making notes in advance of seminars, engaging in seminar discussions, and producing written assignments, students will develop their ability to express themselves clearly and concisely	By engaging in seminar discussions, students will develop their ability to collaborate with others By engaging in extended seminar discussions in which expository and clarificatory work must be completed without lecture back-up, students will develop their ability to collaborate with others in developing knowledge and understanding		

Stage	Module		Programme Learning Outcomes							
			PLO1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**	**PLO7**	**PLO8**
			Apply the techniques and results of physics and mathematics to independently solve complex problems, using core physics, mathematics and/or computational knowledge.	**Apply the principles of physics to construct and execute a scientific investigation to evaluate a hypothesis and interpret the results.**	**Recognise and define key problems, issues, and debates across a range of areas of philosophy—including some at the forefront of contemporary work—and apply their understanding in approaching new problems.**	**Develop and articulate solutions to problems and puzzles in philosophy, lay out what can be said for and against these solutions, and make a measured judgement about what is the best solution in each case, supporting that judgement with a sustained line of argument based on the considerations raised.**	**Communicate complex and difficult ideas in clear, precise, and accessible terms to the general public and professional scientists and philosophers in a variety of formats.**	**Collaborate effectively with others, and work with a group to apply physics themes and concepts to open-ended problems.**	**Critically evaluate scientific methods and theories from a philosophical viewpoint, and critically evaluate philosophical views and theories in the light of the findings of modern physics.**	**Engage with a range of physical and philosophical theories, and the connections between them, in order to appreciate the intellectual beauty and societal applications of physics and philosophy, and be inspired to lifelong learning.**
		By working on (and if applicable, assessed through)								
	Philosophy Year 2 Option Modules 10 Credits (Options will vary slightly from year to year; students on Physics and Philosophy will be able to take Philosophy Options in Summer Term)				Students will develop their ability to work independently to form a clear view of a topic which can be exploited to develop solutions	Students will: (i) enhance their ability to articulate and develop solutions; (ii) develop their ability to construct and critically evaluate arguments; (iii) develop their ability to make judgements on what to believe with regard to a difficult problem based on careful weighing of arguments, objections, and responses	Students will develop their ability to express themselves clearly and concisely, orally and in writing	Students will develop their ability to collaborate with others in developing knowledge and understanding		

Stage	Module		Programme Learning Outcomes							
			PLO1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**	**PLO7**	**PLO8**
			Apply the techniques and results of physics and mathematics to independently solve complex problems, using core physics, mathematics and/or computational knowledge.	**Apply the principles of physics to construct and execute a scientific investigation to evaluate a hypothesis and interpret the results.**	**Recognise and define key problems, issues, and debates across a range of areas of philosophy—including some at the forefront of contemporary work—and apply their understanding in approaching new problems.**	**Develop and articulate solutions to problems and puzzles in philosophy, lay out what can be said for and against these solutions, and make a measured judgement about what is the best solution in each case, supporting that judgement with a sustained line of argument based on the considerations raised.**	**Communicate complex and difficult ideas in clear, precise, and accessible terms to the general public and professional scientists and philosophers in a variety of formats.**	**Collaborate effectively with others, and work with a group to apply physics themes and concepts to open-ended problems.**	**Critically evaluate scientific methods and theories from a philosophical viewpoint, and critically evaluate philosophical views and theories in the light of the findings of modern physics.**	**Engage with a range of physical and philosophical theories, and the connections between them, in order to appreciate the intellectual beauty and societal applications of physics and philosophy, and be inspired to lifelong learning.**
					By approaching some specific and interrelated problems in a specialist area of philosophy primarily by independent reading and seminar discussions of primary texts	By (respectively): (i) forming their own views of proposals presented in primary texts and discussing their nature, relations, and possible elaboration in seminar reading groups; (ii) discussing arguments for and against solutions, identifying potential objections to those solutions, and investigating how those objections might be responded to; (iii) preparing an essay addressing a specific question in the area addressed by the module	By making notes in advance of seminars, engaging in extended seminar discussions, and producing written assignments	By engaging in extended seminar discussions in which expository and clarificatory work must be completed without lecture back-up		
Stage 3	Quantum Physics III	Progress towards PLO	Adapt and apply the tools of quantum mechanics to build and test foundational models of atomic and nuclear systems. Interpret modern atomic and nuclear data in terms of sub-atomic phenomena.	Design experiment using specific observables to identify specific phenomena				Take a collaborative approach to solving problems in quantum mechanics, and achieve a deeper understanding of advanced concepts in nuclear physics through discussion with peers.		Articulate the central importance of quantum mechanics to modern physics and the application of nuclear physics to society.

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			PLO1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**	**PLO7**	**PLO8**
			Apply the techniques and results of physics and mathematics to independently solve complex problems, using core physics, mathematics and/or computational knowledge.	**Apply the principles of physics to construct and execute a scientific investigation to evaluate a hypothesis and interpret the results.**	**Recognise and define key problems, issues, and debates across a range of areas of philosophy—including some at the forefront of contemporary work—and apply their understanding in approaching new problems.**	**Develop and articulate solutions to problems and puzzles in philosophy, lay out what can be said for and against these solutions, and make a measured judgement about what is the best solution in each case, supporting that judgement with a sustained line of argument based on the considerations raised.**	**Communicate complex and difficult ideas in clear, precise, and accessible terms to the general public and professional scientists and philosophers in a variety of formats.**	**Collaborate effectively with others, and work with a group to apply physics themes and concepts to open-ended problems.**	**Critically evaluate scientific methods and theories from a philosophical viewpoint, and critically evaluate philosophical views and theories in the light of the findings of modern physics.**	**Engage with a range of physical and philosophical theories, and the connections between them, in order to appreciate the intellectual beauty and societal applications of physics and philosophy, and be inspired to lifelong learning.**
		By working on (and if applicable, assessed through)	Regular independent assignments (PPQs), independent supported problem solving in problem classes, engagement with lecture material, formal examination.	Analysis of nuclear data in lectures and problem classes and identification of key observables				Engagement with the group-work aspect of problem classes.		Engaging with teaching materials.
Stage 3	Statistical Mechanics and Solid State II	Progress towards PLO	Understand the underlying energy distribution of systems containing many particles. Understand the different models involved describing the electron - electron and electron - lattice interactions in solids. Y							Apply concepts and techniques to real world situations encountered beyond University studies. Apply the principles of mathematical modelling of complex systems based on simple principles to new arenas.
		By working on (and if applicable, assessed through)	Regular independent assignments (PPQs), independent supported problem solving in problem classes, engagement with lecture material, formal examination.							Engaging with teaching materials.

