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		to analvse an	d solve problems for which techniques including cal	culus, algebra, and forma	l logic, were developed	1:				

3	investigate unfamiliar problems in mathematics by adapting and/or synthesising a range of mathematical approaches (including abstraction or numerical approximation);		
4	make a measured judgement about what is the best view on a particular problem and present a sustained line of argument in defence of this judgement based on careful consider	eration	of what
5	critically engage in ongoing scholarly and philosophical debate concerning mathematical truth, knowledge and our use of mathematics in science and modern life		
6	gain research skills in an area of mathematical or philosophical specialisation:		
7			
8			
Drogram	communicate complex and difficult mathematical and philosophical ideas in clear, precise, and accessible terms in a variety of formats.		
For prog	arranmes 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	hut n	ot
necessa	rily 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	01
nossible	to capture a key ability developed by the year in industry by alteration of the standard PLOs	not	
N/A			
Program	nme Learning Outcome for year abroad programmes (where applicable)		
For prog	grammes 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, bu	t not	
necessa	rily 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 r	not	
possible	e to capture a key ability developed by the year abroad by alteration of the standard PLOs.		
N/A			
Explanat	tion of the choice of Programme Learning OutcomesPlease explain your rationale for choosing these PLOs in a statement that can be used for students (such as in	па	
student	handbook). Please include brief reference to:		
i) Why th	ne PLOs are considered ambitious or stretching?		
The PLOs mathema them to a life.	s include the development of substantial subject specific knowledge and techniques across two subjects, as well as significant attention to their overlap in formal logic and the p atics. The course provides a distinct intellectual challenge in being able to learn, relate, and combine the complementary methods of mathematics with the methods of philosop a range of problems across both disciplines, particularly in regard to debates concerning mathematical truth, mathematical knowledge, and our use of mathematics in science a	hilosoj phy an ind mo	ohy of d apply dern

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

As per the statement of purpose, the first PLO emphasizes logical reasoning as the common core to both mathematics and philosophy. It is a distinctive feature of Mathematics and Philosophy as a degree that there is this close overlap in the key role of deductive argument. Students will have the advantage of studying two subject areas that provide valuable subject-specific knowledge in their own right, as well as reflecting on the shared techniques of both, and specifically on the nature of mathematical reasoning.

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)?

In the process of meeting these outcomes, students will be exposed to a range of digital and technology-enhanced resources in the individual modules that make up the programme. They will learn to handle electronic files and have experience of mathematical programming.

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 employability objectives should be informed by the University's Employability Strategy:

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

The PLOs support development of a range of transferrable skills. In particular, graduates will be flexible-thinking problem solvers, with the ability to deal with both formal/technical material and to communicate clearly verbally and in writing. In addition, students will teamworking skills in collaborative work in seminars and problem solving.

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

Primarily via supervisors in the two supporting departments, who monitor progress and meet regularly with their supervisees to discuss their development throughout their degree. Students are allocated a primary supervisor in one of the two Departments, but all are given a contact person in their second Department who they can speak to if they have any subject specific concerns that their own supervisor cannot help with. Additionally, in the Philosophy Department the Director of First Year Programme helps to monitor performance in first year and support students who need it (in close collaboration with our first year seminar tutors). Our first year Beginning Philosophy module highlights basic skills and its online component emphasizes key points. Students are warmly encouraged to make use of module tutors' office hours where they are struggling with material. In addition, there is support available from the Maths Skills Centre and the Writing Centre. Where there are specific learning difficulties, these are identified and supported via the disability/student support services procedures and statements of needs.

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

The vast majority of teaching staff are active in research, which informs their teaching at all levels. In the Philosophy Department the third year modules are particularly research led, focussing on topics in which the module tutor is active in research. Students are introduced to research methods in Mathematics via project work in Maths Skills 1 (also Maths Skills 2 if they choose this option), and can develop their research skills in a mathematical setting if they choose to complete a third year Project in Mathematics. In Philosophy 'Beginning Philosophy' provides an introduction to research methods. Students who do not take the Maths project in third year instead display their independent research skills in philosophy via one or more Advanced Module. In Philosophy, departmental teaching skills workshops for staff feature participation by staff from ASO who ensure our discussions and work take contemporary pedagogical research into account.

