Year of entry: 2022/23

Programme Specification

1	**Awarding body**	University of London						
2	**Teaching Institution**	**Birkbeck College**						
3	**Programme Title(s)**	**BSc Planetary Science with Astronomy**						
4	**Programme Code(s)**	UUBSPSAS_C UBSPSAST_C						
5	**UCAS code**	F590						
6	**Home Department**	Earth & Planetary Sciences						
7	**Exit Award(s)**	Dip HE, Cert HE						
8	**Duration of Study (number of years)**	3 years full-time, 4 years part-time						
9	**Mode of Study**	FT	**X**	PT	**X**	DL		
10	**Level of Award (FHEQ)**	6						
11	**Other teaching depts or institution**	UCL						
12	**Professional, Statutory Regulatory Body(PSRB) details**	N/A						
13	**QAA Benchmark Statement**	Physics, Astronomy and Astrophysics						

14	**Programme Rationale & Aims**
	Main Aims: This BSc Degree will provide a broadly based introduction to the planetary sciences, including their geological and astronomical foundations. Consistent with the general aim of the teaching provision within the College to provide higher education for people otherwise engaged during the day, through flexible teaching contact hours and location, and in line with the benchmark statements for Earth Sciences (ES3), our BSc Planetary Science with Astronomy aims to: • Provide research-based teaching to enable students to gain a multi-disciplinary understanding of geology, planetary science, astrobiology, and astronomy. • Widen admission, in particular through distance learning, to include those with genuine ability and enthusiasm but lacking traditional academic qualifications; • Foster independent and critical thought so that students can reach appropriate conclusions based on relevant evidence; • Provide general skills in learning, information technology, data processing and communication appropriate to any subsequent employer; **Distinctive Features:** The course is taught either full or part-time in the evenings. If required, the course can be taken entirely by distance learning (with notes and videos of lectures provided electronically), or as a mixture of face-to-face and distance learning, although we expect most students to opt for face-to-face lectures. The course provides a theoretical overview of the planetary sciences and astronomy rather than practical training in field geology, although fieldwork forms an optional component.

15	**Entry Criteria**
	UCAS tariff points: 96-120 points (A-levels: CCC-BBB). A minimum of three A-levels, (ideally two should be in scientific subjects). The UCAS tariff applies if students have recently studied for qualifications with a UCAS tariff equivalence. We also welcome applicants without traditional entry qualifications as we base decisions on our own assessment of qualifications, knowledge and previous work experience. We may waive formal entry requirements based on judgement of academic potential.

16	**Learning Outcomes**
	The Department of Earth and Planetary Sciences has long experience in teaching Earth Sciences with staff involved in research projects and practical work in collaboration with industry and academia. Planetary science is necessarily more theoretically oriented than terrestrial geology, and the present programme is designed to develop learning outcomes that are appropriate for students wishing to pursue studies in this area. To gain the qualification the student will have demonstrated the following skills specified in the learning outcomes for approved modules in the programme and for the programme as a whole: Subject Specific 1) The student will gain knowledge and understanding of processes and systems involved in the origin and geological evolution of the Earth and other planets and their wider astronomical context. Intellectual 2) The student will develop hypothesis development and testing skills through analysis of databases, theoretical understanding of relevant concepts, critical assessment of results and outcomes and experience of actual scientific research during project work. Practical 3) The student will be able to collect and analyse data in Earth and planetary sciences and astronomy using a variety of research techniques and software packages. The student will be able to critically assess the quality of scientific method, data, results, conclusions and implications of relevant studies. Personal and Social 4) The student will gain skills such as writing, comprehension of scientific data and papers, mathematical calculation, manipulation of data using relevant software/research techniques, independent study, IT skills and confidence in their abilities to follow a problem through to its end.

17	**Learning, teaching and assessment methods**
	Teaching and learning methods: This BSc programme may be taken either through face-to-face evening lectures or by distance learning, or by a combination of the two. Using experience from our existing distance learning courses in the Earth and Planetary Sciences we will provide lecture and practical material on-line via Moodle, including the course notes and videos of all lectures

(recorded with Panopto). Students will use standard software packages such as Excel, Word, Illustrator, Photoshop, Matlab, statistical packages, and ArcGIS to collate, analyse and present results pertaining to the study of the databases. The Department of Earth and Planetary Sciences has been using such practical material for many years and the staff have considerable experience in designing and implementing such material.
The teaching team are committed to the provision of face-to-face evening teaching, and the lecture remains central to the learning experience that we provide. Nevertheless, we use a wide range of other teaching methods. This diversity develops independence of learning and critical thought, and illustrates the value and nature of group work and teamwork.