Stage	Module		Programme Learning Outcomes							
			PLO1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**	**PLO7**	**PLO8**
			Apply the techniques and results of physics and mathematics to independently solve complex problems, using core physics, mathematics and/or computational knowledge.	**Apply the principles of physics to construct and execute a scientific investigation to evaluate a hypothesis and interpret the results.**	**Recognise and define key problems, issues, and debates across a range of areas of philosophy—including some at the forefront of contemporary work—and apply their understanding in approaching new problems.**	**Develop and articulate solutions to problems and puzzles in philosophy, lay out what can be said for and against these solutions, and make a measured judgement about what is the best solution in each case, supporting that judgement with a sustained line of argument based on the considerations raised.**	**Communicate complex and difficult ideas in clear, precise, and accessible terms to the general public and professional scientists and philosophers in a variety of formats.**	**Collaborate effectively with others, and work with a group to apply physics themes and concepts to open-ended problems.**	**Critically evaluate scientific methods and theories from a philosophical viewpoint, and critically evaluate philosophical views and theories in the light of the findings of modern physics.**	**Engage with a range of physical and philosophical theories, and the connections between them, in order to appreciate the intellectual beauty and societal applications of physics and philosophy, and be inspired to lifelong learning.**
Stage 3	BSc Project incorporating Prof Skills	Progress towards PLO	Select and apply as appropriate a range of appropriate experimental and analytical tools, techniques, and methodologies to make experimental measurements while minimising systematic and random errors as part of a larger research project, and make critical judgements on the effects of these techniques upon the quality and fidelity of the final result. YYY	Plan and execute a complex scientific investigation, including understanding the context of the problem, and using appropriate techniques.			Concisely and clearly communicate the background to and results of an extended research-style scientific investigation both orally to peers in a large group, examiners in a viva-style examination, and in formal dissertation writeup. Keep accurate record of all experimental and theoretical work to accepted standards. YYY	Work effectively as part of a group to plan and execute a solution to an extended and open-ended physical problem.		Apply previously learned approaches and techniques to unfamiliar problems, and understand that a physics approach can be useful beyond the bounds of pure physics. Be inspired by a project in an area of choice and conduct an extended investigation into it.
		By working on (and if applicable, assessed through)	BSc Project work, examined through formal report, assessment of project lab book, and oral (viva-style) exam.	Planning, executing and evaluating project work with support from project supervisors where appropriate.			Group oral presentation at the BSc project conference, individual oral viva-style defence and examination, formal written dissertation, examination of laboratory notebook.	Working as a group to achieve a common goal.		Engaging with BSC project work and the wider context into which it fits.

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			PLO1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**	**PLO7**	**PLO8**
			Apply the techniques and results of physics and mathematics to independently solve complex problems, using core physics, mathematics and/or computational knowledge.	**Apply the principles of physics to construct and execute a scientific investigation to evaluate a hypothesis and interpret the results.**	**Recognise and define key problems, issues, and debates across a range of areas of philosophy—including some at the forefront of contemporary work—and apply their understanding in approaching new problems.**	**Develop and articulate solutions to problems and puzzles in philosophy, lay out what can be said for and against these solutions, and make a measured judgement about what is the best solution in each case, supporting that judgement with a sustained line of argument based on the considerations raised.**	**Communicate complex and difficult ideas in clear, precise, and accessible terms to the general public and professional scientists and philosophers in a variety of formats.**	**Collaborate effectively with others, and work with a group to apply physics themes and concepts to open-ended problems.**	**Critically evaluate scientific methods and theories from a philosophical viewpoint, and critically evaluate philosophical views and theories in the light of the findings of modern physics.**	**Engage with a range of physical and philosophical theories, and the connections between them, in order to appreciate the intellectual beauty and societal applications of physics and philosophy, and be inspired to lifelong learning.**
	Research-led Year 3 Taught Philosophy Option Module 20 Credits	Progress towards PLO			KEY: Students will develop and demonstrate their ability to provide insightful and detailed explanations of philosophical problems in clear and accessible terms	KEY: Students will (i) develop and demonstrate their ability to make progress and identify solutions even where it's unclear in the first instance how to proceed; (ii) come to be able to analyse and generate sophisticated logical arguments; (iii) come to be able to present a sustained and detailed case for a judgement based on careful weighing of arguments, objections, and responses	Students will develop their ability to express difficult ideas clearly and concisely, orally and in writing	Students will hone their abilities to work independently and in collaboration with others to develop knowledge and understanding		

Stage	Module		Programme Learning Outcomes							
			PLO1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**	**PLO7**	**PLO8**
			Apply the techniques and results of physics and mathematics to independently solve complex problems, using core physics, mathematics and/or computational knowledge.	**Apply the principles of physics to construct and execute a scientific investigation to evaluate a hypothesis and interpret the results.**	**Recognise and define key problems, issues, and debates across a range of areas of philosophy—including some at the forefront of contemporary work—and apply their understanding in approaching new problems.**	**Develop and articulate solutions to problems and puzzles in philosophy, lay out what can be said for and against these solutions, and make a measured judgement about what is the best solution in each case, supporting that judgement with a sustained line of argument based on the considerations raised.**	**Communicate complex and difficult ideas in clear, precise, and accessible terms to the general public and professional scientists and philosophers in a variety of formats.**	**Collaborate effectively with others, and work with a group to apply physics themes and concepts to open-ended problems.**	**Critically evaluate scientific methods and theories from a philosophical viewpoint, and critically evaluate philosophical views and theories in the light of the findings of modern physics.**	**Engage with a range of physical and philosophical theories, and the connections between them, in order to appreciate the intellectual beauty and societal applications of physics and philosophy, and be inspired to lifelong learning.**
		By working on (and if applicable, assessed through)			By tackling difficult philosophical issues, including some at the forefront of contemporary debate	By (respectively): (i) working on a cutting-edge topic and engaging with a tutor working on an area in which they research; (ii) engaging with high-level contemporary debates and developing arguments, objections, and responses; (iii) working to produce a substantial essay seeking to provide an answer to a challenging philosophical question	By making notes in advance of seminars, engaging in extended seminar discussions, and producing written assignments on advanced philosophical texts	By pursuing an exploration of a difficult topic, involving work on an extended reading list and regular creative dialogue with their tutor and fellow students in seminar discussions		