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 th	e first year (Stage 1), stu	idents will be able to:					
			Global statement				
PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8
recognise and use logical symbols and terminology to formalise simple arguments and discuss their validity.	competently use foundational mathematical and logical techniques appropriately.	adapt some foundational techniques in mathematics to unfamiliar situations.	appreciate some problems and puzzles in some central areas of philosophy and its history, and begin to consider how these problems may be solved.	appreciate and critically engage with some core issues concerning the nature of knowledge.	grasp some basic mathematical and philosophical research skills.	engage in productive collaborative inquiry (e.g. in seminars) and work independently on problems set by lecturers.	communicate basic ideas in seminars and written work.
Stage 2	e second year (Stage 2)	students will be able to:					
	ie secona year (stage z),	students will be able to.	Global statement				
PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8
recognise and use logical symbols and terminology to formalise simple arguments and discuss their validity. Provide logical derivations and countermodels to answer questions concerning the validity of arguments in formal logic.	competently use foundational mathematical and logical techniques appropriately. Confidently perform calculations, or use methods, which require the combination of several foundational techniques, and identify which of those techniques is appropriate.	adapt some foundational techniquest to unfamiliar situations. Recognize when some foundational techniques can be applied outside their standard context, and put together two or more techniquest to analyse a problem.	Appreciate a range of problems and puzzles across core areas of philosophy and its history, and understand and critically evaluate available solutions.	appreciate, and critically engage with, metaphysical issues relevant to mathematics, via discussions of metaphysics and/or the philosophy of science.	develop use of mathematical and philosophical research skills through independent study in support of taught modules.	engage in productive collaborative inquiry (e.g. in seminars) and work independently on problems set by lecturers and arising out of individual and group reflection.	Communicate basic and more complex ideas clearly, concisely, and accurately in seminars and written work.
Stage 3	.) On a second se	ha third waar (Ctars 2)	_				
(For integrated Masters students will be able to	s) On progression from t :	ne third year (Stage 3),	Global statement				
PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8
Individual statements							
Programme Struct	ture						

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	n
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 module	es for Stage O, use t	he togg	gles to	o the	left t	o shc	ow th	e hio	dden	rows	5)																				
Stage 1																																
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10	PHI00001C	Beginning Philosophy		s																	А	EA										
20	PHI00005C	Reason and Argument A	s									EA	A																			
20	PHI00008C	Knowledge and Perception												s								E	A									
10	PHI00003C	Metaphysics																					S			E		А				
30	MAT00001C	Calculus		S									А													E	А					
20	MAT00010C	Algebra		S									А													E	А					
10	MAT00011C	Mathematical Skills 1: Reasoning and Communication		S									A									EA		A								
Stage 2																																
Credits	Mo	dule				Aut	umn	Tern	า							S	pring	; Ter	m							Su	mmer	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
Students t	ake 60 credits of Phil	osophy including Key	Ideas.	Intorn	adiat	a L oo	ie and	d at la	act o	ne of	Kov	daas	in Ma	tanh	reice	and k	av Id	loor i	n Dhil	oson	hy of	Scier		how r	nav o	nt for a	further	20 cr	adit K	av Id	0.00	

Students take 60 credits of Philosophy including Key Ideas: Intermediate Logic and at least one of Key Ideas in Metaphysics and Key Ideas in Philosophy of Science. They may opt for a further 20 credit Key Ideas module or Tutorial Module, or two 10 credit option modules.

Students take the 40 credit PURE stream in Mathematics, plus Linear Algebra (10 cr) and one of Mathematical Skills 2 and Vector Calculus.

		Key Ideas																														
		(Autumn																														
		modules) -																														
		includes																														
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		Key Ideas (Spring																														
		Includes) -																														
		Metaphysics																														
		Philosophy of																														
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Management and Adr	nissions Inf	ormation						
This document applies to	students wh	o commence	d the programme(s) in:		2017/18			
Interim awards available (Level 4/Certificate), Diplo specify any proposed exce	Interim awar ma of Higher ptions to this	rds available o Education (Lo s norm.	on undergraduate programmes (sul evel 5/Intermediate), Ordinary Deg	pject to programme rea ree and in the case of I	gulations Integrate) will normally be: Cer d Masters the Bachelc	tificate o ors with h	f Higher Education ionours. Please
Certificate of Higher Education Diploma of Higher Education	on (Level 4/Ce ۱ (Level 5/Inter	rtificate) Gene mediate) Gene	ric eric					
Admissions Criteria								
TYPICAL OFFERS A levels AAA/AAB IB Diploma Programme 36/35 points including HL 6 in essential subjects BTEC Extended Diploma DDD (may vary for combined programmes) Length and status of the p	programme(s	and mode(s) of study					
Programme	Length	Status (full-	Start dates/months			Mode		
	(years)	time/part- time) Please select	(if applicable – for programmes that have multiple intakes or start dates that differ from the usual academic year)	Face-to-face, campus	s-based	Distance learni	ng	Other
BA Mathematics and Philosophy	3	Full-time	n/a	Please select Y/N	Yes	Please select Y/N	No	n/a
Language(s) of study English.								
Language(s) of assessmen	ıt							
Programme accreditat	tion by Pro ised or accre	fessional, Si dited by a PSI	tatutory or Regulatory Bodies	(PSRB)				

