

Programme Information & PLOs	
This document forms part of the Programme Design Document and is for use in the roll-out of the York Pedagogy to design and capture new programme statement of purpose (for applicants to the programme), programme learning outcomes, programme map and enhancement plan. Please provide information required on all three tabs of this document.	
Title of the new programme – including any year abroad/ in industry variants	
MSci & BSc Natural Sciences specialising in Archaeology	
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 Please select Y/N	No
Department(s): Where more than one department is involved, indicate the lead department	
Lead Department	Natural Sciences
Other contributing Departments:	Archaeology, Biology, Chemistry, Environment
Programme leadership and programme team	
Please name the programme leader and any key members of staff responsible for designing, maintaining and overseeing the programme.	
Jason Levesley (Ch. BoS), Roddy Vann (Prog. Director), Camilla Speller (Arch), Bryce Beukers-Stewart (Env), Gareth Evans (Bio), Andy Parsons & Glenn Hurst (Chem)	
Particular information that the UTC working group should be aware of when considering the programme documentation (e.g. challenges faced, status of the implementation of the pedagogy, need to incorporate PSRB or employer expectations)	
With few exceptions the modules which make up any of the Nat Sci programmes are drawn from the corresponding contributing single subject degree programmes. Local pedagogical practices and modes of assessment are honoured in Nat Sci unless there is evidence that such practices would not be pedagogically sound. Therefore, given the nature of the Nat Sci programmes parts of this document draw liberally from, or make reference to, the corresponding documentation from the contributing departments. This documentation should therefore be considered in parallel with the corresponding proforma for the single subject degree programmes of the contributing departments.	
Who has been involved in producing the programme map and enhancement plan? (please include confirmation of the extent to which colleagues from the programme team /BoS have been involved; whether student views have yet been incorporated, and also any external input, such as employer liaison board)	
The people listed in item 14 have primarily being responsible for the programme map and enhancement plan. At all stages the BoS has had free access to and being invited to comment on the documentation. Student input has been fed into the YP process in a focus group, through the SSLC and via the BoS.	
Purpose and learning outcomes of the programme	
Statement of purpose for applicants to the programme	
Please express succinctly the overall aims of the programme as an <u>applicant facing statement</u> for a prospectus or website. This should clarify to a prospective student why they should choose this programme, what it will provide to them and what benefits they will gain from completing it.	

MSci & BSc Natural Sciences specialising in Archaeology 2017/2018 Programme Design Document

All Natural Science programmes at the University of York aim to produce leaders in science, technology and industry who will have the interdisciplinary knowledge and skills to succeed in complex research and business environments. You will learn how science is conducted in different disciplines, how to operate within different methodological communities, and how to apply techniques and ideas across multiple disciplines.

As a Natural Science student specialising in Archaeology, you will spend the majority of your time studying in the Department of Archaeology, a department at the forefront of archaeological research and innovative teaching, employing a wide range of teaching methods and assessments. Expert staff have created your degree to offer a range of modules that reflects the multidisciplinary nature of the subject, incorporating aspects of the humanities, sciences and social sciences. The modules have been chosen to link in and draw upon the material seen in other science disciplines that you study in your first two years. As well as engaging with key themes and debates in archaeology, students are trained in the hard skills entailed by data generation and analysis; in the design and execution of both independent and team projects; and in the presentation of ideas to public and professional audiences through written, visual, and oral forms of presentation, using a range of digital applications. During your degree you will experience a variety of hands-on practical based activities including a choice of wide ranging specialised skills within the sub-discipline of archaeological science including the options of laboratory work with environmental or bioarchaeological material or prospection, GIS or digital reconstruction. All this, alongside your early foundation in Biology, Chemistry and Environment will mark you out as an Archaeologist with a strong sense of interdisciplinary science.

The three-year BSc provides a strong foundation in archaeological science, underpinned by your early exposure to natural science subjects, providing a wealth of transferable skills that can be applied to range of careers. The four-year M.Sci will further develop your expertise in cutting-edge bioarchaeological approaches and have you playing an active role in the development and/or application of new techniques, providing valuable training and expertise for a wide range of careers and further study in Archaeology or related scientific subjects.

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	Engage critically in debates around scholarship that inform current archaeological and heritage issues applicable to multiple periods of human society, using evidence from the UK and elsewhere in the world
1 MSci	Engage critically in advanced debates and scholarship that inform current archaeological issues applicable to multiple periods of human society, using diverse evidence from the UK and elsewhere in the world
2 BSc	Design, execute and evaluate archaeological and scientific research projects to a standard informed by key scientific and theoretical knowledge and legal and professional principles and methodologies in an international context
2 MSci	Design, execute and evaluate archaeological and scientific research projects to a professional standard informed by key scientific and theoretical knowledge and legal and professional principles and methodologies in an international context
3 BSc	Generate, document and manage primary archaeological data from diverse sources of evidence and contexts and conduct analysis using a range of digital technology, and be able to apply these skills across disciplines
3 MSci	Systematically generate, document and manage primary archaeological data from diverse sources of evidence and contexts and conduct complex analyses using a range of digital technology, and be able to apply critically these skills across disciplines
4 BSc	Operate effectively as constructive and inclusive leaders and confident participants in teamwork using data from multi-disciplinary field and/or laboratory projects.
4 MSci	Operate effectively as independent, constructive and inclusive leaders and confident, proactive and collaborative participants in teamwork using data from multi-disciplinary field and/or laboratory projects.
5 BSc	Apply critical and creative approaches to problem-solving in complex situations with diverse, fragmentary datasets that reflect biases in their generation, survival, identification and documentation of biological material
5 MSci	Apply critical and creative approaches to problem-solving in complex and unpredictable situations with diverse, fragmentary datasets that reflect biases in their generation, survival, identification and documentation of biological material
6 BSc	Exploit the synergies between Archaeological science and other science based disciplines by using the principles themes, concepts and methodologies of Archaeology as appropriate to a Natural Scientist.
6 MSci	Exploit the synergies between Archaeological science and other science based disciplines by using advanced principles themes, concepts and methodologies of Archaeology as appropriate to a Natural Scientist.