Stage	Module		Programme Learning Outcomes							
			PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
			Apply the techniques and results of physics and mathematics to independently solve complex problems, using core physics, mathematics and/or computational knowledge.	Apply the principles of physics to construct and execute a scientific investigation to evaluate a hypothesis and interpret the results.	Recognise and define key problems, issues, and debates across a range of areas of philosophy—including some at the forefront of contemporary work—and apply their understanding in approaching new problems.	Develop and articulate solutions to problems and puzzles in philosophy, lay out what can be said for and against these solutions, and make a measured judgement about what is the best solution in each case, supporting that judgement with a sustained line of argument based on the considerations raised.	Communicate complex and difficult ideas in clear, precise, and accessible terms to the general public and professional scientists and philosophers in a variety of formats.	Collaborate effectively with others, and work with a group to apply physics themes and concepts to open-ended problems.	Critically evaluate scientific methods and theories from a philosophical viewpoint, and critically evaluate philosophical views and theories in the light of the findings of modern physics.	Engage with a range of physical and philosophical theories, and the connections between them, in order to appreciate the intellectual beauty and societal applications of physics and philosophy, and be inspired to lifelong learning.
Stage 3	Philosophy of Physics PHI00013H 20 Credits (Compulsory)	Progress towards PLO			KEY: Students will develop and demonstrate their ability to provide insightful and detailed explanations of philosophical problems in clear and accessible terms	KEY: Students will (i) develop and demonstrate their ability to make progress and identify solutions even where it's unclear in the first instance how to proceed; (ii) come to be able to analyse and generate sophisticated logical arguments; (iii) come to be able to present a sustained and detailed case for a judgement based on careful weighing of arguments, objections, and responses	Students will develop their ability to express difficult ideas clearly and concisely, orally and in writing	Students will hone their abilities to work independently and in collaboration with others to develop knowledge and understanding	KEY: Students will develop and demonstrate their abilities (a) to evaluate scientific methods and theories from a philosophical perspective, and (b) to evaluate and revise philosophical views in the light of findings in physics	KEY: Students will develop and demonstrate their awareness of the connections between philosophy and physics

Stage	Module		Programme Learning Outcomes							
			PLO1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**	**PLO7**	**PLO8**
			Apply the techniques and results of physics and mathematics to independently solve complex problems, using core physics, mathematics and/or computational knowledge.	**Apply the principles of physics to construct and execute a scientific investigation to evaluate a hypothesis and interpret the results.**	**Recognise and define key problems, issues, and debates across a range of areas of philosophy—including some at the forefront of contemporary work—and apply their understanding in approaching new problems.**	**Develop and articulate solutions to problems and puzzles in philosophy, lay out what can be said for and against these solutions, and make a measured judgement about what is the best solution in each case, supporting that judgement with a sustained line of argument based on the considerations raised.**	**Communicate complex and difficult ideas in clear, precise, and accessible terms to the general public and professional scientists and philosophers in a variety of formats.**	**Collaborate effectively with others, and work with a group to apply physics themes and concepts to open-ended problems.**	**Critically evaluate scientific methods and theories from a philosophical viewpoint, and critically evaluate philosophical views and theories in the light of the findings of modern physics.**	**Engage with a range of physical and philosophical theories, and the connections between them, in order to appreciate the intellectual beauty and societal applications of physics and philosophy, and be inspired to lifelong learning.**
		By working on (and if applicable, assessed through)			By tackling difficult issues in the philosophy of physics, including some at the forefront of contemporary debate	By (respectively): (i) working on a cutting-edge topic and engaging with a tutor working on an area in which they research; (ii) engaging with high-level contemporary debates and developing arguments, objections, and responses; (iii) working to produce a substantial essay seeking to provide an answer to a challenging philosophical question	By making notes in advance of seminars, engaging in extended seminar discussions, and producing written assignments on advanced philosophical texts	By pursuing an exploration of a difficult topic, involving work on an extended reading list and regular creative dialogue with their tutor and fellow students in seminar discussions	By investigating difficult issues in the philosophy of physics	By investigating difficult issues in the philosophy of physics

Stage	Module		Programme Learning Outcomes							
			PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
			Apply the techniques and results of physics and mathematics to independently solve complex problems, using core physics, mathematics and/or computational knowledge.	Apply the principles of physics to construct and execute a scientific investigation to evaluate a hypothesis and interpret the results.	Recognise and define key problems, issues, and debates across a range of areas of philosophy—including some at the forefront of contemporary work—and apply their understanding in approaching new problems.	Develop and articulate solutions to problems and puzzles in philosophy, lay out what can be said for and against these solutions, and make a measured judgement about what is the best solution in each case, supporting that judgement with a sustained line of argument based on the considerations raised.	Communicate complex and difficult ideas in clear, precise, and accessible terms to the general public and professional scientists and philosophers in a variety of formats.	Collaborate effectively with others, and work with a group to apply physics themes and concepts to open-ended problems.	Critically evaluate scientific methods and theories from a philosophical viewpoint, and critically evaluate philosophical views and theories in the light of the findings of modern physics.	Engage with a range of physical and philosophical theories, and the connections between them, in order to appreciate the intellectual beauty and societal applications of physics and philosophy, and be inspired to lifelong learning.
	Philosophy Advanced Module 10 Credits				Students will develop and demonstrate their ability to come to an understanding of an issue using their existing philosophical knowledge and skills	Students will: (i) develop and demonstrate their ability to identify and develop solutions; (ii) develop and demonstrate their ability to analyse and generate sophisticated logical arguments; (iii) test and extend their ability to present a sustained and detailed case for a judgement based on careful weighing of the arguments	Students will test and extend their ability to present difficult ideas in a clear, precise, and accessible way			
					By working independently on an advanced topic	By (respectively): (i) working independently to address a difficult problem; (ii) working independently to engage with a high-level debate; (iii) working independently to produce a substantial essay seeking to provide an answer to a challenging philosophical question	By working independently to produce a substantial essay seeking to provide an answer to a challenging philosophical question			