Please Select Y/N:	No	if No move to next Section
		if Yes complete the following questions
Name of PSRB		
Are there any conditi	ons on the ap	oproval/ accreditation of the programme(s)/ graduates (for example accreditation only for the full award and not any interim award)
Additional Drofoco	ional or Vo	cational Standards
Additional Profess		cational Stanualus
Are there any additio	nai requirem	ents of accrediting bodies of PSKB of pre-requisite professional experience needed to study this programme?
Please Select Y/N:		if Yes, provide details
(max 200 words)		
University award I	regulations	
The University's award	and assessmen	t 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 docume	nt.	
Are students on the p	programme p	ermitted to take elective modules?
(See: https://www.yo	ork.ac.uk/med	dia/staffhome/learningandteaching/documents/policies/Framework%20for%20Programme%20Design%20-%20UG.pdf)
Diago Salact V/N:		
Please select 1/1.		
Careers & Placeme	ents - 'With	Placement Year' programmes
Students on all under	graduate 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 thei	r studies at Stage 3 in the following year, thus lengthening their programme by a year. Successful completion of the placement year and
associated assessmen	t allows this t	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 a	idds a Program	mme Learning Outcome, concerning employability. (See Careers & Placements for details).
In exceptional circum	stances, UTC	may approve an exemption from the 'Placement Year' initiative. This is usually granted only for compelling reasons concerning
accreditation; if the D	epartment al	ready 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 le	ngth.	
Programme excluded	N	
from Placement Year?	NO	If yes, what are the reasons for this exemption:
Study Abroad (incl	luding Year	Abroad as an additional year and replacement year)

Students on all programmes may apply to spend Stage 2 on th programme is on a competitive basis. Marks from modules tak	University-wide North America/ Asia/ Australia student exchangent on replacement years count toward progression and classificat	e programme. Acceptance onto the ion.
Does the programme include the opportunity to undertake ot Abroad	er formally agreed study abroad activities? All such programmes	nust comply with the Policy on Study
https://www.vork.ac.uk/staff/teaching/procedure/programm	/design/	
Please Select Y/N: Yes		
Additional information		
Transfers out of or into the programme		
ii) Transfers into the programme will be possible? Yes (please select Y/N)		
Additional details:		
Transfers into the programme are permitted during Term 1, subject to modules are full-stage). Transfers out of the programme are permitted subject to the approva	approval by the Joint Board of Studies, but become increasingly difficulion of the incoming Board of Studies.	thereafter (Stage 1 Mathematics
ii) Transfers out of the programme will be possible? (please select Y/N)		
Additional details:		
Transfers into the programme are permitted during Term 1, subject to modules are full-stage). Transfers out of the programme are permitted subject to the approva	approval by the Joint Board of Studies, but become increasingly difficulion of the incoming Board of Studies.	thereafter (Stage 1 Mathematics
Exceptions to University Award Regulations approved by Uni	ersity Teaching Committee	
Exception Please detail any exceptions to University Award Regulations approv	d by UTC	
Date on which this programme information was updated:		
		28/02/2017

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.

Programme Map

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

Programme Map: Module Contribution to Programme Learning Outcomes

This table maps the contribution to programme learning outcomes made by each module, in terms of the advance in understanding/ expertise acquired or reinforced in the module, the work by which students achieve this advance and the assessments that test it. This enables the programme rationale to be understood:

• Reading the table vertically illustrates how the programme has been designed to deepen knowledge, concepts and skills progressively. It shows how the progressive achievement of PLOs is supported by formative work and evaluated by summative assessment. In turn this should help students to understand and articulate their development of transferable skills and to relate this to other resources, such as the Employability Tutorial and York Award;

• Reading the table horizontally explains how the experience of a student at a particular time includes a balance of activities appropriate to that stage, through the design of modules.