MSci & BSc Natural Sciences specialising in Archaeology 2017/2018 Programme Design Document

7 BSc	Confidently explain, communicate and debate ideas through written, visual, and oral forms of presentation to a wide range of public and professional audiences using print and digital media
7 MSci	Confidently explain, communicate and debate ideas through high quality written, visual, and oral forms of presentation with sensitivity to the needs of a wide range of public and professional audiences using print and digital media
8 BSc	Contribute as independent scholarsthe field of bioarchaeology and science in general through rigorous and imaginative inquiry in multi-disciplinary contexts
8 MSci	Contribute as autonomous and self-reflective scholars to the field of bioarchaeology and science in general through rigorous, independent and imaginative inquiry in multi-disciplinary contexts
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.	
NA	
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.	
NA	
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 engage students directly, critically and practically with practice in their disciplinary area at the leading edge of current theoretical, scientific and professional principles and methodologies. Students will develop as effective team members and confident communicators in a range of media and assessed projects and meet the demands of increasingly challenging areas of independent learning, data management and interpretation. By Year 3 (and 4) students progress to their own independently-designed and executed, original research project, write and present a short lecture, and design, lead, present and critique research seminars. To fully meet the PLOs given a student will need to meet the PLOs commensurate with those of a single subject Archaeological Scientist whilst studying up to three other sciences in Stages 1 & 2, ensuring that students have broad knowledge and first hand experience in how scientific techniques are used across disciplines and particularly archaeological science.	
ii) The ways in which these outcomes are distinctive or particularly advantageous to the student:	
As states in the single-subject Archaeology submission: "One of the key advantages of an Archaeology degree is the breadth of skills and ideas with which graduates are confident; the BSc Bioarchaeology programme at York is designed to maximise this advantage. As well as engaging with key themes and debates in archaeology and the role of bioarchaeological evidence, students are trained in the hard skills entailed by data generation and analysis; in the design and execution of both independent and team projects; and in the presentation of archaeological ideas to a wide range of audiences. Every student will complete a novel independent dissertation project in bioarchaeological research. Throughout the programme we place particular emphasis on the ability not just to understand and develop but to communicate ideas, through written, visual, and oral forms of presentation - as exemplified in the second-year Communicating Archaeology and the third-year Assessed Seminar modules, and in the assessed lecture that each student delivers on the subject of their dissertation research." Our PLOs will ensure that Nat Sci students have skills and knowledge commensurate with a single subject Archaeological Scientist, enhanced by their foundational knowledge and first hand experience of how scientific subjects can be applied across disciplines.	
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)?	

The degree uses a wide range of digital applications in order to develop students' digital literacy, including spreadsheets, GIS, creating digital images, use of social media, word processing, and databases. A range of word processing and analytical software is used to complete their lab reports and projects in different degree subjects in stage 1 and 2. There are opportunities for students to develop these skills further through specialised modules and dissertation projects. We also use technology-enhanced learning such as recording lectures where possible so that students can watch them back, and use cloud computing such as GoogleDocs for collaborative learning and the University's Virtual Learning Environment.

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/>

All the Nat. Sci. programmes have been designed with employability in mind. This is not only as a factor of the design of the programmes themselves, which have had engagement with the University's employability strategy as a given since the early design phases of the programme. But also as a factor of the embedded skills that the contributing departments have built into their modules. Modules which form the bulk of the teaching on this degree programme. Many of the skills listed in the PLOs are generic and will equip the student with a highly transferrable skill set. Learning to co-operate with others, taking on different roles within a team, and problem solving as a team are developed through modules such as Team Projects and Assessed Seminars. However, self management is also a critical skill to learn and students have to develop their self motivation and time management, particularly when researching their dissertations. A key focus of our degree is training in oral communication: from the first year we teach in small groups and train students to develop presentations to the class. By the third and fourth year students have the capability to deliver a high standard of presentation culminating with a lecture at the end of the year. Students learn to develop research skills and report writing throughout their degree but particularly in their Dissertations (stage 3) and Extended projects (stage 4). All students will gain transferable lab skills in their first year, with further development through lab-based dissertation. Creativity and innovation is important and we encourage students to generate new ideas. Many of the Archaeology modules encourage social, cultural and global awareness and students learn to identify the ethical issues associated with their research projects and in relevant cases, apply the correct procedures. We aim to provide opportunities for students to gain an insight into how organisations work so as to prepare students for the world of work. Finally, we aim encourage students to be mindful of their developing skills and in the third year ask them to submit a CV as part of an assessment alongside a short pitch similar to an interview presentation (World Archaeology II).

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

Students who need support will generally self identify at admission or early in the Stage 1 and standard University protocols will then be followed. If this isn't the case and a student is identified as needing extra support later in the programme then the student will discuss the matter with their personal supervisor who will advise in accordance with University guidance. Students are assigned a supervisor in one of the contributing departments and have access to a subject facilitator in both contributing departments. The student can approach their supervisor for advice in accordance with University guidelines and seek more specialist advice on a particular discipline from the subject facilitator. Module level issues are handled with the department to which the module belongs and a student can avail themselves off all feedback and quality control mechanisms that the department offers.

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

As stated in single subject Archaeology submission: "We are a research active department that engage with multi-disciplinary projects spanning multiple departments such as Environment, TFTV, Chemistry, Biology, Physics, History and the Centre for Digital Heritage. Research-led teaching is a key component of our degree. We ensure that staff teach subjects aligned to their research interests in almost all taught modules, ensuring that students engage with material at the forefront of active research. In the first year this includes modules team-taught by staff, Prehistory to the Present and Introduction to Archaeological Science. In the second year, modules such as Themes in Historical Archaeology and Practical Skills and Team Project are all specific to staff interests and by the third year, all students choose a 'Special Topic', a specialised module providing detailed coverage of a particular staff specialism. Our research is international in scope as well as interdisciplinary and we have World Archaeology modules that at the cutting edge of global issues in research"

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:

Developed core learning strategies for each of the four disciplines studied in Stage 1. Have been introduced to and worked with the core concepts that underpin all three disciplines. Be familiar with the foundational material and practices of each of the four disciplines.

PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8
-------	-------	-------	-------	-------	-------	-------	-------

Please note: you need to complete information on all three tabs of this sheet before submitting to the UTC Strategy Working Group.

You are required to submit this information for all undergraduate programme by the 31 July 2016.

Programme Map: Module Contribution to Programme Learning Outcomes

Please complete the summary table below which shows how individual modules contribute to the achievement of programme learning outcomes.

Core modules should be mapped individually. If the programme offers multiple options that contribute to exactly the same PLOs you can group these, providing a statement that articulates how all of these contribute to the achievement of the programme learning outcomes. All modules, both core and optional, should be accounted for in the map.

The 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.

Note: it is not expected that every module contributes directly to all PLOs, but every module should advance some of them.

(Add additional rows as required)

Stage	Module	MSci Programme Learning Outcomes							
		PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8