In the first two years of the BSc, about 50% of contact time involves practical classes, problem solving, fieldwork and group work. In advanced units the proportion of time devoted to lectures increases, but considerable time is given to practicals, poster sessions, oral presentations, independent research, problem-solving and IT sessions. There are a number of different field based half-course units available and students are encouraged to take these.

Internal and external factors considered in developing the learning outcomes:
The Department of Earth and Planetary Sciences has long experience in teaching Earth Science with staff involved in research projects and practical work in collaboration with industry and academia. Planetary science is necessarily more theoretically oriented than terrestrial geology and the present programme is designed to develop learning outcomes that are appropriate for students wishing to pursue studies in this area.

Assessment methods used and rationale:
A variety of assessment methods are utilised in different modules to assess the different types of learning outcome. Assessment criteria clearly state expected levels of achievement. The comments of visiting examiners, both from within the university and from other universities are discussed at a variety of teaching committees and sub-boards and where possible suitable changes are made to the curriculum and syllabus. We believe that our criteria discriminate effectively because of the range of classes of degrees awarded with approval of external examiners.

Within the BSc programme, assessment methods are very diverse. We believe that such diversity, together with associated instruction, increases the range of key skills, and allows students, with different existing skills, the opportunity to demonstrate their academic ability.

Many course units/components have continuous course assessment and most have an unseen written examination. Assessed coursework includes:

- practical reports;
- essays;
- problem solving and data analysis;
- oral communication and poster presentations;

Workloads:
Because of the special circumstances of Birkbeck College students we ensure a reasonable distribution of workloads by:
- setting staggered deadlines for course work;
- setting defined milestones within project work.

	Some assessment has additional formative value e.g. oral and poster presentations, and computer based tests, are part of the assessment process but also contribute to the development of key skills. Coursework of different kinds allows student to use different skills. By providing coursework students learn key personal and transferable skills. Especially in later stages of the programme assessed coursework provides the opportunity for students to become self-motivated learners. Final degree classification is calculated as the arithmetic mean of marks for individual course units, with 1st year units weighted at 0, 2nd year units weighted at 1 and 3rd/4th year units weighted at 2. A combination of theory examinations, practical examinations and assessed work will apply. The rationale is to test theoretical understanding through theory exams, practical skills and theoretical understanding during practical exams and allow formal feedback during mark accumulation via assessed work. The 60 credit Project will be started in the 3rd year and completed in the 4th year.

18	**Programme Description**
	Students take 360 credits to complete the degree, with 120 credits at level 4, 120 at level 5 and 120 at level 6. Details of the modules taken are shown below.

19 **Programme Structure**

Full Time programme

Year 1

Level	Module Code	Module Title	Credits	Status*
4	SCES009H4	Geology of the Solar System I	15	Compulsory
4	EASC038H4	Introduction to Geochemistry	15	Compulsory
4	SCES057H4	Earth's Interior Geology	15	Compulsory
4	SCES058H4	Methods in Earth and Planetary Science	15	Compulsory
4	EASC057H4	Foundations of Mineralogy	15	Compulsory
4	SCES001H4	Foundations of Astronomy.	15	Compulsory
5	SCES010H5	Geology of the Solar System II	15	Compulsory
	Plus <u>one Level 4</u> option chosen from the following list:			
4	EASC050H4	Earth History	15	Option
4	SCES052H4	Assessed Field Techniques 1	15	Option
4	EASC042H4	Invertebrate Palaeontology	15	Option
4	SCES051H4	Earth's Surface Geology	15	Option
		Total Year 1	**120**	

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Year 2				
Level	**Module Code**	**Module Title**	**Credits**	**Status***
5	SCES005H5	Igneous Petrology	15	Compulsory
5	EASC064H5	Introduction to Astrobiology	15	Compulsory
5	EASC005H5	Geophysics	15	Compulsory
5	SCES054H5	Scientific Computing and Data Modelling	15	Compulsory
5/6	SCES055H5 or EASC059H6	Comets, Asteroids and Meteorites* or Volcanism in the Solar System*	15	Compulsory
6	SCES035H6 or SCES047H6	Remote Sensing and Planetary Surfaces* or Exploration and Modelling of Planetary Interiors*	15	Compulsory
	***NB**. The pairs of modules listed as "either/or" above are comp modules but are offered in alternate years. For each pair, students will take both modules, but the order will depend on which module of the pair is on when the student reaches year 2.			
	Plus <u>two</u> options, <u>one at level 4</u> and <u>one at level 5</u>, chosen from the following list:			
4	PHAS0003	Practical Astronomy at UCL (subject to availability)	15	Option
4	EASC050H4	Earth History	15	Option
4	SCES052H4	Assessed Field Techniques 1	15	Option
4	EASC042H4	Invertebrate Palaeontology	15	Option
4	SCES051H4	Earth's Surface Geology	15	Option
5	SCES008H5	Principles of Sedimentology	15	Option
5	EASC011H5	Structural Geology I	15	Option
5	SCES006H5	Metamorphic Petrology	15	Option
5	SCES053H5	Global Tectonics	15	Option
5	SCES056H5	Field Class in Planetary Science	15	Option
		Total Year 2	**120**	