Stage	Module					Programme Lea	rning Outcomes			
			PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
			use logical reasoning to build arguments, and to critically analyse statements, arguments, or conjectures made by others, justifying the principles chosen for such a	to analyse and solve problems for which techniques including calculus, algebra, and formal logic, were developed;	investigate unfamiliar problems in mathematics by adapting and/or synthesising a range of mathematical approaches (including abstraction or numerical		critically engage in ongoing scholarly and philosophical debate concerning mathematical truth, knowledge and our use of mathematics in science and modern life	gain research skills in an area of mathematical or philosophical specialisation;	work effectively, imaginatively, and productively as a thinker and learner;	communicate complex and difficult mathematical and philosophical ideas in clear, precise, and accessible terms in a variety of formats.
Stage 1	Beginning	Progress towards	heginning to	N/A	$\frac{approximation}{\Delta}$	develon a basic	Ν/Δ	Become	KEV: students	Begin the process
Stage 1	Philosophy PHI1000C 10 Credits	PLO	apply basic logical techniques.		11/ A	understanding of a range of problems and puzzles from 'applied' and 'theoretical' philosophy and its history		familiarized with some basic techniques of philosophical research.	will develop their ability to work effectively by prioritising and self- motivating	of communicating philosophical ideas.

		-	-			-		-		
		By working on (and if applicable, assessed through)	critically engaging in an argument or arguments presented in the lecture course. Assessed by essay.			attending and engaging with 'taster' lectures on a wide variety of philosophical topics,		working independently through online resources. Assessed through online quizzes.	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	writing an essay on one of the lecture topics. Assessed by essay.
									online quizzes.	
Stage 1	Reason and Argument A PHI00005C 20 Credits	Progress towards PLO	KEY: 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	KEY: apply the concepts and techniques of formal logic to clarify, articulate, and evaluate arguments in a systematic way	N/A	tackling puzzles and problems concerning the meaning of and logical relations between claims.	KEY: students will be introduced to the initial resources needed to appreciate the problem of mathematical truth.	begin to develop independent study techniques.	Begin to develop imaginative problem solving techniques.	Begin the process of communicating philosophical ideas.

	By working on (and if applicable, assessed through)	expressing claims and arguments expressed in natural language in logical terms. Assessed in exam.	puzzles and problems concerning the meaning of and logical relations between claims. Assessed in exam and essay.		Attending lectures, engaging in seminar discussions, completing a weekly problem sheet (with support from lectures),and completing an essay	being introduced to, and critically examining, the notions of truth values, truth conditions, and logical form. Assessed in exam and essay.	working independently on weekly problem sets and on their final essay.	Working on weekly problem sets.	writing an essay considering the cases for and against one theory of the logical form of a particular kind of phrase. Assessed in essay.
Knowledge and Perception PHI00008C 20 Credits	Progress towards PLO	be introduced to the application of logical techniques and terminology in the development and evaluation of arguments.	N/A	N/A	tackle some key problems, issues, and debates in Epistemology and Philosophy of Perception	KEY: students will be introduced to the initial resources needed to appreciate the problem of mathematical knowledge.	begin to develop independent study techniques.	work collaboratively to approach philosophical problems and consider their solutions.	Begin the process of communicating philosophical ideas.
	By working on (and if applicable, assessed through)	Attending and preparing for lectures and seminars.			Attending lectures, engaging in seminar discussions, answering study questions on set readings (with support from lectures), and completing an essay.	being introduced to, and critically examining, the notion of knowledge and our methods of acquiring knowledge. Assessed in essay.	Working independently on study questions and on their final essay.	participating in seminar discussions with peers.	Writing an essay on epistemology and/or perception. Assessed in essay.
Metaphysics PHI00003C 10 Credits	Progress towards PLO	be introduced to the application of logical techniques and terminology in the development and evaluation of arguments.	N/A	N/A	tackle some key problems, issues, and debates in metaphysics.	KEY: students will be introduced to the initial resources needed to appreciate metaphysical issues relating to mathematics.	begin to develop independent study techniques.	work collaboratively to approach philosophical problems and consider their solutions.	Begin the process of communicating philosophical ideas.