			Engage critically in advanced debates and scholarship that inform current archaeological issues applicable to multiple periods of human society, using diverse evidence from the UK and elsewhere in the world	Design, execute and evaluate archaeological and scientific research projects to a professional standard informed by key scientific and theoretical knowledge and legal and professional principles and methodologies in an international context	Systematically generate, document and manage primary archaeological data from diverse sources of evidence and contexts and conduct complex analyses using a range of digital technology, and be able to apply critically these skills across disciplines	Operate effectively as independent, constructive and inclusive leaders and confident, proactive and collaborative participants in teamwork using data from multi-disciplinary field and/or laboratory projects.	Apply critical and creative approaches to problem-solving in complex and unpredictable situations with diverse, fragmentary datasets that reflect biases in their generation, survival, identification and documentation of biological material	Exploit the synergies between Archaeological science and other science based disciplines by using advanced principles themes, concepts and methodologies of Archaeology as appropriate to a Natural Scientist.	Confidently explain, communicate and debate ideas through high quality written, visual, and oral forms of presentation with sensitivity to the needs of a wide range of public and professional audiences using print and digital media	Contribute as autonomous and self-reflective scholars to the field of bioarchaeology and science in general through rigorous, independent and imaginative inquiry in multi-disciplinary contexts
BSc Programme Learning Outcomes										
			PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
			Engage critically in debates around scholarship that inform current archaeological issues applicable to multiple periods of human society, using evidence from the UK and elsewhere in the world	Design, execute and evaluate archaeological and scientific research projects to a standard informed by key scientific and theoretical knowledge and legal and professional principles and methodologies in an international context	Generate, document and manage primary archaeological data from diverse sources of evidence and contexts and conduct analysis using a range of digital technology, and be able to apply these skills across disciplines	Operate effectively as constructive and inclusive leaders and confident participants in teamwork using data from multi-disciplinary field and/or laboratory projects.	Apply critical and creative approaches to problem-solving in complex situations with diverse, fragmentary datasets that reflect biases in their generation, survival, identification and documentation of biological material	Exploit the synergies between Archaeological science and other science based disciplines by using the principles themes, concepts and methodologies of Archaeology as appropriate to a Natural Scientist.	Confidently explain, communicate and debate ideas through written, visual, and oral forms of presentation to a wide range of public and professional audiences using print and digital media	Contribute as independent scholars to the field of bioarchaeology and science in general through rigorous and imaginative inquiry in multi-disciplinary contexts

Stage 1	Chemistry for Natural Sciences 1	Progress towards PLO		Development of core laboratory skills and understanding of key safety practices. Aspects of planning and experimental design.			Developing an understanding of core chemical principles of atomic structure, thermodynamics, periodicity, acids & bases, separations science & mass spectrometry and reactivity.		Development of core laboratory skills and understanding of key safety practices. Aspects of planning and experimental design.	
		By working on (and if applicable, assessed through)		Lab report			Exam and assessed workshop		Lab report	
Stage 1	Chemistry for Natural Sciences 2	Progress towards PLO		Development of core laboratory skills and understanding of key safety practices. Aspects of planning and experimental design.			Developing an understanding of core chemical principles of kinetics, thermodynamics, spectroscopy, transition metals and reactivity.		Development of core laboratory skills and understanding of key safety practices. Aspects of planning and experimental design.	
		By working on (and if applicable, assessed through)		Lab report			Exam and assessed workshop		Lab report	

<p>Stage 1</p>	<p>Introduction to Archaeological Sciences</p>	<p>Progress towards PLO</p>	<p>Students will gain an appreciation of how scientific techniques are used within archaeology to explore key issues and some of the potentials and limitations of these methods</p>	<p>students will begin to understand the role that scientific techniques play in archaeological research</p>				<p>students will begin to understand the role that various scientific techniques play in archaeological research</p>	<p>Students will work on criticality in written work</p>	<p>Students will consolidate growing skills in finding, obtaining and accessing the key information within research articles</p>	
		<p>By working on (and if applicable, assessed through)</p>	<p>by being introduced to a range of scientific techniques used in archaeology in lectures, learning to read scientific articles in seminar workshops and writing a journal article critique for the formative and summative assessment</p>	<p>by being introduced to a range of scientific techniques used in archaeology in lectures and learning to read scientific articles in seminar workshops</p>				<p>by being introduced to a range of scientific techniques used in archaeology in lectures and learning to read scientific articles in seminar workshops</p>	<p>by completing journal article critiques in formative and summative assessment</p>	<p>by obtaining and reading scientific articles for multiple formative VLE based multiple choice tests, participating in seminar workshop discussions and completing independent journal article critiques for formative and summative assessment</p>	
<p>Stage 1</p>	<p>Genetics</p>	<p>Progress towards PLO</p>		<p>Gain experience of core techniques such as gel electrophoresis and microscopy</p>			<p>Problem solving exercises to develop understanding of genetics. Students can work individually or in groups.</p>				
		<p>By working on (and if applicable, assessed through)</p>		<p>Three x 3 hr practicals</p>			<p>By multiple pen + paper workshop sessions spread throughout the term. 1 hour closed exam</p>				

<p>Stage 1</p>	<p>Genetics and Evolution</p>	<p>Progress towards PLO</p>	<p>Learning and developing an understanding about the principles of genetic analysis, the evolution of genes and genomes, and an introduction to evolutionary and population genetics</p>				<p>By practising the principles of genetic analysis, and evolutionary and population genetics in problem solving exercises.</p>				
		<p>By working on (and if applicable, assessed through)</p>	<p>Listening and engaging with lectures and reading selected chapters in textbooks. Completing a number of VLE based exercises and quizzes that test and direct student learning.. 1 hour closed exam</p>				<p>Participating in problem solving workshops and practicing the skills required by a Geneticist in lateral thinking and problem solving. 1 hour closed exam</p>				
<p>Stage 1</p>	<p>Molecular Biology and Biochemistry</p>	<p>Progress towards PLO</p>					<p>Practicing problem-solving and basic chemistry-based calculations together with hands-on practicals in enzymes kinetics and separation of macromolecules.</p>				

		By working on (and if applicable, assessed through)					Worksheets and practical protocols. An open assessment of problems, graphs, calculations, and conclusions relating to the practical work on enzyme kinetics.			
Stage 1	Ecological Principles for the Environment	Progress towards PLO	Develops knowledge, understanding and awareness		Practice in data handling and statistical analysis	Practice in working as a group		Develops awareness of the importance of interdisciplinarity	KPT training in scientific report writing	
		By working on (and if applicable, assessed through)	Lectures and practicals on ecological theories and skills (assessed by exam)		<i>Statistics: Analysis and interpretation of ecological data (assessed in scientific report)</i>	Groupwork during data collection during field practicals.		Lectures and practicals on ecological problems and how society can manage and affect these (assessed by scientific reports)	Write up of scientific reports on ecological research as summative assessments	
Stage 2	World Archaeology I	Progress towards PLO	Students will gain a greater understanding of important issues or themes in archaeology outside the U.K. on either a global or regional scale	Students will build on their skills in designing research					Students will practice the principles of communicating complex issues to a non-specialist audience from within the discipline	students will continue to build on independent scholarship
		By working on (and if applicable, assessed through)	by being introduced to key issues in lectures, consolidating this knowledge through directed reading and through completion of a summative article on a chosen case study	By choosing their own case study for their summative article and initially producing an annotated bibliography to critically assess potential sources of evidence for the formative assessment					by being provided with worked examples online and producing an article on a chosen case study for a popular archaeology magazine for the summative assessment	by completing an independent piece of summative assessment