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			PLO1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**	**PLO7**	**PLO8**
			Apply the techniques and results of physics and mathematics to independently solve complex problems, using core physics, mathematics and/or computational knowledge.	**Apply the principles of physics to construct and execute a scientific investigation to evaluate a hypothesis and interpret the results.**	**Recognise and define key problems, issues, and debates across a range of areas of philosophy—including some at the forefront of contemporary work—and apply their understanding in approaching new problems.**	**Develop and articulate solutions to problems and puzzles in philosophy, lay out what can be said for and against these solutions, and make a measured judgement about what is the best solution in each case, supporting that judgement with a sustained line of argument based on the considerations raised.**	**Communicate complex and difficult ideas in clear, precise, and accessible terms to the general public and professional scientists and philosophers in a variety of formats.**	**Collaborate effectively with others, and work with a group to apply physics themes and concepts to open-ended problems.**	**Critically evaluate scientific methods and theories from a philosophical viewpoint, and critically evaluate philosophical views and theories in the light of the findings of modern physics.**	**Engage with a range of physical and philosophical theories, and the connections between them, in order to appreciate the intellectual beauty and societal applications of physics and philosophy, and be inspired to lifelong learning.**
Stage 3	Intro to Plasma Science and Technology and Stellar Physics	Progress towards PLO	Adapt and apply concepts and techniques to independently solve increasingly complex problems in plasma and stellar physics							Learn key plasma physics and behaviour, including plasma fusion. Understand the relevence of plasma science to matters of clean energy and energy security. Appreciate how plasma physics can aid in the understanding and interpretation of astrophysical systems. Understand the wider implications of plasma fusion.
		By working on (and if applicable, assessed through)	Regular independent assignments (PPQs), independent supported problem solving in problem classes, engagement with lecture material, formal examination.							Engaging with teaching materials.

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			PLO1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**	**PLO7**	**PLO8**
			Apply the techniques and results of physics and mathematics to independently solve complex problems, using core physics, mathematics and/or computational knowledge.	**Apply the principles of physics to construct and execute a scientific investigation to evaluate a hypothesis and interpret the results.**	**Recognise and define key problems, issues, and debates across a range of areas of philosophy—including some at the forefront of contemporary work—and apply their understanding in approaching new problems.**	**Develop and articulate solutions to problems and puzzles in philosophy, lay out what can be said for and against these solutions, and make a measured judgement about what is the best solution in each case, supporting that judgement with a sustained line of argument based on the considerations raised.**	**Communicate complex and difficult ideas in clear, precise, and accessible terms to the general public and professional scientists and philosophers in a variety of formats.**	**Collaborate effectively with others, and work with a group to apply physics themes and concepts to open-ended problems.**	**Critically evaluate scientific methods and theories from a philosophical viewpoint, and critically evaluate philosophical views and theories in the light of the findings of modern physics.**	**Engage with a range of physical and philosophical theories, and the connections between them, in order to appreciate the intellectual beauty and societal applications of physics and philosophy, and be inspired to lifelong learning.**
Stage 3	Atomic Physics & Lasers and Modern Optics	Progress towards PLO	Adapt and apply concepts and mathematics to independently solve unfamiliar problems in atomic physics, laser physics, and modern optics	Use demonstrations to show various optical phenomena and interpret the results						Be stimulated in the applications of optics in a range of scientific and consumer applications. Appreciate the intellectual beauty of the foundation of atomic physics/laser/modern optics. Understand how atmoic physics can explain phenomena from other fields of physics.
		By working on (and if applicable, assessed through)	Regular independent assignments (PPQs), independent supported problem solving in problem classes, and enclosed examination.	Engagement with lecture content.						Engaging with teaching materials.

Stage	Module		Programme Learning Outcomes							
			PLO1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**	**PLO7**	**PLO8**
			Apply the techniques and results of physics and mathematics to independently solve complex problems, using core physics, mathematics and/or computational knowledge.	**Apply the principles of physics to construct and execute a scientific investigation to evaluate a hypothesis and interpret the results.**	**Recognise and define key problems, issues, and debates across a range of areas of philosophy—including some at the forefront of contemporary work—and apply their understanding in approaching new problems.**	**Develop and articulate solutions to problems and puzzles in philosophy, lay out what can be said for and against these solutions, and make a measured judgement about what is the best solution in each case, supporting that judgement with a sustained line of argument based on the considerations raised.**	**Communicate complex and difficult ideas in clear, precise, and accessible terms to the general public and professional scientists and philosophers in a variety of formats.**	**Collaborate effectively with others, and work with a group to apply physics themes and concepts to open-ended problems.**	**Critically evaluate scientific methods and theories from a philosophical viewpoint, and critically evaluate philosophical views and theories in the light of the findings of modern physics.**	**Engage with a range of physical and philosophical theories, and the connections between them, in order to appreciate the intellectual beauty and societal applications of physics and philosophy, and be inspired to lifelong learning.**
Stage 3	Advanced Theoretical Techniques and Intro to Quantum Computing	Progress towards PLO	Adapt and apply sophisticated theoretical and mathematical tools, including quantum algorithms, integral and general linear transformations, to solve unseen problems across many fields of physics. Y							Exploit the links between quantum mechanics and quantum computing to understand the potential benefits of quantum computing when applied to certain mathematical and physical problems.
		By working on (and if applicable, assessed through)	Regular independent assignments (PPQs), independent supported problem solving in problem classes, engagement with lecture material, formal examination.							Engaging with teaching materials.

