

PROGRAMME SPECIFICATION

Name, title and level of final qualification(s)	MSc Astrobiology (Level 7)
Name and title of any exit qualification(s)	Postgraduate Diploma Astrobiology Postgraduate Certificate Astrobiology
Awarding Body	University of London
Teaching Institution(s)	Birkbeck, University of London (Note: 30 credits of options may be taken at University College London under intercollegiate arrangements by students on the in-person route)
Home Department/other teaching departments	School of Natural Sciences
Location of delivery	Central London/Online
Language of delivery and assessment	English
Mode of study, length of study and normal start month	Full-time (1 years) Part-time (2 years) October
Professional, statutory or regulatory body	N/A
<u>QAA subject benchmark group(s)</u> <u>Higher Education Credit Framework for</u> <u>England</u>	Earth Sciences, Environmental Sciences and Environmental Studies
Birkbeck Course Code	TMSASTRO_C
HECoS Code	100414 (astronomy) 101103 (planetary science) 100398 (palaeontology)
Start date of programme	October 2023
Date of programme approval	December 2022
Date of last programme amendment approval	N/A
Valid for academic entry year	2026-27
Programme Director	Dr Andrew Rushby
Date of last revision to document	7/05/24

Admissions requirements

This programme is aimed primarily at recent graduates from physical scientific disciplines (e.g., the geological, astronomical, and life sciences) who plan to undertake PhD-level research in astrobiology. Typically an undergraduate degree (2:2 or above) in a relevant subject is required, but individual applications will be considered on the basis of experience and merit.

Please note: students who have completed or who are enrolled on the BSc Planetary Science, Space Exploration, and Astrobiology at Birkbeck, University of London, are discouraged from enrolling on this programme.

Course aims

Astrobiology is a rapidly emerging interdisciplinary subject aimed at understanding the origins, distribution, evolution, and future of life in the universe. In recent years, research opportunities in astrobiology have expanded greatly, in areas ranging from the conditions under which life arose on our planet, the search for life elsewhere in the Solar System, and the study of potentially habitable planets orbiting other stars.

Over the coming years contemporary and new on-orbit and ground-based telescopes, such as the James Webb Space Telescope, ARIEL, and the ELTs, will continue to detect and possibly allow for the detailed study of exoplanets, greatly expanding our understanding of the distribution of habitable environments in the Galaxy, while landers, orbiters, and rovers from space agencies across the world continue to explore the Solar System as part of the search for life outside the Earth. Closer to home, focus on the biochemical limits of life and its origins continues via analogue, lab-based, and in-situ investigations.

This programme is aimed primarily at graduates in a wide range of scientific disciplines (e.g., the geological, astronomical, and life sciences) who plan to undertake PhD-level research in astrobiology, but whose undergraduate degrees lacked the interdisciplinary breadth that a subject like astrobiology requires. Students will acquire the multi- and interdisciplinary knowledge, tools, and skills needed to design, implement, support, and contribute to ambitious projects and research programmes in astrobiology, and stand-out in a highly competitive international field. Students will be able to select modules covering a wide range of options from across the College to best complement their existing knowledge base. For example, the programme will aim provide geoscience graduates with the necessary background in astronomy and biology, and biology graduates with the necessary background in astronomy and planetary science, etc.

In a broader context, the UK is well-placed to make significant contributions to the field of astrobiology through space technology development, research, and leadership. This rigorous MSc. programme, the first of its kind in the UK, demonstrates Birkbeck's commitment to becoming a national pioneer and leader in astrobiology education and training.

Course structure

Level	Module Code	Module Title	Credit	Status	Teaching term(s)
Full-time – 1 year, in-person route					
7	SCES076S7	Foundations of Astrobiology	30	Comp	T1
7	SCES077H7	Research Topics in Astrobiology and Planetary Science	15	Comp	T2
7	SCES079H7	Astrobiology Analogue Rover Mission	15	Comp	T3
7	SCBS097D7	Research Project	60	Core	T3
All of the above modules are required. In addition to those, students must select options to a value of 60 credits from the list below, noting that not more than two of these options (30 credits) can be selected from the Level 6 offerings, and not more than two (30 credits) can be taken from the UCL modules. Note: UCL options are taught in-person and so are not available to fully online students.					
7	SCBS095S7	Molecular Basis of Life	30	Option	T1
7	<i>UCL module</i>	Physics of Exoplanets	15	Option	T2
7	<i>UCL module</i>	Origin of Life and Exobiology	15	Option	T2
7	<i>UCL module</i>	Planetary Atmospheres	15	Option	T2
6	<i>UCL module</i>	Life in Extreme Environments	15	Option	T2
6	SCES022H6	Physical Principles of Astronomy	15	Option	T2
6	SCES035H6	Remote Sensing and Planetary Surfaces	15	Option	T2
6	SCES002H6	Comets, Asteroids, and Meteorites	15	Option	T2
6	SCES050H6	The Vertebrate Fossil Record	15	Option	T2
6	SCES047H6	Planetary Interiors	15	Option	T1
Full-time – 1 year, online route					
7	SCES076S7	Foundations of Astrobiology	30	Comp	T1
7	SCBS095S7	Molecular Basis of Life	30	Comp	T1
7	SCES077H7	Research Topics in Astrobiology and Planetary Science	15	Comp	T2
7	SCES079H7	Astrobiology Analogue Rover Mission	15	Comp	T3
7	SCBS097D7	Research Project	60	Core	T3
All of the above modules are required. In addition to those, students must select options to a value of 30 credits from the list below. Note: the UCL options shown above are taught in-person and so are not available to fully online students.					
6	SCES022H6	Physical Principles of Astronomy	15	Option	T2