<p>Stage 2</p>	<p>Practical Skills</p>	<p>Progress towards PLO</p>	<p>Students will critically engage with a specialist practical discipline in relevant for bioarchaeology. Appropriate module options might include Biomolecular Archaeology, Animal Bones or Human Bones (availability dependent)</p>	<p>students will gain an appreciation of the range of research questions that might be addressed by their chosen specialist methodology</p>	<p>students will develop good practice in practical skills relevant to their chosen option</p>				<p>Students will further build on criticality in their written work and recognise professional standards in report writing</p>	<p>students will continue to build on independent scholarship</p>	
		<p>By working on (and if applicable, assessed through)</p>	<p>by being introduced to specialist methodologies pertinent to the chosen option through lectures and completing a written critique of a professional report for formative and summative assessment</p>	<p>by being introduced to specialist methodologies and research questions pertinent to the chosen option through lectures and completing a written critique of a professional report for formative and summative assessment</p>	<p>by performing a range of practical and/or analytical techniques involved in data collection and interpretation and undertaking a practical test of data analysis for summative assessment</p>				<p>by completing written critiques of professional reports in formative and summative assessment</p>	<p>by completing an independent summative assessment</p>	
<p>Stage 2</p>	<p>Team Project</p>	<p>Progress towards PLO</p>		<p>students will build on their knowledge of archaeological research design using specialist methodologies relevant to their chosen option</p>	<p>students will deepen their knowledge and understanding of gathering archaeological data in a particular specialist field</p>	<p>students will significantly enhance their understanding and experience of teamwork</p>	<p>students will gain an understanding of the issues and biases surrounding data collection and interpretation in their chosen option</p>		<p>Students will improve their understanding of professional communication and report writing</p>		

		By working on (and if applicable, assessed through)		by matching recording and analytical methods to research aims and objectives and writing a specialist report on a dataset for the summative assessment with initial guidance during group meetings attended by staff	by gathering and recording relevant data and conducting analysis using appropriate digital applications in order to produce a professional group report for the summative assessment, with initial limited guidance during group meetings with staff	by working as a team to produce a professional report for the summative assessment and, with some initial guidance during timetabled sessions, students are required to allocate and coordinate tasks, communicate effectively and keep adequate records of meetings. managing their time effectively to complete a substantial piece of collaborative work to a deadline,	by gathering and recording relevant, surviving archaeological data and conducting analysis an interpretation for the summative assessment with initial guidance during group meetings with staff		by completing a group report to a professional standard for the summative assessment	
Stage 2	Molecular Biology, Biotechnology & Bioinformatics	Progress towards PLO		First hand execution of practical and analysis of quantitative transcriptomics data.	Understanding methods associated with transcriptomics, manipulating and interpreting this type of data using bioinformatics skills.	Biological problems presented in a range of workshops with different formats where students will work alone or in different sized groups.	Understanding methods associated with transcriptomics, manipulating and interpreting this type of data using bioinformatics skills.			
		By working on (and if applicable, assessed through)		Practicals	All workshops and or practicals which involve some of the transferable skills listed above	Practicals and workshops. Understanding and problem solving ability assessed in workshops. All blocks	All workshops and or practicals which involve some of the transferable skills listed above			

Stage 2	Genes, Genomes, Evolution & Population	Progress towards PLO				Individual and group problem-solving	Evaluation of techniques including genomic techniques, evolutionary, population and behavioural modelling etc. and interpretation of data arising from these techniques		Research talk and discussions about careers with post-docs and PhD students	
		By working on (and if applicable, assessed through)				workshops focussing on population genetic principles, using simple models. Workshop on altruism, and workshop on macroevolution.	Lectures, practicals and workshops		Participation in discussions	
Stage 2	Ecology of Animals, Plants & Microbes	Progress towards PLO		Design and conduct experiments to understand underlying principles governing organism behaviour and function in a range of conditions/enviro nments		Group work in lab and field practicals and algorithm workshop will develop their understanding of key module concepts and allow student to learn through peer assessment and instruction. Closed exam and open assessment in mid-term will focus on individual self-teaching and motivation.			Groups will present developed models with peer assessment and discussion	

		By working on (and if applicable, assessed through)		Lab practicals and associated workshops, algorithm workshop, field practical		Practicals, workshops, exam and open assessment			Algorithm workshop presentations		
Stage 2	Chemistry for Natural Sciences 3	Progress towards PLO		Develop intermediate skills required for synthetic inorganic and organic chemistry including handling air and water-sensitive materials and pyrophorics. Working safely in the laboratory			Developing an understanding of advanced chemical principles of retrosynthetic analysis, solutions and mixtures, symmetry and group theory, organic synthesis with enolate equivalents, metal-ligand and metal-metal bonding, coordination chemistry and quantum mechanics.		Develop intermediate skills required for synthetic inorganic and organic chemistry including handling air and water-sensitive materials and pyrophorics. Working safely in the laboratory		

		By working on (and if applicable, assessed through)		Experiments within the Advanced synthesis practical. Safety lecture course and assessment highlights good working practice. Core and advanced laboratory skills are formatively assessed during the Skills exercise then summatively assessed on a weekly basis principally through in-lab assessments during the first half of term.			Examination		Experiments within the Advanced synthesis practical. Safety lecture course and assessment highlights good working practice. Core and advanced laboratory skills are formatively assessed during the Skills exercise then summatively assessed on a weekly basis principally through in-lab assessments during the first half of term.	
Stage 2	Chemistry for Natural Sciences 4	Progress towards PLO		Design and perform experiments			Developing an understanding of advanced chemical principles of vibrational spectroscopy, excited states and photochemistry, physical organic chemistry, organometallic chemistry, photoelectron spectroscopy and molecular orbital theory and heteroaromatic chemistry.		Design and perform experiments	

		By working on (and if applicable, assessed through)		Physical organic chemistry lab / physical chemistry labs			Examination		Physical organic chemistry lab / physical chemistry labs	
Stage 2	Chemistry for Natural Sciences 5	Progress towards PLO		Development of core laboratory skills and understanding of key safety practices. Aspects of planning and experimental design.		Developing professional modes of behaviour, with respect to sharing resources, learning and adhering to standard laboratory practice, and working well with others	Developing an understanding of fundamental chemical principles of solid state chemistry, substitution and elimination and alkenes and alkynes.		Development of core laboratory skills and understanding of key safety practices. Aspects of planning and experimental design.	

		By working on (and if applicable, assessed through)		Team project work through Integrated Chemistry Practical (ICP). A mixture of mainly formative assessments (training) and selected summative assessments (proof of competence) drive the learning of key laboratory skills. Design of an experimental investigation applying analytical chemistry techniques is guided by laboratory staff and summatively assessed at the conclusion of ICP.		Group experiments in the integrated chemistry practicals and by working on practical experiments individually, in pairs, and in small groups; creative approaches to research strategy; summative assessment (ICP) involves team presentations.	Examination		Team project work through Integrated Chemistry Practical (ICP). A mixture of mainly formative assessments (training) and selected summative assessments (proof of competence) drive the learning of key laboratory skills. Design of an experimental investigation applying analytical chemistry techniques is guided by laboratory staff and summatively assessed at the conclusion of ICP.	
Stage 2	Earth Processes & Landforms	Progress towards PLO			Develops data handling and analysis skills	Practice in working as a group			Develops skills in written communication	
		By working on (and if applicable, assessed through)			Statistics: analysis of field data for a summative report. Field based analysis of sediment	Groupwork: Working as a group to collect data for individual reports			Written: write up of summatively assessed report in scientific style	
Stage 2	Biogeography	Progress towards PLO	Develops knowledge, understanding and awareness	Develops skills in data collection and handling, and research project design	Develops data handling and analysis skills	Practice in working as a group		Develops awareness of the importance of interdisciplinarity	Develops skills in oral, written and visual communication	