Year 3				
Level	**Module Code**	**Module Title**	**Credits**	**Status***
6	SCES016D6	Project	60	Compulsory
6	SCES022H6	Physical Principles of Astronomy	15	Compulsory
6/5	EASC059H6 or SCES055H5	Volcanism in the Solar System* or Comets, Asteroids and Meteorites*	15	Compulsory
6	SCES047H6 or SCES035H6	Exploration and Modelling of Planetary Interiors* OR Remote Sensing and Planetary Surfaces*	15	Compulsory
	***NB**. The pairs of modules listed as "either/or" above are comp modules but are offered in alternate years. For each pair, students will take both modules, but the order will depend on which module of the pair is on when the student reaches year 2.			

	Plus <u>one level 5</u> option chosen from the following list:			
5	SCES008H5	Principles of Sedimentology	15	Option
5	EASC011H5	Structural Geology I	15	Option
5	SCES006H5	Metamorphic Petrology	15	Option
5	SCES053H5	Global Tectonics	15	Option
5	SCES056H5	Field Class in Planetary Science	15	Option
		Total Year 3	**120**	

***NB. These pairs of modules are taught in alternate years. For each pair, students will take both modules, but the order in which they do so will depend on their year of entry.**

Part Time programme

Year 1

Level	Module Code	Module Title	Credits	Status*
4	SCES009H4	Geology of the Solar System I	15	Compulsory
4	EASC038H4	Introduction to Geochemistry	15	Compulsory
4	SCES057H4	Earth's Interior Geology	15	Compulsory
4	SCES058H4	Methods in Earth and Planetary Science	15	Compulsory
4	EASC057H4	Foundations of Mineralogy	15	Compulsory
4	SCES001H4	Foundations of Astronomy.	15	Compulsory
		Total Year 1	**90**	

Year 2

Level	Module Code	Module Title	Credits	Status*
5	SCES005H5	Igneous Petrology	15	Compulsory
5	SCES010H5	Geology of the Solar System II	15	Compulsory
5	EASC064H5	Introduction to Astrobiology	15	Compulsory
5	EASC005H5	Geophysics	15	Compulsory
	Plus <u>two level 4</u> options chosen from the following list:			
4	EASC050H4	Earth History	15	Option
4	PHAS0003	Practical Astronomy at UCL (subject to availability)	15	Option
4	SCES052H4	Assessed Field Techniques 1	15	Option
4	EASC042H4	Invertebrate Palaeontology	15	Option
4	SCES051H4	Earth's Surface Geology	15	Option
		Total Year 2	**90**	

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Years 3/4				
Level	**Module Code**	**Module Title**	**Credits**	**Status***
5	SCES054H5	Scientific Computing and Data Modelling	15	Compulsory
5	SCES055H5	Comets, Asteroids and Meteorites	15	Compulsory
6	EASC059H6	Volcanism in the Solar System	15	Compulsory
6	SCES035H6	Remote Sensing and Planetary Surfaces	15	Compulsory
6	SCES047H6	Exploration and Modelling of Planetary Interiors	15	Compulsory
6	SCES022H6	Physical Principles of Astronomy (to be taken in Year 4)	15	Compulsory
6	SCES016D6	Project (to be started in Year 3 and completed in Year 4)	60	Compulsory
	Plus <u>two level 5</u> option chosen from the following list:			
5	SCES008H5	Principles of Sedimentology	15	Option
5	EASC011H5	Structural Geology I	15	Option
5	SCES006H5	Metamorphic Petrology	15	Option
5	SCES053H5	Global Tectonics	15	Option
5	SCES056H5	Field Class in Planetary Science	15	Option
		Total Years 3/4	**180**	

Status*

CORE – Module must be taken and passed by student; COMPULSORY – Module must be taken, mark can be reviewed at sub-exam board; OPTIONAL – Student can choose to take this module

20	**Programme Director**	Professor Ian Crawford
21	**Start Date *(term/year)***	October 2010
22	**Date approved by TQEC**	Spring 2010
23	**Date approved by Academic Board**	Summer 2010
24	**Date(s) updated/amended**	May 2020