6	SCES035H6	Remote Sensing and Planetary Surfaces	15	Option	T2
6	SCES002H6	Comets, Asteroids, and Meteorites	15	Option	T2
6	SCES050H6	The Vertebrate Fossil Record	15	Option	T2
6	SCES047H6	Planetary Interiors	15	Option	T1
Part-time - 2 years, in-person route					
Year 1					
7	SCES076S7	Foundations of Astrobiology	30	Comp	T1
7	SCES077H7	Research Topics in Astrobiology and Planetary Science	15	Comp	T2
7	SCES079H7	Astrobiology Analogue Rover Mission	15	Comp	T3
All of the above modules are required. In addition to those, students must select options to a value of 30 credits in Year 1, noting that over the course of the 2 year programme not more than two of these options can be selected from the Level 6 offerings, and not more than two (30 credits) can be taken from the UCL modules.					
Year 2					
7	SCBS097D7	Research Project	60	Core	T3
All of the above modules are required. In addition to those, students must select options to a value of 30 credits in Year 2, noting that over the course of the 2 year programme not more than two of these options can be selected from the Level 6 offerings, and not more than two (30 credits) can be taken from the UCL modules.					
Optional modules					
7	SCBS095S7	Molecular Basis of Life	30	Option	T1
7	<i>UCL module</i>	Physics of Exoplanets	15	Option	T2
7	<i>UCL module</i>	Origin of Life and Exobiology	15	Option	T2
7	<i>UCL module</i>	Planetary Atmospheres	15	Option	T2
6	<i>UCL module</i>	Life in Extreme Environments	15	Option	T2
6	SCES022H6	Physical Principles of Astronomy	15	Option	T2
6	SCES035H6	Remote Sensing and Planetary Surfaces	15	Option	T2
6	SCES002H6	Comets, Asteroids, and Meteorites	15	Option	T2
6	SCES050H6	The Vertebrate Fossil Record	15	Option	T2
6	SCES047H6	Planetary Interiors	15	Option	T1

Part-time - 2 years, online route					
Year 1					
7	SCES076S7	Foundations of Astrobiology	30	Comp	T1
7	SCES077H7	Research Topics in Astrobiology and Planetary Science	15	Comp	T2
7	SCES079H7	Astrobiology Analogue Rover Mission	15	Comp	T3
All of the above modules are required. In addition to those, students must select options to a value of 30 credits in Year 1. Note: the UCL options shown in the lists above are taught in-person and so are not available to online students.					
Year 2					
7	SCBS095S7	Molecular Basis of Life	30	Comp	T1
7	SCBS097D7	Research Project	60	Core	T2, 3
Optional modules					
6	SCES022H6	Physical Principles of Astronomy	15	Option	T2
6	SCES035H6	Remote Sensing and Planetary Surfaces	15	Option	T2
6	SCES002H6	Comets, Asteroids, and Meteorites	15	Option	T2
6	SCES050H6	The Vertebrate Fossil Record	15	Option	T2
6	SCES047H6	Planetary Interiors	15	Option	T1

Note: under college regulations modules taken at level 6 do not count towards the final classification of the degree.

Core: Module must be taken and passed by student

Compulsory: Module must be taken but can be considered for compensated credit (see CAS regulations paragraph 24)

Option: Student can choose to take this module

How you will learn

Your learning and teaching is organised to help you meet the learning outcomes (see below) of the programme. As a student, we expect you to be an active learner and to take responsibility for your learning, engaging with all of the material and sessions arranged for you.

This programme is divided into modules. You will find information on the virtual learning site (Moodle, see Academic Support below) about each of your modules, what to expect, the work you need to prepare, links to reading lists, information about how and when you will be assessed.

Teaching will be delivered in-person and online through a series of lectures, a revision session, as well as through staff-supported, learner-driven research and directed reading, in order to develop the skills, knowledge, and experience required to undertake a comprehensive independent research project/dissertation on a pertinent astrobiology topic. The ability to conduct independent work and research will facilitate the transition to PhD level research or employment in industry or other sectors outside academia.