MSci & BSc Natural Sciences specialising in Archaeology 2017/2018 Programme Design Document

		By working on (and if applicable, assessed through)	Studying the patterns and process of temperate ecosystems. Assessed via scientific report.	Designing a field/ lab project as part of a group. Defining a research question, aim and objectives, sampling strategy, collecting data in the field/ lab, analysing the data and communicating the findings.	Statistics: Analysis of collected experimental data and presented in a summative report	Groupwork: Working in groups to carry out field-based practicals		Bringing together a range of information from the fields of ecology, environmental management and geography in a summative report.	Written: preparing a summatively assessed scientific report		
Stage 2	Geographical Information Systems	Progress towards PLO	Develops knowledge, understanding and awareness	Develops skills in data collection and handling, and research project design	Develops data handling and analysis skills			Develops awareness of the importance of interdisciplinarity	Develops skills in written communication		
		By working on (and if applicable, assessed through)	Undertaking a GIS project on one of three project topics (wind power; flood risk mapping; air pollution and health). Assessed in the scientific report.	Student-led project: There are many ways in which these multiple spatial datasets can be combined in carrying out the project allowing new insights and knowledge to be created. Assessed in summative report.	GIS, Statistics: Designing and performing GIS analysis of diverse spatial datasets and reporting results in a summative report. Encouragement is given to perform some statistical analysis beyond the GIS work.			Undertaking projects which call for the combination of physical science and socio-economic spatial datasets. Assessed in summative report.	Written: Reporting the project work in a summative scientific report.		
Stage 2	Environmental Geochemistry	Progress towards PLO			Develops skills in data collection and handling	Develops team-working skills	Develops skills in performing scientific calculations		2500 word written report		

		By working on (and if applicable, assessed through)			Lecturer-led laboratory practicals: A range of laboratory practicals and calculation methods that students may choose to apply in their 3rd / 4th year projects	Groupwork: Working in groups to carry out laboratory practicals	Calculations: A range of laboratory and paper based practicals in which environmental science data is analysed to gain insight and information about various topics relevant to environmental science. Assessed by summative coursework and exam.				
Stage 2	Climate Change	Progress towards PLO	Develops knowledge, understanding and awareness	Develops skills in data collection and handling, and research project design	Develops skills in scientific modelling	Practice in working as a group	Develops awareness of environmental problems and their solutions, and provides experience in designing sustainable solutions	Develops awareness of the importance of interdisciplinarity	Develops skills in written communication		

		By working on (and if applicable, assessed through)	Studying the public perception, best evidence of impacts, mitigation and adaptations to climate change including recommendations for future emissions reductions in carbon.	Student-led research projects, groups: For a scientific report, students plan, design and execute research as an individual to address climate change using modelling software	Modelling: For a report, they use quantitative data to make recommendations for emissions control in the future. This includes carrying out a set of model runs where it is possible to generate large amounts of data, so critical evaluation of the results to provide a coherent report is key.	Groupwork: Work responsibly as part of a team or as a team-leader to design and write an eye catching yet scientifically informing newspaper article on climate change	A report recommending sustainable solutions to climate change considering the broader social, political and environmental contexts, and the ethical implications of their application by applying knowledge, theories and approaches from the module and wider degree	Media seminar which involves students thinking about something other than the science of climate change and how the need to sell papers affects reporting. The scientific report involves working across disciplinary boundaries. As well as considering the scientific aspects behind climate change, students also consider the social, political and economic aspects.	Written: effectively communicating knowledge, complex ideas and persuasive arguments for a summative written report. Design and write an eye-catching yet scientifically informative summative newspaper article on climate change.		
Stage 3	Special Topic	Progress towards PLO	Students will gain an in-depth and critical appreciation of a specialist, active research area in archaeology. Appropriate module options might include Ancient DNA and Human Evolution	students build upon their skills in critical evaluation of evidence from relevant case studies					Students will continue to further their confidence in oral presentation skills	Students will have a significantly enhanced independence in their own scholarship	

		By working on (and if applicable, assessed through)	by being introduced to the cutting-edge research in the chosen option by staff actively researching in the subject area in lectures and participating in seminars that encourage criticality and debate. Also by writing a formative essay on a provided topic and writing a critical appraisal in a chosen aspect of the field for the summative essay	by being introduced to archaeological case studies for the chosen option in lectures and participating in seminars that encourage criticality and debate. Also by writing a formative essay on a provided topic and writing a critical appraisal of evidence for a chosen aspect of the field for the summative essay					by communicating complex ideas in multiple individual presentations (using presentation software) of a longer length than those given in previous modules that are formatively assessed and discussing and defending arguments during seminars	by writing independent formative and summative essays, with attention paid to criticality and in-depth knowledge and understanding of a specialist topic	
Stage 3	World Archaeology II	Progress towards PLO	Students will gain a greater understanding of important issues or themes in archaeology outside the U.K. on either a global or regional scale		Students will recognise the skills they have as leaders and team players gained throughout their degree				students will enhance their well-developed oral presentation skills	Students will recognise the skills they have gained in independent scholarship throughout their degree	

		By working on (and if applicable, assessed through)	by being introduced to key issues in lectures, consolidating this knowledge through directed reading and through completion of a short oral 'pitch style' presentation on a chosen issue (summative assessment)			By compiling a CV in a stipulated, general format to accompany the oral interview style pitch (summative assessment), requiring self reflection of the skills gained particularly relevant to the issue presented after having had a CV writing support session			by concisely evaluating the impact of a chosen methodology to the relevant subject option during a short interview pitch style oral presentation (summative assessment) communicating complex issues in an approachable way after having had training via a lecture workshop	By compiling a CV in a stipulated, general format to accompany the oral interview style pitch (summative assessment), requiring self reflection of the skills gained particularly relevant to the issue presented after having had a CV writing support session
Stage 3	Assessed seminar	Progress towards PLO	Students will demonstrate their firm understanding of theoretical and methodological issues related to their chosen option. Appropriate module options might include Environmental Archaeology - A Landscape Perspective, Debates in Archaeological Science, Animals and Archaeology, Human Impact on Ecosystems or Palaeodiet (availability dependent)	Students will further demonstrate their ability to evaluate a wide range of evidence from case studies and understand the need for self-reflection in evaluation		Students will consolidate their leadership skills and further build on their practiced ability to work as constructive members of a team			students will further enhance their well-practiced oral presentation skills	