		By working on (and if applicable, assessed through)	Attending and preparing for lectures and seminars.			Attending lectures, engaging in seminar discussions, answering study questions on set readings (with support from lectures),and completing an essay.	being introduced to, and critically examining, some basic ideas and arguments in metaphysics. Assessed in exam.	Working independently on study questions and preparing for final exam.	participating in seminar discussions with peers.	Answering philosophical questions clearly and concisely in an exam setting.
Stage 1	Calculus	Progress towards PLO	justify the steps in the solution of calculus problems, or their application	KEY: competently use the standard methods of differential and integral calculus	KEY: adapt standard calculus tools to problems slightly outside the standard format	N/A	understand how calculus has developed to enable the solution of a variety of mathematical problems	begin to develop independent study techniques.	Begin to develop imaginative problem solving techniques.	present clear and concise solutions to exercises
		By working on (and if applicable, assessed through)	lecture material and exercises, with the support of seminars and formative feedback through marked work, and assessed by examination	lecture material and exercises, with the support of seminars and formative feedback through marked work, and assessed by examination	exercises and with formative feedback through marked work and the seminars, and assessed by examination		lecture material, exercises and with the support of seminars.	Working on exercises.	Working on exercises.	exercises, with the support of seminars and formative feedback through marked work
Stage 1	Algebra	Progress towards PLO	justify the steps and methods used in algebraic arguments	KEY: competently use the standard algebra of vectors, matrices and related objects	KEY: adapt the standard algebraic tools to problems slightly outside the standard format	N/A	understand how algebraic methods allow the solution of a variety of mathematical problems	begin to develop independent study techniques.	Begin to develop imaginative problem solving techniques.	present clear and concise solutions to exercises

		By working on (and if applicable, assessed through)	lecture material and exercises, with the support of seminars and formative feedback through marked work, and assessed by examination	lecture material and exercises, with the support of seminars and formative feedback through marked work, and assessed by examination	exercises and with formative feedback through marked work and the seminars, and assessed by examination		lecture material, exercises and with the support of seminars	Working on exercises.	Working on exercises.	exercises, with the support of seminars and formative feedback through marked work
Stage 1	Mathematical Skills 1	Progress towards PLO	practice different methods of mathematical reasoning	KEY: achieve competence in working with sets, functions, logic and methods of proof in a mathematical setting	KEY: adapt the standard concepts of set theory and logic to problems slightly outside the standard format	N/A	KEY: gain familiarity with the tools used by philosophers working in the 'foundations' of mathematics.	begin to develop independent study techniques.	Begin to develop imaginative problem solving techniques.	present clear and concise solutions to exercises
		By working on (and if applicable, assessed through)	lecture material and exercises, with formative feedback through marked work and the tutorials, and assessed by examination	lecture material and exercises, with formative feedback through marked work and the tutorials, and assessed by examination	exercises and with formative feedback through marked work and the tutorials, and assessed by examination		lecture material.	exercises, with the support of seminars and formative feedback through marked work	exercises, with the support of seminars and formative feedback through marked work	exercises, with the support of seminars and formative feedback through marked work
Stage 2	Key Ideas: Intermediate Logic	Progress towards PLO	KEY: consolidate understanding of the concepts and techniques of formal logic and their use in the evaluation of arguments.	KEY: apply the tools of formal logic to test arguments for validity.	N/A	Develop an understanding of some issues concerning logical form.	KEY: develop familiarity with the tools used by philosophers work ing in the 'foundations' of mathematics.	consolidate independent study techniques.	Further develop imaginative problem solving techniques.	present clear and concise solutions to exercises
		By working on (and if applicable, assessed through)	lecture material and exercises, with the support of seminars and formative feedback through marked work, and assessed by examination	lecture material and exercises, with the support of seminars and formative feedback through marked work, and assessed by examination		lecture material.	lecture material.	exercises, with the support of seminars and formative feedback through marked work	exercises, with the support of seminars and formative feedback through marked work	exercises, with the support of seminars and formative feedback through marked work

Key ideas: Philosophy of Science	Progress towards PLO	continue to apply logical techniques in the construction and evaluation of arguments.	N/A	N/A	Develop an understanding of key issues in the philosophy of science, and begin to articulate solutions to some of these.	be introduced to some key issues concerning the confirmation of scientific theories relevant to considering the question of whether mathematics is confirmed by itse use in science.	consolidate independent study techniques.	work collaboratively to approach philosophical problems and consider their solutions.	communicate more complex philosophical ideas and arguments in written form.
	By working on (and if applicable, assessed through)	Lecture material and seminar discussion, and preparing an essay addressing a specific question in the area of philosophy of science.			Lecture material and seminar discussion, and preparing an essay addressing a specific question in the area of philosophy of science.	Lecture material and seminar discussion.	Seminar preparation.	participating in seminar discussions with peers.	preparing an essay addressing a specific question in the area of philosophy of science.
Key ideas: Metaphysics	Progress towards PLO	continue to apply logical techniques in the construction and evaluation of arguments.	N/A	N/A	Develop an understanding of key issues in metaphysics, and begin to articulate solutions to some of these.	be introduced to some key issues concerning ontology relevant to approaching the question of the nature of mathematical objects.	consolidate independent study techniques.	work collaboratively to approach philosophical problems and consider their solutions.	communicate more complex philosophical ideas and arguments in written form.
	By working on (and if applicable, assessed through)	Lecture material and seminar discussion, and preparing an essay addressing a specific question in the area of philosophy of science.			Lecture material and seminar discussion, and preparing an essay addressing a specific question in the area of metaphysics.	Lecture material and seminar discussion.	Seminar preparation.	participating in seminar discussions with peers.	preparing an essay addressing a specific question in the area of metaphysics.