How we will assess you

The course will use a variety of assessment methods and these will be used to enhance your learning in addition to testing it. We use a variety of assessment methods in the 15- and 30-credit taught modules: a variety of combinations of exams (face-to-face or online), assessed coursework, and student presentations. Individual module descriptions provide detailed information about the components of the assessment. All assessments are to be completed by the end of the term in which the module runs.

Learning outcomes (what you can expect to achieve)

'Learning outcomes' indicate what you should be able to know or do at the end of your course. Providing them helps you to understand what your teachers will expect and also the learning requirements upon which you will be assessed.

Course learning goal(s):

- 1) Acquire comprehensive and detailed background knowledge of the broad range of topics relevant to contemporary astrobiology research, and develop an understanding of the current state of the field.
- 2) Describe, understand, and evaluate the distribution of habitable environments in space and time, including astrobiological investigations of Solar System objects, distant exoplanets, and in the context of the origin of life on the Earth and the biogeochemical co-evolution of life and the planet.
- 3) Evaluate and critically appraise contemporary astrobiology research from a range of experimental settings, including theoretical, observational, laboratory, and field/*analogue/in-situ* measurements, and identify areas in which understanding is lacking and/or can be improved.
- 4) Consider and evaluate the wider scientific, social, and economic impact(s) of astrobiology research.
- 5) Develop research, synthesis, and data analysis skills to facilitate further research in astrobiology at the M.Phil./Ph.D. level.

Additional learning goal(s):

- Acquire a broad range of transferable skills including technical, IT, computing, written and oral communication, organisational and research.

Careers and further study

Astrobiology as a discipline is relatively new and fast-growing, and this programme will form one of the first of its kind in the UK. Therefore, the future career trajectories of our graduates outside academia are not yet clear, but our approach for this course will be primarily preparing students with undergraduate degrees with a geology, astronomy, biology, or chemistry for Ph.D. research in astrobiology. However, this course will also impart a range of valuable transferrable skills for industry, the private and public sectors etc.

Birkbeck's MSc. Astrobiology graduates will complete with a set of valuable attributes, for example:

- High-level oral and written communication skills in English, computer numerical skills and computer graphics skills.
- Research, evaluation and synthesis skills.
- Science communication and presentation skills.

Birkbeck offers a range of careers support to its students. You can find out more on [the careers pages of our website](#).

Academic regulations and course management

Birkbeck's academic regulations are contained in its Common Award Scheme Regulations and Policies published by year of application on the Birkbeck website.

You will have access to a course handbook on Moodle and this will outline how your course is managed, including who to contact if you have any questions about your module or course.

Support for your study

Your learning at Birkbeck is supported by your teaching team and other resources and people in the College there to help you with your study. Birkbeck uses a virtual learning environment called Moodle and each course has a dedicated Moodle page and there are further Moodle sites for each of your modules. This will include your course handbook.

Birkbeck will introduce you to the Library and IT support, how to access materials online, including using Moodle, and provide you with an orientation which includes an online Moodle module to guide you through all of the support available. You will also be allocated a personal tutor and provided with information about learning support offered within your School and by the College.

Please check our website for more information about student support services. This covers the whole of your time as a student with us including learning support and support for your wellbeing.

Quality and standards at Birkbeck

Birkbeck's courses are subject to our quality assurance procedures. This means that new courses must follow our design principles and meet the requirements of our academic regulations. Each new course or module is subject to a course approval process where the proposal is scrutinised by subject specialists, quality professionals and external representatives to ensure that it will offer an excellent student experience and meet the expectation of regulatory and other professional bodies.

You will be invited to participate in an online survey for each module you take. We take these surveys seriously and they are considered by the course team to develop both modules and the overall courses. Please take the time to complete any surveys you are sent as a student.

We conduct an annual process of reviewing our portfolio of courses which analyses student achievement, equality data and includes an action plan for each department to identify ongoing enhancements to our education, including changes made as a result of student feedback. Our periodic review process is a regular check (usually every four years) on the courses by department with a specialist team including students.

Each course will have an external examiner associated with it who produces an annual report and any recommendations. Students can read the most recent external examiner reports on the course Moodle pages. Our courses are all subject to Birkbeck Baseline Standards for our Moodle module information. This supports the accessibility of our education including expectations of what information is provided online for students.

The information in this programme specification has been approved by the College's Academic Board and every effort has been made to ensure the accuracy of the information it contains.

Programme specifications are reviewed periodically. If any changes are made to courses, including core and/or compulsory modules, the relevant department is required to provide a revised programme specification. Students will be notified of any changes via Moodle.

Further information about specifications and an archive of programme specifications for the College's courses is [available online](#).

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