		By working on (and if applicable, assessed through)	by independently designing a seminar, preparing a worksheet which sets out key reading and issues for presentation, debate and discussion with initial support from lecture workshops (summative assessment) and an initial formative assessment of the worksheet	by designing a seminar and presenting in other student seminars, with a focus on critical and analytical discussion and be able to judge the general 'success' of the seminar by reflection through a written summary of a seminar as part of the seminar worksheet (summative assessment)		by chairing a seminar of their own design, engaging interest in the topic, stimulating debate and structured discussion and also acting as an active participant in informed discussions and presentations in other student's seminars (summative assessment) and support the group in the preparation of their seminar with initial support from lecture workshops			by giving multiple presentations in other student's seminars within the general theme using presentation software (summative assessment)	
Stage 3	Dissertation and Assessed Lecture for Archaeological Scientists	Progress towards PLO	students will actively engage with current debates and contribute to scholarship in archaeological science issues in their chosen period and region	students will demonstrate their ability to design, manage and evaluate archaeological research projects	Students will demonstrate their ability to generate, document and manage primary archaeological data from diverse sources and conduct analysis using appropriate digital applications	students will demonstrate their ability to handle diverse, fragmentary datasets and synthesise and critically assess a range of primary and secondary archaeological evidence	students will gain practical experience of resolving challenges in interpretation and presentation for their chosen research project	Students will demonstrate their excellence communicating research in an accessible format in oral presentation Students will consolidate skills in structuring a substantial piece of writing, presented to a professional standard	students will demonstrate their aptitude as practiced, independent scholars in archaeological science	

	By working on (and if applicable, assessed through)	by drawing upon knowledge of current issues gained throughout the course of the degree and producing a piece of original research (summative assessment) with a substantive element of critical engagement, supported by discussions with their supervisor and comments on an initial chapter (formative feedback)	by drawing upon experience in executing and designing research in earlier modules, choosing the intellectual content of their chosen topic, managing their time effectively to complete a substantial piece of original, independent written work that is well placed within theoretical principles in an international context to a deadline (summative assessment) supported by regular meetings with their dissertation supervisor	by drawing upon the experience of using multiple digital applications for data gathering, analysis and interpretation as the basis for their original, independent research project (summative assessment), supported by regular meetings with their supervisor and providing an initial chapter of the dissertation for formative feedback		by building on previous experience during the degree course to produce a dissertation based on a chosen research topic (summative assessment), putting into practice critical and creative approaches to problem-solving in complex situations. This is supported by discussions with their supervisor and comments on an initial chapter (formative feedback)	by compiling a dissertation based on a chosen research topic (summative assessment), putting into practice knowledge gained during research skills modules in the second year, with attention to the potential ethical implications of their research and drawing upon interdisciplinary perspectives introduced throughout previous taught modules. This is supported by discussions with their supervisor and comments on an initial chapter (formative feedback)	by building on substantial experience gained throughout the degree to structure and deliver a lecture presentation to a large audience of their peers to a professional standard, using appropriate visual material to communicate ideas (summative assessment) by producing a coherent dissertation of 10,000 words using appropriate graphics and text presentation skills (summative assessment) with support from a supervisor and dissertation workshops	by drawing upon the experience of scholarship over the course of the degree, managing their time effectively to complete a substantial piece of original, independent written work to a deadline (summative assessment), supported by regular meetings with their supervisor and dissertation workshops
--	---	--	---	---	--	--	---	--	---

<p>Stage 4</p>	<p>Extended Research Project</p>	<p>Progress towards PLO</p>	<p>students will actively engage with current debates and contribute to scholarship in archaeological science issues in their chosen period and region</p>	<p>students will demonstrate their ability to design, manage and evaluate archaeological research projects</p>	<p>Students will demonstrate their ability to generate, document and manage primary archaeological data from diverse sources and conduct analysis using appropriate digital applications</p>		<p>students will demonstrate their ability to handle diverse, fragmentary datasets and synthesise and critically assess a range of primary and secondary archaeological evidence</p>	<p>students will gain practical experience of resolving challenges in interpretation and presentation for their chosen research project</p>	<p>Students will demonstrate their excellence communicating research in an accessible format in oral presentation</p> <p>Students will consolidate skills in structuring a substantial piece of writing, presented to a professional standard</p>	<p>students will demonstrate their aptitude as practiced, independent scholars in archaeological science</p>
-----------------------	----------------------------------	-----------------------------	--	--	--	--	--	---	---	--

	<p>By working on (and if applicable, assessed through)</p>	<p>by drawing upon knowledge of current issues gained throughout the course of the degree and producing a piece of original research (summative assessment) with a substantive element of critical engagement, supported by discussions with their supervisor and comments on an initial chapter (formative feedback)</p>	<p>by drawing upon experience in executing and designing research in earlier modules, choosing the intellectual content of their chosen topic, managing their time effectively to complete a substantial piece of original, independent written work that is well placed within theoretical principles in an international context to a deadline (summative assessment) supported by regular meetings with their dissertation supervisor</p>	<p>by drawing upon the experience of using multiple digital applications for data gathering, analysis and interpretation as the basis for their original, independent research project (summative assessment), supported by regular meetings with their supervisor and providing an initial chapter of the dissertation for formative feedback</p>		<p>by building on previous experience during the degree course to produce a dissertation based on a chosen research topic (summative assessment), putting into practice critical and creative approaches to problem-solving in complex situations. This is supported by discussions with their supervisor and comments on an initial chapter (formative feedback)</p>	<p>by compiling a dissertation based on a chosen research topic (summative assessment), putting into practice knowledge gained during their various modules, with attention to the potential ethical implications of their research and drawing upon interdisciplinary perspectives and methods introduced throughout previous taught modules. This is supported by discussions with their supervisor and comments on an initial chapter (formative feedback)</p>	<p>by building on substantial experience gained throughout the degree to structure and deliver a lecture presentation to a large audience of their peers to a professional standard, using appropriate visual material to communicate and support ideas (summative assessment) by producing a coherent dissertation of 20,000 words using appropriate graphics and text presentation skills (summative assessment) with support from a supervisor and dissertation workshops</p>	<p>by drawing upon the experience of scholarship over the course of the degree, managing their time effectively to complete a substantial piece of original, independent written work to a deadline (summative assessment), supported by regular meetings with their supervisor and dissertation workshops</p>
--	--	---	--	--	--	---	---	---	--

Stage 4	Archaeology of Human Bone	Progress towards PLO	Students will critically evaluate techniques, contexts, and theoretical approaches that osteoarchaeologists use to study and interpret human skeletal remains through lectures	students build upon their skills in critical evaluation of evidence from relevant case studies		Students will further develop their ability to work as part of a team	Students will further develop their ability to solve complex problems based on fragmentary archaeological data from a multi-disciplinary archaeological research project		Students will continue to further their confidence in oral presentation skills	Students will have a significantly enhanced independence in their own scholarship
		By working on (and if applicable, assessed through)	by being introduced to current method and theory in the lectures, by writing a formative essay on a provided topic and by completing a summative essay to integrate and contextualize the module material	by being introduced to osteological case studies for the chosen option in lectures . Also by writing a formative essay on a provided topic and writing a critical appraisal of evidence for a chosen aspect of the field for the summative essay		by working together to sample, analyse, and evaluate data from a multi-disciplinary bioarchaeological project in a one-day research simulation workshop	by completing a one-day research simulation workshop in bioarchaeological research		by communicating complex ideas in group presentations (using presentation software) and discussing and defending arguments during role playing exercises	by writing independent formative and summative essays, with attention paid to criticality and in-depth knowledge and understanding of human osteology, ethics, and funerary context
Stage 4	Becoming Human: evolving minds and societies	Progress towards PLO	Students will gain an in-depth and critical appreciation of the evolution of human cognition and social systems	students build upon their skills in critical evaluation of evidence from relevant case studies					Students will continue to further their confidence in oral presentation skills	Students will have a significantly enhanced independence in their own scholarship