Stage	Module		Programme Learning Outcomes							
			PLO1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**	**PLO7**	**PLO8**
			Apply the techniques and results of physics and mathematics to independently solve complex problems, using core physics, mathematics and/or computational knowledge.	**Apply the principles of physics to construct and execute a scientific investigation to evaluate a hypothesis and interpret the results.**	**Recognise and define key problems, issues, and debates across a range of areas of philosophy—including some at the forefront of contemporary work—and apply their understanding in approaching new problems.**	**Develop and articulate solutions to problems and puzzles in philosophy, lay out what can be said for and against these solutions, and make a measured judgement about what is the best solution in each case, supporting that judgement with a sustained line of argument based on the considerations raised.**	**Communicate complex and difficult ideas in clear, precise, and accessible terms to the general public and professional scientists and philosophers in a variety of formats.**	**Collaborate effectively with others, and work with a group to apply physics themes and concepts to open-ended problems.**	**Critically evaluate scientific methods and theories from a philosophical viewpoint, and critically evaluate philosophical views and theories in the light of the findings of modern physics.**	**Engage with a range of physical and philosophical theories, and the connections between them, in order to appreciate the intellectual beauty and societal applications of physics and philosophy, and be inspired to lifelong learning.**
Stage 3	Relativity and Particle Physics	Progress towards PLO	Adapt and apply the principles of relativistic and non-relativistic quantum physics to describe and predict the behaviour of fundamental particles.				Conduct a literature review on an area of the course chosen from a list, presenting and evaluating information from a range of research papers in a succinct and readable written form. This is good preparation for MPhys project work (MPhys students only).			Understand and articulate the current state of knowledge about a particular aspect covered in lectures.
		By working on (and if applicable, assessed through)	Regular independent assignments (PPQs), independent supported problem solving in problem classes, engagement with lecture material, formal examination.				Writing literature review/essay for summative assessment.			Engaging with teaching materials, writing literature review/essay for summative assessment.
Stage 4	Light and Matter	Progress towards PLO	Develop expert knowledge and high-level understanding of semiconductors, lasers and light-matter interactions and their application to specific complex real-world physics problems				Articulate the behaviour of semiconductors, lasers and light matter interactions and the limitations of the approaches used.		Develop expert knowledge and high-level understanding of semiconductors and their application to specific complex real-world physics problems	

Stage	Module		Programme Learning Outcomes							
			PLO1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**	**PLO7**	**PLO8**
			Apply the techniques and results of physics and mathematics to independently solve complex problems, using core physics, mathematics and/or computational knowledge.	**Apply the principles of physics to construct and execute a scientific investigation to evaluate a hypothesis and interpret the results.**	**Recognise and define key problems, issues, and debates across a range of areas of philosophy—including some at the forefront of contemporary work—and apply their understanding in approaching new problems.**	**Develop and articulate solutions to problems and puzzles in philosophy, lay out what can be said for and against these solutions, and make a measured judgement about what is the best solution in each case, supporting that judgement with a sustained line of argument based on the considerations raised.**	**Communicate complex and difficult ideas in clear, precise, and accessible terms to the general public and professional scientists and philosophers in a variety of formats.**	**Collaborate effectively with others, and work with a group to apply physics themes and concepts to open-ended problems.**	**Critically evaluate scientific methods and theories from a philosophical viewpoint, and critically evaluate philosophical views and theories in the light of the findings of modern physics.**	**Engage with a range of physical and philosophical theories, and the connections between them, in order to appreciate the intellectual beauty and societal applications of physics and philosophy, and be inspired to lifelong learning.**
		By working on (and if applicable, assessed through)	Engaging with lecture and problem class material. Formal examination.				Engaging with teaching materials		Working in groups in problem classes.	
Stage 4	Adv and Further Quantum Mechanics	Progress towards PLO	Solve complex problems independently and during interactive problem classes.				Articulate the central importance and immense power of quantum mechanics. Understand and utilise the concepts of QM when discussing physical measurements and their reproducibility and accuracy.			Creatively adapt and apply core and advanced physics concepts to new situations.
		By working on (and if applicable, assessed through)	Working in groups in problem classes.				Engaging with teaching materials.			Regular independent assignments, engaging with lecture material. Formal examination.
Stage 4	Biophysics	Progress towards PLO	Appreciate that physical principles are used to solve familiar and unfamilar problems related to biological systems. Communicate how a physics approach can be immensely powerful to solving problems from disparate fields of research.					Solve complex problems, partly working in a group within a small-group teaching environment.		Creatively adapt and apply core and advanced physics concepts to new situations.

Stage	Module		Programme Learning Outcomes							
			PLO1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**	**PLO7**	**PLO8**
			Apply the techniques and results of physics and mathematics to independently solve complex problems, using core physics, mathematics and/or computational knowledge.	**Apply the principles of physics to construct and execute a scientific investigation to evaluate a hypothesis and interpret the results.**	**Recognise and define key problems, issues, and debates across a range of areas of philosophy—including some at the forefront of contemporary work—and apply their understanding in approaching new problems.**	**Develop and articulate solutions to problems and puzzles in philosophy, lay out what can be said for and against these solutions, and make a measured judgement about what is the best solution in each case, supporting that judgement with a sustained line of argument based on the considerations raised.**	**Communicate complex and difficult ideas in clear, precise, and accessible terms to the general public and professional scientists and philosophers in a variety of formats.**	**Collaborate effectively with others, and work with a group to apply physics themes and concepts to open-ended problems.**	**Critically evaluate scientific methods and theories from a philosophical viewpoint, and critically evaluate philosophical views and theories in the light of the findings of modern physics.**	**Engage with a range of physical and philosophical theories, and the connections between them, in order to appreciate the intellectual beauty and societal applications of physics and philosophy, and be inspired to lifelong learning.**
		By working on (and if applicable, assessed through)	Engaging with teaching materials and working in groups to discuss problems					Working in groups in problem classes.		Regular independent assignments, engaging with lecture material. Formal examination.
Stage 4	Nanomaterials: From Graphene to Spintronics	Progress towards PLO	Use advanced physics concepts to investigate complex physics problems.	Produce an in-depth investigation on a particular topic identifying or designing the best methodology with which to approach a given physics problem.			Summarise complex research ideas to a professional audience in written form. Acquire and summarise in-depth knowledge and understanding of key physics phenomena underpinning the development of advanced 'nano' techniques research. Appraise and advise on the suitability of different nanofabriacation and nanomanipulation techniques for the solution of a specific problem. Appreciate the benefits and drawbacks associated with consumer products based on nanomaterials.		Engage with the scientific literature to identify the most suitable methodology to solve a complex nanophysical problem.	Creatively use advanced physics concepts to evaluate given physical world questions Understand key physics phenomena underpinning the development of advanced experimental techniques used in Physics research. Appraise the suitability of different nanofabriacation and nanomanipulation techniques for the solution of a specific problem