Stage 2	Key ideas: general	Progress towards PLO	continue to apply logical techniques in the construction and evaluation of arguments.	N/A	N/A	Develop an understanding of key issues in the module area, and begin to articulate solutions to some of these.	N/A	consolidate independent study techniques.	work collaboratively to approach philosophical problems and consider their solutions.	communicate more complex philosophical ideas and arguments in written form.
		By working on (and if applicable, assessed through)	Lecture material and seminar discussion, and preparing an essay addressing a specific question in the area of philosophy of science.			Lecture material and seminar discussion, and preparing an essay addressing a specific question in the module area.		Seminar preparation.	participating in seminar discussions with peers.	preparing an essay addressing a specific question in the area of metaphysics.
Stage 2	Tutorial Module (Option)	Progress towards PLO	continue to apply logical techniques in the construction and evaluation of arguments.	N/A	N/A	work intensively on understanding and articulating solutions to particular problems relating to the tutorial topic.	N/A	develop ability to initiate and pursue a novel project	develop ability to work collaboratively to develop effective and imaginative solutions to problems.	communicate sophisticated ideas and arguments orally as well as in written form.
		By working on (and if applicable, assessed through)	Tutorial preparation, including preparing a tutorial essay.			preparing an extended essay plan on a substantive question, presenting this to their tutorial group, and discussing it.		selecting a topic for their main assessed essay, and producing a detailed plan for this.	working with a small group of students (4) and a tutor to get to grips with a specific issue, and by giving constructive criticism on the written work of other students.	presenting a tutorial essay to the tutorial group.
Stage 2	10 credit option (Lecture based)	Progress towards PLO	continue to apply logical techniques in the construction and evaluation of arguments.	N/A	N/A	Develop an understanding of key issues in the module area, appreciating a range of proposed solutions.	N/A	consolidate independent study techniques.	work collaboratively to approach philosophical problems and consider their solutions.	present clear and concise discussions answering focussed questions in an exam format.

				1		1	i	1	1	
		By working on	lecture material			Lecture material,		seminar and	participating in	Lecture material,
		(and if applicable,	with the support			seminar		exam	seminar	seminar
		assessed	of seminars and			discussion, and		preparation.	discussions with	discussion, and
		through)	formative			exam			peers.	exam
			feedback through			preparaton.				preparaton.
			marked work,							
			and assessed by			Assessed by				Assessed by
			examination			exam.				exam.
Stage 2	10 credit option	Progress towards	continue to apply	N/A	N/A	Develop an in	N/A	consolidate	work	communicate
	(Reading group	PLO	logical			depth		independent	collaboratively to	more complex
	based)		techniques in the			understanding of		study techniques.	approach	philosophical
			construction and			a key text.			philosophical	ideas and
			evaluation of			-			problems and	arguments in
			arguments.						consider their	written form.
									solutions.	
		By working on	sominar			interrogating a		seminar and	participating in	preparing an
		(and if applicable,	proparation with			text or texts		essay	seminar	essay addressing
		assessed	the support of			through close		prepartation.	discussions with	a specific
		through)	cominars and			reading and			peers.	question in the
			formative			group discussion.				area of the
			foodbook through			5 · · · · · · · · · · · ·				module.
			reedback through			Assessed by				
			marked work,			essav.				
			and assessed by			,-				
Stage 2	Duro	Drograda towarda	essay.	understand the	recognize and he	NI / A	annrasista and	aanaalidata	Further develop	nracant
Stage 2	Pure	Progress towards	reproduce, with	language of	recognize and be	N/A	appreciate, and	consolidate	Further develop	present
	Iviathematics	PLO	understanding,	language of	able to put into		be able to	independent	Inaginative	conerent, clear
					practice the		explain, now the	study techniques.	problem solving	and concise
			arguments used	mathematics and	principles of		fundamental		techniques.	solutions to
			in algebra,	work confidently	abstract		ideas of algebra,			exercises
			number theory	with the ideas	mathematics in		number theory			
			and geometry,	which form the	unfamiliar		and geometry			
			and be able to	basis of abstract	settings		have arisen from			
			adapt these to	algebra, number			, and enabled the			
			similar situations	theory and			solution of, some			
				geometry			important			
							problems in			
	1						science			