		By working on (and if applicable, assessed through)	by being introduced to current method and theory in the lectures and seminars, by writing a formative essay on a provided topic and by completing a summative essay to integrate and contextualize the module material	by being introduced to archaeological case studies for the chosen option in lectures and participating in seminars that encourage criticality and debate. Also by writing a formative essay on a provided topic and writing a critical appraisal of evidence for a chosen aspect of the field for the summative essay					by communicating complex ideas in presentations (using presentation software) and discussing and defending arguments during weekly seminars	by writing independent formative and summative essays, with attention paid to criticality and in-depth knowledge and understanding of human evolution	
Stage 4	Animal bones for archaeologists (previously Bone and Bones)	Progress towards PLO	students further develop and critically apply knowledge of vertebrate skeletal anatomy, growth patterns, and diagenesis (drawn from zoology) to the study of animal bones in the archaeological record.	students build upon their skills in critical evaluation of zooarchaeological evidence from relevant case studies and species			apply theoretical knowledge on taphonomy, diagenesis, and human behaviour in a practical setting involving fragmentary and diverse archaeological assemblages		Students will continue to further their confidence in oral presentation skills	Students will have a significantly enhanced independence in their own scholarship	

		By working on (and if applicable, assessed through)	by being introduced to the broad structure of vertebrate phylogeny, by discussing the anatomy, identification, and growth patterns of key taxa in seminars, and by completing formative and summative essays on aspects of vertebrate skeletal anatomy of particular relevance to zooarchaeology.	by being introduced to the core scientific concepts and principles that underpin zooarchaeological techniques, and discussing the application of those techniques in seminars. Also by writing a formative essay on a provided topic and writing a critical appraisal of evidence for a chosen aspect of the field for the summative essay			by completing a one-day hands-on Taphonomy workshop		by communicating complex ideas, and discussing and defending arguments during weekly seminars	by writing independent formative and summative essays, with attention paid to criticality and in-depth knowledge and understanding of vertebrate skeletal anatomy and its implications in an archaeological context	
Stage 4	Ancient Biomolecules	Progress towards PLO	student further develop and critically evaluate biomolecular techniques in archaeology, and interpret scientific datasets	students build upon their skills in critical evaluation of methodological strength and limitations of various scientific techniques		Students will further develop their ability to work as part of a team to sample, analyse, and evaluate data from a multi-disciplinary archaeological research project.	apply theoretical knowledge of biomolecular archaeology, diagenesis, and sample selection of diverse (zoo) archaeological assemblages	students build upon their skills in critical evaluation of methodological strength and limitations of various scientific techniques		Students will have a significantly enhanced independence in their own scholarship	

		By working on (and if applicable, assessed through)	by being introduced to cutting-edge biomolecular methods by writing a formative essay on a provided topic and by completing a summative essay to integrate and contextualize the module material	by solidifying knowledge of a range scientific techniques in archaeology Also by writing a formative essay on a provided topic and writing a critical appraisal of evidence for a chosen aspect of the field for the summative essay		by completing a one-day research simulation workshop in bioarchaeological research	by completing a one-day research simulation workshop in bioarchaeological research	by solidifying knowledge of a range scientific techniques in archaeology Also by writing a formative essay on a provided topic and writing a critical appraisal of evidence for a chosen aspect of the field for the summative essay		by writing independent formative and summative essays, with attention paid to criticality and in-depth knowledge and understanding of biomolecular archaeology	
Stage 4	Interpreting Animal Remains	Progress towards PLO	critically evaluate published interpretations of animal remains and human behaviour	students build upon their skills in critical evaluation of zooarchaeological evidence from relevant case studies and species		Students will further develop their ability to work as part of a team to sample, analyse, and evaluate data from a multi-disciplinary archaeological research project.	apply theoretical knowledge of biomolecular archaeology, diagenesis, and sample selection of diverse (zoo) archaeological assemblages		Students will continue to further their confidence in oral presentation skills	Students will have a significantly enhanced independence in their own scholarship	

		By working on (and if applicable, assessed through)	by being exposed to case studies in zooarchaeological interpretation, covering the Palaeolithic to the present day and spanning much of the world. And by writing a formative essay on a provided topic and by completing a summative essay to integrate and contextualize the module material	by being introduced to archaeological case studies for the chosen option in lectures that encourage criticality and debate. Also by writing a formative essay on a provided topic and writing a critical appraisal of evidence for a chosen aspect of the field for the summative essay		by completing a one-day research simulation workshop in bioarchaeological research	by completing a one-day research simulation workshop in bioarchaeological research		by communicating complex ideas, and discussing and defending arguments during weekly seminars	by writing independent formative and summative essays, with attention paid to criticality and in-depth knowledge and understanding of zooarchaeology	
Stage 4	Human Evolutionary Anatomy	Progress towards PLO	develop advanced knowledge and critical understanding of the hominin fossil record, the interpretation of hominin anatomical material and currently employed methods	students build upon their skills in critical evaluation of fossil evidence and the use of indirect evidence to interpret and investigate hominin anatomy and function			apply theoretical knowledge of human and fossil hominin anatomy, and the use of indirect evidence to interpret anatomy and function		Students will continue to further their confidence in oral presentation skills	Students will have a significantly enhanced independence in their own scholarship	

	<p>By working on (and if applicable, assessed through)</p>	<p>by engaging in self-directed learning and practical work, and through presentations and discussion in the seminar. And by critically assess the literature in a summative essay and demonstrating knowledge through an exam.</p>	<p>through exposure to and discussion of theory and methods in human evolution during the lectures and seminars. Also by writing a formative essay on a provided topic and writing a critical appraisal of evidence for a chosen aspect of the field for the summative essay.</p>			<p>by completing practicals in human evolutionary anatomy and completing a timed exam as a summative assessment</p>		<p>by communicating complex ideas, and discussing and defending arguments during weekly seminars and through presentations</p>	<p>by writing independent summative essays, with attention paid to criticality and in-depth knowledge and understanding of human fossil anatomy and evolution.</p>	
--	--	---	---	--	--	---	--	--	--	--

<p>Stage 4</p>	<p>Research Skills</p>	<p>Progress towards PLO</p>	<p>Students will critically engage with a specialist practical discipline relevant for bioarchaeology and archaeological science. Appropriate module options might include Human bone practical, Virtual Anatomy, Zooarchaeology, GIS, Geoarchaeology, Experimental archaeology, Database design and implementation, Perspectives in landscape research, Geophysical survey, Working on the web (availability dependent)</p>	<p>students will gain an appreciation of the range of research questions that might be addressed by their chosen specialist methodology</p>	<p>students will develop professional level practical skills relevant to their chosen option</p>		<p>Students will demonstrate their ability to manipulate and analyse diverse, fragmentary datasets</p>			<p>students will continue to build on independent scholarship</p>	
-----------------------	------------------------	-----------------------------	--	---	--	--	--	--	--	---	--