Stage	Module		Programme Learning Outcomes							
			PLO1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**	**PLO7**	**PLO8**
			Apply the techniques and results of physics and mathematics to independently solve complex problems, using core physics, mathematics and/or computational knowledge.	**Apply the principles of physics to construct and execute a scientific investigation to evaluate a hypothesis and interpret the results.**	**Recognise and define key problems, issues, and debates across a range of areas of philosophy—including some at the forefront of contemporary work—and apply their understanding in approaching new problems.**	**Develop and articulate solutions to problems and puzzles in philosophy, lay out what can be said for and against these solutions, and make a measured judgement about what is the best solution in each case, supporting that judgement with a sustained line of argument based on the considerations raised.**	**Communicate complex and difficult ideas in clear, precise, and accessible terms to the general public and professional scientists and philosophers in a variety of formats.**	**Collaborate effectively with others, and work with a group to apply physics themes and concepts to open-ended problems.**	**Critically evaluate scientific methods and theories from a philosophical viewpoint, and critically evaluate philosophical views and theories in the light of the findings of modern physics.**	**Engage with a range of physical and philosophical theories, and the connections between them, in order to appreciate the intellectual beauty and societal applications of physics and philosophy, and be inspired to lifelong learning.**
		By working on (and if applicable, assessed through)	Participating in problem classes.	Completing formally examined written assignment.			Completing formally examined written assignment.		Completing an independent research-based assignment for formal assessment.	Engaging with lecture and problem class material. Formal examination.
Stage 4	Adv Computational Physics	Progress towards PLO	Apply independent learning strategies to implement complex computational methods for the simulation of advanced physical problems, eg fast fourier transforms, parallel code etc	Plan and execute a computational scientific investigation using advanced parallel computing techniques including MPI, OpenMP, and CUDA. Compare and contrast different computational approaches to the same problem, including comparison of different compilers and programming paradigms.				Work independently and as a team implementing complex algorithms and applying them to extended and complex problems		
		By working on (and if applicable, assessed through)	Participating in practical programming classes developing computational techniques, engaging with lecure material, formal examination.	Developing a high performance computer code to investigate the properties of a modelled system				Participating in supported lab sessions (practicals), and completing two long, complex, and open-ended computational assignments.		

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			Apply the techniques and results of physics and mathematics to independently solve complex problems, using core physics, mathematics and/or computational knowledge.	**Apply the principles of physics to construct and execute a scientific investigation to evaluate a hypothesis and interpret the results.**	**Recognise and define key problems, issues, and debates across a range of areas of philosophy—including some at the forefront of contemporary work—and apply their understanding in approaching new problems.**	**Develop and articulate solutions to problems and puzzles in philosophy, lay out what can be said for and against these solutions, and make a measured judgement about what is the best solution in each case, supporting that judgement with a sustained line of argument based on the considerations raised.**	**Communicate complex and difficult ideas in clear, precise, and accessible terms to the general public and professional scientists and philosophers in a variety of formats.**	**Collaborate effectively with others, and work with a group to apply physics themes and concepts to open-ended problems.**	**Critically evaluate scientific methods and theories from a philosophical viewpoint, and critically evaluate philosophical views and theories in the light of the findings of modern physics.**	**Engage with a range of physical and philosophical theories, and the connections between them, in order to appreciate the intellectual beauty and societal applications of physics and philosophy, and be inspired to lifelong learning.**
Stage 4	Adv Nuclear Physics	Progress towards PLO	Creatively apply independent learning strategies that incorporate core and advanced physics to evaluate real-world nuclear physics and astrophysics problems Understand the wider role of nuclear physics in the cosmos, and the power of small scale interactions to shape the universe.	Evaluate and analyse third-party data.			Communicate advanced nuclear physics concepts via report writing and presentations	Work independently and within a research team to deliver thorough and complete solutions to complex exercises and assignments	Evaluate sophisticated experimental measurements to evaluate nuclear physics and astrophysics models.	
		By working on (and if applicable, assessed through)	Regular independent assignments, engaging with lecture and problem class material, formal examination.	Applying the principles of nuclear physics and astrophysics to evaluate third-party published data			Engaging with lectures, problem classes and assignments	Engaging with group-work aspect of problem classes and assignments.	Engaging with teaching material, working on independent assignment.	

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			PLO1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**	**PLO7**	**PLO8**
			Apply the techniques and results of physics and mathematics to independently solve complex problems, using core physics, mathematics and/or computational knowledge.	**Apply the principles of physics to construct and execute a scientific investigation to evaluate a hypothesis and interpret the results.**	**Recognise and define key problems, issues, and debates across a range of areas of philosophy—including some at the forefront of contemporary work—and apply their understanding in approaching new problems.**	**Develop and articulate solutions to problems and puzzles in philosophy, lay out what can be said for and against these solutions, and make a measured judgement about what is the best solution in each case, supporting that judgement with a sustained line of argument based on the considerations raised.**	**Communicate complex and difficult ideas in clear, precise, and accessible terms to the general public and professional scientists and philosophers in a variety of formats.**	**Collaborate effectively with others, and work with a group to apply physics themes and concepts to open-ended problems.**	**Critically evaluate scientific methods and theories from a philosophical viewpoint, and critically evaluate philosophical views and theories in the light of the findings of modern physics.**	**Engage with a range of physical and philosophical theories, and the connections between them, in order to appreciate the intellectual beauty and societal applications of physics and philosophy, and be inspired to lifelong learning.**
Stage 4	Adv Plasma Science and Applications	Progress towards PLO	Creatively apply independent learning strategies incorporating core and advanced physics to understand and evaluate real-world plasma physics of relevance to inertial and magnetic fusion and astrophysics. Understand key plasma physics concerns behind both inertial and magnetic confinement approaches to fusion and basic plasma behaviour. Understand the relevence of plasma science to matters of clean energy and energy security.				Through deep understanding, communicate the key plasma physics issues behind realising inertial and magnetic confinement approaches to fusion and basic plasma behaviour. Understand the relevence of plasma science to matters of clean energy and energy security. Appreciate how plasma physics knowledge - aquired and tested in terrestrial setting - is used to understand and interpret astrophysical systems.	Work both independently and collaboratively in order to explore complex problems involving terrestrial and astrophysical plasmas.		
		By working on (and if applicable, assessed through)	Regular independent assignments, engaging with teaching materials and problem class material, formal examination.				Engaging with teaching materials, formal examination.	Regular assignments and engaging with problem class material.		