		By working on	lecture material	lecture material	exercises and		lecture material,	exercises, with	exercises, with	exercises, with
		(and if applicable,	and exercises,	and exercises,	with formative		exercises and	the support of	the support of	the support of
		assessed	with the support	with the support	feedback through		with the support	seminars	seminars	seminars
		through)	of seminars and	of seminars and	marked work and		of seminars			
		-	formative	formative	the seminars,					
			feedback through	feedback through	and assessed by					
			marked work,	marked work,	examination					
			and assessed by	and assessed by						
			examination	examination						
Stage 2	Linear Algebra	Progress towards	prove standard	use the standard	apply basic linear	Ν/Δ	annreciate the	consolidate	Further develop	nresent
ottuge 1		PIO	results in	methods of basic	algebra and		nower of the	independent	imaginative	coherent clear
		1 20	abstract linear	linear algebra	matrix theory to		abstract	study techniques	nrohlem solving	and concise
			algebra	and matrix	a range of		approach to	study teeninques.	techniques	solutions to
			algebra	theory and their	unfamiliar		linear algebra		icenniques.	evercises
				theoretical	situations		and the variety of			CACICISCS
				iuctification	Situations		usos of linear			
				through abstract			algobra			
							aigenia			
		Du working on	lastura material	lastura matarial	avaraisas and		lastura matarial	avaraisas with	avaraiaaa with	avaraisas with
		By working on	lecture material	lecture material	exercises and		lecture material,	exercises, with	exercises, with	exercises, with
		(and if applicable,	and exercises,	and exercises,	with formative		exercises and	the support of	the support of	the support of
		assessed	with the support	with the support	feedback through		with the support	seminars	seminars	seminars
		through)	of seminars and	of seminars and	marked work and		of seminars			
			formative	formative	the seminars,					
			feedback through	feedback through	and assessed by					
			marked work,	marked work,	examination					
			and assessed by	and assessed by						
			examination	examination						
Stage 2	Vector Calculus	Progress towards		use the standard	apply these	N/A	see how the	consolidate	Further develop	present clear and
		PLO		methods of	standard		methods of	independent	imaginative	concise solutions
				multi-variable	methods to		vector calculus	study techniques.	problem solving	to exercises
				differential and	problems which		arise from		techniques.	
				integral calculus	require a level of		important			
				to work with	interpretation to		problems in the			
				functions of	set up the		study of the			
				many variables	application		physical world			
				and vector fields						
		By working on		lecture material	exercises and		lecture material,	exercises, with	exercises, with	exercises, with
		(and if applicable,		and exercises,	with formative		exercises and	the support of	the support of	the support of
		assessed		with the support	feedback through		with the support	seminars	seminars	seminars
		through)		of seminars and	marked work and		of seminars			
		-		formative	the seminars,					
				feedback through	and assessed by					
				marked work,	examination '					
				and assessed by						
				examination '						

Stage 3	Foundations of Mathematics	Progress towards PLO	use logical reasoning to build arguments, and to critically analyse statements, arguments, or conjectures made by others, justifying the principles chocon	N/A	N/A	develop an understanding of, and articulate a solution to, a key problem or puzzle in the philosophy of mathematics.	KEY: appreciate, and critically engage with, the philosophical issues raised by mathematical truth and knowledge, and by our use of mathematics in compilical science	consolidate independent study techniques.	work effectively, imaginatively, and productively as a thinker and learner, individually and in collaboration with others.	communicate complex and difficult philosophical ideas in clear, precise, and accessible terms orally in seminar discussion, and in writing in the form of ap in
		By working on (and if applicable, assessed	for such a critique An in depth essay on a topic from the module.			An in depth essay on a topic from the module.	lecture material, seminar discussion, and	Seminar and essay preparation.	Seminar discussions, essay	Seminar depth essay.
Starp 2	20 credit	through)	use logical	N/A	N/A	develop an	preparing an in depth essay on a topic from the module.	consolidate	preparation.	topic from the module.
Stage 3	research led modules in Philosophy	Progress towards	reasoning to build arguments, and to critically analyse statements, arguments, or conjectures made by others, justifying the principles chosen for such a critique	N/A	N/A	understanding of, and articulate a solution to, a key problem or puzzle in the module topic.	N/A	independent study techniques.	work effectively, imaginatively, and productively as a thinker and learner, individually and in collaboration with others.	communicate complex and difficult philosophical ideas in clear, precise, and accessible terms orally in seminar discussion, and in writing in the form of an in depth essay.
		By working on (and if applicable, assessed through)	An in depth essay on a topic from the module.			An in depth essay on a topic from the module.		Seminar and essay preparation.	Seminar discussions, essay preparation.	Seminar discussions; an in depth essay on a topic from the module.