	By working on (and if applicable, assessed through)	by being introduced to specialist methodologies pertinent to the chosen option through lectures, labwork, practicals and workshop and completing a summative assessment demonstrating engagement and practical competency.	by being introduced to specialist methodologies and research questions pertinent to the chosen option through lectures, practicals and workshops and by demonstrating practical competency in a range of skills through their summative assessment	by performing a range of practical and/or analytical techniques involved in data collection, analysis, and interpretation and displaying competency through their summative assessment		by displaying competence in a range of practical skills during their summative assessment			by completing an independent summative assessment demonstrating their competence as practicing members of the discipline	
--	---	--	--	--	--	---	--	--	--	--

Programme Map: Module Contribution to Programme Learning Outcomes

The information provided in this section should make clear why the students are doing the key activities of the programme, in terms of reaching the PLOs. You should use this section to provide commentary on the programme map and how current practice effectively propels student learning. Please indicate any changes that you plan to make to the programme linked to the pedagogic principles.

This section should capture reflections on the programmes and areas for development linked to the principles of the York pedagogy. Please provide an explanation of the programme and assessment design with reference to future enhancements aligned with the pedagogic principles.

Contact with staff

Please explain how the programme's design maximises the value of students' contact time with staff (which may be face-to-face, virtual, synchronous or asynchronous), including through the use of technology-enhanced learning. An example might be giving students resources for their independent study which then enables a class to be more interactive with a greater impact on learning.

You should include:

i. An explanation of how contact with staff in the future programme will be designed to propel student learning

The vast majority of the programme is made up of modules from the Department of Archaeology. Therefore the relevant statements made in that department's respective submissions apply here. Note is also made to refer to the Biology, Chemistry & Environment YP single subject documentation due to the splits in Stages 1 and 2.

ii. Changes to the existing programme that will be explored to affect this change; make references to the map to include module level change.

Some changes are expected due to the rollout of the YP in Biology & Chemistry. Archaeology is reviewing Stages 3 & 4 later in 2017 and this will of course impact our programme. Some additional changes may take place in stage 4 Archaeology as changes are made to existing taught Masters as a result of the postgraduate YP. All courses, this one included, are reviewed annually and feedback will be given to all contributing departments. Any further changes that may be necessary will naturally arise during this constant process of review.

We are increasing contact hours in the third year in response to student feedback in the NSS (in Archaeology as a single subject). In order to do this we are decreasing our third year Special Topics from 40 credits to 30 credits without changing staff contact time and will introduce a new 10 credit World Archaeology II suite of options for the third year (in line with single subject Archaeology in stage 3).

For the MSci, we are increasing contact time through the introduction of four 5 credit vocationally oriented research skills modules. These skills options will provide additional opportunities to develop practical and transferable skills within a range of topics, preparing students for their professional careers. These skills modules run in discrete 4 week blocks within the Autumn and Spring term, and form a core component of our taught postgraduate degrees. To ensure a balanced workload, we are reducing the Extended Research project from 80 credits to 60 credits.

Students' independent study and formative work

Please outline key features of how independent study and formative work has been designed to support the progressive achievement of the programme learning outcomes. (For example, the use of online resources, which may also incorporate formative feedback; opportunities for further learning from work-based placements).

You should include:

i. An explanation of how students' independent study and formative work has been designed in the future programme to propel student learning?

Again, we refer to the corresponding statements in the Arch, Biol, Chem and Env enhancement plans for the reasons stated above.

ii. Changes to the existing programme to affect this change; make reference to the programme map to indicate module level change

Changes due roll out of the YP will be phased as they occur in the single subject rollout. Further changes will follow as Arch is due to review its Stage 4 submissions which makes up the final year of this degree programme. Any changes will be phased in as and when they happen in the single subject degrees. Reference is made to the corresponding statements in the Arch, Bio, Chem & Env enhancement plans.

Due to the nature of all our specialisation programmes and the fact that the learning and teaching in Stages 1 & 2 is spread across multiple departments, there may be bottle necks for the students in terms of assessment. Currently this is handled on a report to the BoS basis and then escalated outwards after a BoS meeting to the Departments. This is a challenge for Natural Sciences and a definite enhancement to the programmes will be some way of monitoring and controlling these bottlenecks. Currently the YP doesn't help as its level of detail is module assessment and that we have more control over. Its the intra-module assessment. We will carry on investigating ways in which we can manage this issue effectively for our students.

One thing that we have not yet being able to do is use any NSS returns to identify issues or good practice as we have yet to have a graduating cohort. Once this data comes in then we will of course incorporate the outcomes into our annual review processes.

(c) Summative Assessment

Please outline how summative assessment within and across modules has been designed to support and evidence the progressive achievement of the programme learning outcomes. (For example, the use of different assessment methods at the 'introduction' stage compared to those used to evaluate deeper learning through the application of skills and knowledge later in the programme).

You should include:

i. An explanation of how formative and summative assessment has been designed in the future programme to propel student learning?

As in Item 5; Nat Sci honours the pedagogical practices of our contributing departments whenever possible and this is certainly the case in summative assessment. The vast majority of the programme is built on modules from the single subject diet and the assessment modes used are those as judged best for purpose by the experts for assessing the various learning outcomes on these modules.

ii. Changes to the existing programme to affect this change; make reference to the programme map to indicate module level change

As for item 12.

The final year project is a major component of all our degrees and is a chance for our students to show not only their skills and ability in a specialism, but also to work in their specialism on a project that is interdisciplinary. Indeed this is seen at the most natural place to assess any PLOs which emphasise interdisciplinarity. The full process of running projects is currently under review and any changes/improvements will be incorporated into the programmes.

We need to figure out how to faithfully capture the interdisciplinarity of the programme when a lot of it isn't assessed e.g.

(a) the intentional juxtaposition of modules from different departments that cover complementary/similar topics

(b) Natural Sciences hour

The latter is especially important as its a unique feature of the Nat Sci programmes.

Support with implementing programme enhancements

Support services will be able to provide guidance on enhancing programmes for example changing assessment and feedback practice, developing students' digital literacy capabilities and technology enhanced learning, employability etc. Please indicate in the space below if you would like additional guidance to implement you enhancements and what support you would require. For more information on the types of support that is available across the University please see the website:

<https://www.york.ac.uk/staff/teaching/support/>

Infrastructure: we look forward to the creation of a fully-functional programme & module catalogue which will enable:

the efficient sharing of information between departments (& the ASO) e.g. module changes

the shared usage of information for a variety of purposes (e.g. programme specs, admissions materials, student handbooks, website, ...)

identification of issues like assessment bottlenecks & student workload

Nat Sci would like to give a particular note of thanks to David Gent, Cecillia Lowe, Katy Mann Benn & colleagues for their support when compiling this documentation and undergoing the process of making our programmes YP compliant. Their input has been invaluable.