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			PLO1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**	**PLO7**	**PLO8**
			Apply the techniques and results of physics and mathematics to independently solve complex problems, using core physics, mathematics and/or computational knowledge.	**Apply the principles of physics to construct and execute a scientific investigation to evaluate a hypothesis and interpret the results.**	**Recognise and define key problems, issues, and debates across a range of areas of philosophy—including some at the forefront of contemporary work—and apply their understanding in approaching new problems.**	**Develop and articulate solutions to problems and puzzles in philosophy, lay out what can be said for and against these solutions, and make a measured judgement about what is the best solution in each case, supporting that judgement with a sustained line of argument based on the considerations raised.**	**Communicate complex and difficult ideas in clear, precise, and accessible terms to the general public and professional scientists and philosophers in a variety of formats.**	**Collaborate effectively with others, and work with a group to apply physics themes and concepts to open-ended problems.**	**Critically evaluate scientific methods and theories from a philosophical viewpoint, and critically evaluate philosophical views and theories in the light of the findings of modern physics.**	**Engage with a range of physical and philosophical theories, and the connections between them, in order to appreciate the intellectual beauty and societal applications of physics and philosophy, and be inspired to lifelong learning.**
Stage 4	MPhys Project and Res Skills	Progress towards PLO	Creatively apply independent learning strategies to tackle new research questions and/or unfamiliar problems in specialised areas of physics, interpreting and presenting results in an appropriate manner. Independently identify relevant data, methodologies, and approaches from a wide body of research literature, and incorporate them into project work as and when appropriate. Understand that a physics approach can be immensely powerful when applied to a vast range of problems.	Carry out independent research and identify the most suitable approach to tackle a specific research question.			Concisely, clearly, and comprehensively communicate the background, theory, methodology, and results of an advanced extended scientific investigation orally to peers in a large group, examiners in a viva-style defence, in formal dissertation writeup, and in a conference poster. Defend the poster before conference attendees (peers, research students, and academics). Keep accurate record of all experimental and theoretical work to accepted standards. Be able to articulate how a specific physics problem fits into the broader picture of our understanding of nature.	Work independently as part of a research group on a complex and open-ended research project incorporating methodologies and approaches garnered both from academic literature and from research groups here in York. Write a final report including critical appraisal of published data, results, and conclusions in the light of the outcomes of the research project.	Carry out novel research, including experimental/computational design, appropriate selection of data acquisition/generation and analysis techniques, analysis, evaluation, and appraisal of the results obtained in the context of the strengths and limitations of the methodology used.	

Stage	Module		Programme Learning Outcomes							
			PLO1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**	**PLO7**	**PLO8**
			Apply the techniques and results of physics and mathematics to independently solve complex problems, using core physics, mathematics and/or computational knowledge.	**Apply the principles of physics to construct and execute a scientific investigation to evaluate a hypothesis and interpret the results.**	**Recognise and define key problems, issues, and debates across a range of areas of philosophy—including some at the forefront of contemporary work—and apply their understanding in approaching new problems.**	**Develop and articulate solutions to problems and puzzles in philosophy, lay out what can be said for and against these solutions, and make a measured judgement about what is the best solution in each case, supporting that judgement with a sustained line of argument based on the considerations raised.**	**Communicate complex and difficult ideas in clear, precise, and accessible terms to the general public and professional scientists and philosophers in a variety of formats.**	**Collaborate effectively with others, and work with a group to apply physics themes and concepts to open-ended problems.**	**Critically evaluate scientific methods and theories from a philosophical viewpoint, and critically evaluate philosophical views and theories in the light of the findings of modern physics.**	**Engage with a range of physical and philosophical theories, and the connections between them, in order to appreciate the intellectual beauty and societal applications of physics and philosophy, and be inspired to lifelong learning.**
		By working on (and if applicable, assessed through)	Completing independent project work, with support from project supervisor(s) as appropriate.	Planning and executing an independent research project, evaluating the data in relation to a hypothesis or hypotheses, and presenting results in formal written and oral formats.			Preparing research materials for dissemination in written form (e.g. in laboratory note books, dissertations), oral form (e.g. supervisor discussion, seminar, viva) and via other presentations (e.g. to supervisors and during the summer conference).	Working both independently and as part of a wider group to produce research-level output incorporating all aspects of this PLO.	Working on research project design, realisation, and follow-up. Examined through formal written report and oral viva-style examination.	

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			PLO1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**	**PLO7**	**PLO8**
			Apply the techniques and results of physics and mathematics to independently solve complex problems, using core physics, mathematics and/or computational knowledge.	**Apply the principles of physics to construct and execute a scientific investigation to evaluate a hypothesis and interpret the results.**	**Recognise and define key problems, issues, and debates across a range of areas of philosophy—including some at the forefront of contemporary work—and apply their understanding in approaching new problems.**	**Develop and articulate solutions to problems and puzzles in philosophy, lay out what can be said for and against these solutions, and make a measured judgement about what is the best solution in each case, supporting that judgement with a sustained line of argument based on the considerations raised.**	**Communicate complex and difficult ideas in clear, precise, and accessible terms to the general public and professional scientists and philosophers in a variety of formats.**	**Collaborate effectively with others, and work with a group to apply physics themes and concepts to open-ended problems.**	**Critically evaluate scientific methods and theories from a philosophical viewpoint, and critically evaluate philosophical views and theories in the light of the findings of modern physics.**	**Engage with a range of physical and philosophical theories, and the connections between them, in order to appreciate the intellectual beauty and societal applications of physics and philosophy, and be inspired to lifelong learning.**
Stage 4	Topics in Theoretical Philosophy	Progress towards PLO			Students will develop and demonstrate their ability to develop insightful and illuminating explanations of key problems, issues, and debates, applying a developed understanding of core philosophical issues to novel questions	KEY: Students will (i) develop and demonstrate their ability to make progress and identify solutions to problems even where it's unclear in the first instance how to proceed; (ii) come to be able to analyse and generate sophisticated logical arguments in a critically reflective and autonomous way; (iii) come to be able to present a sustained and detailed case for a judgement based on careful weighing of arguments, objections, and responses in the light of a sophisticated appreciation of the considerations raised	Students will develop their ability to express difficult ideas clearly and concisely, orally and in writing			