Stage 3	10 credit Advanced Modules in PHilosophy	Progress towards PLO	use logical reasoning to build arguments, and to critically analyse statements, arguments, or conjectures made by others, justifying the principles chosen for such a critique	N/A	N/A	develop an understanding of, and articulate a solution to, a key problem or puzzle in the module topic.	N/A	KEY: conduct independent study and research into an area of philosophical specialisation.	work effectively, imaginatively, and productively as a thinker and learner, individually and in collaboration with others	communicate complex and difficult philosophical ideas in clear, precise, and accessible terms in writing in the form of a short, focussed essay.
		By working on (and if applicable, assessed through)	An essay on a topic of their choosing (agreed with supervisor).			An essay on a topic of their choosing (agreed with supervisor).			Independent study, discussions with supervisor, and essay preparation.	An essay on a topic of their choosing (agreed with supervisor).
Stage 3	BSc Final Year Project in Mathematics	Progress towards PLO	justify the reasoning and/or choice of methods used in the mathematics relevant to the project topic		adapt and apply the mathematics learned during the degree to some challenging topic outside the BSc degree syllabus	N/A	understand and be able to explain the context and/or role of the mathematics presented in the dissertation, both in mathematics and more widely in the sciences to which the project topic is relevant	KEY: conduct independent study and research into an area of mathematical specialisation.	work effectively, imaginatively, and productively as a thinker and learner, individually and in collaboration with others	communicate complex mathematical ideas clearly in writing at the final year BSc level, and also be able to present an effective summary of these ideas for non-experts
		By working on (and if applicable, assessed through)	the project dissertation, with the support of the project supervisor and as assessed by the dissertation		material found in the literature, with the support of the project supervisor and as assessed by the dissertation		the introduction and conclusion of the dissertation and the writing assignment which addresses that aspect.	the project dissertation, with the support of the project supervisor and as assessed by the dissertation	the project dissertation, with the support of the project supervisor and as assessed by the dissertation	the project dissertation and the poster, with the support of the project supervisor and the lectures on writing mathematics, as assessed by the writing assignments and the dissertation

Stage 3	Mathematics	Progress towards	justify reasoning	apply standard	investigate	N/A	appreciate the	consolidate	work effectively,	present clear and
-	modules	PLO	and/or choice of	techniques from	unfamiliar		power of the	independent	imaginatively,	concise solutions
			methods used in	the relevant	problems in		mathematics	study techniques.	and productively	to exercises
			the relevant	mathematical	mathematics by		covered in the		as a thinker and	
			mathematical	subject area to	adapting and/or		module subject		learner,	
			subject areas.	analyse the types	synthesising a		area, including		individually and	
				of problems for	mathematical		the uses to which		in collaboration	
				which those	approaches		it can be put.		with others	
				techniques were	relevant to the					
				developed and	module topic.					
				provide solutions						
		D	1	last an order dat			Leaf an order dat			
		By Working on	lecture material	lecture material	exercises, with		lecture material	exercises, with	lecture material,	exercises, with
		(and if applicable,	and exercises,	and exercises,	the guidance and		and exercises,	the support of	exercises, and	the support of
		assessed	with the	with the	support of		with the	formative	seminar	Seminars and
		unrough)	guidance and	guidance and	seminars, and		guidance and	foodbook through		foodbook through
			support of	support of	inrough reeuback		support of	reedback through		reedback through
			through foodback	through foodback	and as assossed		seminars, and as			
			on marked work	on marked work	through		assessed through			
			on marked work,	on marked work,	ovamination		examination			
			through	through	examination.					
			ovamination	ovamination						
				examination						