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			PLO1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**	**PLO7**	**PLO8**
			Apply the techniques and results of physics and mathematics to independently solve complex problems, using core physics, mathematics and/or computational knowledge.	**Apply the principles of physics to construct and execute a scientific investigation to evaluate a hypothesis and interpret the results.**	**Recognise and define key problems, issues, and debates across a range of areas of philosophy—including some at the forefront of contemporary work—and apply their understanding in approaching new problems.**	**Develop and articulate solutions to problems and puzzles in philosophy, lay out what can be said for and against these solutions, and make a measured judgement about what is the best solution in each case, supporting that judgement with a sustained line of argument based on the considerations raised.**	**Communicate complex and difficult ideas in clear, precise, and accessible terms to the general public and professional scientists and philosophers in a variety of formats.**	**Collaborate effectively with others, and work with a group to apply physics themes and concepts to open-ended problems.**	**Critically evaluate scientific methods and theories from a philosophical viewpoint, and critically evaluate philosophical views and theories in the light of the findings of modern physics.**	**Engage with a range of physical and philosophical theories, and the connections between them, in order to appreciate the intellectual beauty and societal applications of physics and philosophy, and be inspired to lifelong learning.**
		By working on (and if applicable, assessed through)			By considering some central issues in theoretical philosophy, including questions in Metaphysics, Epistemology, Philosophy of Mind, and Philosophy of Language	By (respectively): (i) working on key topics in theoretical philosophy; (ii) engaging with high-level debates and developing arguments, objections, and responses, individually and in the context of extended seminar discussions; (iii) working to produce a substantial essay seeking to provide an answer to a challenging question in theoretical philosophy	By making notes in advance of seminars, engaging in extended seminar discussions, and producing written assignments on advanced philosophical texts			

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			PLO1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**	**PLO7**	**PLO8**
			Apply the techniques and results of physics and mathematics to independently solve complex problems, using core physics, mathematics and/or computational knowledge.	**Apply the principles of physics to construct and execute a scientific investigation to evaluate a hypothesis and interpret the results.**	**Recognise and define key problems, issues, and debates across a range of areas of philosophy—including some at the forefront of contemporary work—and apply their understanding in approaching new problems.**	**Develop and articulate solutions to problems and puzzles in philosophy, lay out what can be said for and against these solutions, and make a measured judgement about what is the best solution in each case, supporting that judgement with a sustained line of argument based on the considerations raised.**	**Communicate complex and difficult ideas in clear, precise, and accessible terms to the general public and professional scientists and philosophers in a variety of formats.**	**Collaborate effectively with others, and work with a group to apply physics themes and concepts to open-ended problems.**	**Critically evaluate scientific methods and theories from a philosophical viewpoint, and critically evaluate philosophical views and theories in the light of the findings of modern physics.**	**Engage with a range of physical and philosophical theories, and the connections between them, in order to appreciate the intellectual beauty and societal applications of physics and philosophy, and be inspired to lifelong learning.**
	Philosophy 20-credit MA Module (Various)	Progress towards PLO			Students will develop and demonstrate their ability to develop insightful and illuminating explanations of key problems, issues, and debates, applying a developed understanding of core philosophical issues to novel questions	KEY: Students will (i) develop and demonstrate their ability to make progress and identify solutions to problems even where it's unclear in the first instance how to proceed; (ii) come to be able to analyse and generate sophisticated logical arguments in a critically reflective and autonomous way; (iii) come to be able to present a sustained and detailed case for a judgement based on careful weighing of arguments, objections, and responses in the light of a sophisticated appreciation of the considerations raised	Students will develop their ability to express difficult ideas clearly and concisely, orally and in writing			

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			PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
			Apply the techniques and results of physics and mathematics to independently solve complex problems, using core physics, mathematics and/or computational knowledge.	Apply the principles of physics to construct and execute a scientific investigation to evaluate a hypothesis and interpret the results.	Recognise and define key problems, issues, and debates across a range of areas of philosophy—including some at the forefront of contemporary work—and apply their understanding in approaching new problems.	Develop and articulate solutions to problems and puzzles in philosophy, lay out what can be said for and against these solutions, and make a measured judgement about what is the best solution in each case, supporting that judgement with a sustained line of argument based on the considerations raised.	Communicate complex and difficult ideas in clear, precise, and accessible terms to the general public and professional scientists and philosophers in a variety of formats.	Collaborate effectively with others, and work with a group to apply physics themes and concepts to open-ended problems.	Critically evaluate scientific methods and theories from a philosophical viewpoint, and critically evaluate philosophical views and theories in the light of the findings of modern physics.	Engage with a range of physical and philosophical theories, and the connections between them, in order to appreciate the intellectual beauty and societal applications of physics and philosophy, and be inspired to lifelong learning.
		By working on (and if applicable, assessed through)			By engaging with lectures, seminars, and literature addressing some central issues in a particular area of philosophy	By (respectively): (i) working on key topics in the area addressed by the module; (ii) engaging with high-level debates and developing arguments, objections, and responses, individually and in the context of extended seminar discussions; (iii) working to produce a substantial essay seeking to provide an answer to a challenging question in the area addressed by the module	By making notes in advance of seminars, engaging in extended seminar discussions, and producing written assignments on advanced philosophical texts			
		Progress towards PLO								
		By working on (and if applicable, assessed through)								
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