



UNSW Course Outline

BEES2741 Introduction to Astrobiology: Life in the Universe - 2024

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General Course Information

Course Code : BEES2741

Year : 2024

Term : Term 2

Teaching Period : T2

Is a multi-term course? : No

Faculty : Faculty of Science

Academic Unit : School of Biological, Earth and Environmental Sciences

Delivery Mode : Online

Delivery Format : Standard

Delivery Location : Kensington

Campus : Sydney

Study Level : Undergraduate

Units of Credit : 6

Useful Links

[Handbook Class Timetable](#)

Course Details & Outcomes

Course Description

Astrobiology is the study of the search for life elsewhere in the universe, the origin of life on

Earth, and the future of life on Earth. The course emerged from the UNSW Australian Centre for Astrobiology, which is deeply embedded in the search for life on Mars and the origin of life on Earth. The course is fully online, and there is no final exam.

The content ranges from our origin in the Big Bang at the beginning of the universe to the study of microbes that live in extreme environments on Earth, how life and our planet evolved together and the search for life elsewhere in our solar system and beyond. Astrobiology seeks to answer our most profound question: Are we alone in the universe?

This second-level course addresses astrobiology from the microbiological, geological and palaeobiological perspectives to the development of life on Earth and the search for life elsewhere in the universe. It is strongly interdisciplinary and offers a possible pathway for you to consider the third level/postgraduate science elective BEES6741 Astrobiology: Life in the universe. BEES6741 focuses on the search for Life on Mars and includes an interaction with a NASA Mars scientist in preparation for the final assessment.

Course Aims

The aim of this course is to introduce students to the broadly interdisciplinary subject of astrobiology - life in the universe. It also aims to develop skills in interdisciplinary thinking and research and inspire students through the study of the origin of life, the possibility of life elsewhere in the universe and space exploration in general.

Course Learning Outcomes

Course Learning Outcomes
CLO1 : Analyse and describe the role of an interdisciplinary approach in the search for life in the solar system and beyond.
CLO2 : Critically review and evaluate primary and secondary literature to assess the potential for life elsewhere in the solar system, and beyond.
CLO3 : Synthesise and apply knowledge about the emergence and evolution of life on Earth to the potential for life elsewhere in the solar system and beyond.
CLO4 : Investigate, observe and evaluate potential habitable environments.

Course Learning Outcomes	Assessment Item
CLO1 : Analyse and describe the role of an interdisciplinary approach in the search for life in the solar system and beyond.	<ul style="list-style-type: none">• Virtual Field Trip (VFT) observations and report on the origin of life on Earth• Groupwork video or alternative mode of presentation• Report on “Life elsewhere in the universe”
CLO2 : Critically review and evaluate primary and secondary literature to assess the potential for life elsewhere in the solar system, and beyond.	<ul style="list-style-type: none">• Virtual Field Trip (VFT) observations and report on the origin of life on Earth• Groupwork video or alternative mode of presentation• Report on “Life elsewhere in the universe”
CLO3 : Synthesise and apply knowledge about the emergence and evolution of life on Earth to the potential for life elsewhere in the solar system and beyond.	<ul style="list-style-type: none">• Virtual Field Trip (VFT) observations and report on the origin of life on Earth• Groupwork video or alternative mode of presentation• Report on “Life elsewhere in the universe”
CLO4 : Investigate, observe and evaluate potential habitable environments.	<ul style="list-style-type: none">• Virtual Field Trip (VFT) observations and report on the origin of life on Earth

Learning and Teaching Technologies

Moodle - Learning Management System

Learning and Teaching in this course

You will use an immersive laptop-delivered Virtual Field Trip for Assessment 2.

Assessments

Assessment Structure

Assessment Item	Weight	Relevant Dates
Virtual Field Trip (VFT) observations and report on the origin of life on Earth Assessment Format: Individual Short Extension: Yes (2 days)	30%	
Groupwork video or alternative mode of presentation Assessment Format: Group Short Extension: Yes (2 days)	25%	Start Date: 14/06/2024 11:59 PM Due Date: 09/07/2024 11:59 PM Post Date: 23/07/2024 11:30 PM
Report on "Life elsewhere in the universe" Assessment Format: Individual Short Extension: Yes (3 days)	45%	Start Date: 12/07/2024 11:00 AM Due Date: 02/08/2024 12:00 AM

Assessment Details

Virtual Field Trip (VFT) observations and report on the origin of life on Earth

Assessment Overview

Virtual fieldwork Part A (10%): You will examine and make observations on the prevalence of life in alkali and acid hot springs. You will pay particular attention to the temperature and pH gradients when making your observations. A laptop-delivered immersive Virtual Field Trip of the hot springs is provided for your virtual fieldwork. You will answer four questions about your observations. Due end of Week 2 with marks and feedback in Week 3.

VFT report Part B (20%): You will use observations from Part A to draw conclusions about which type is more supportive of a variety of life and why, particularly in relation to local temperature and pH gradients. You will compare these land-based systems to alkali and acid deep sea hot springs. You will produce a 1,000-word report (word count excludes references, headings, sub-headings and captions). Due end of Week 4 with marks and feedback in Week 6.

Course Learning Outcomes

- CL01 : Analyse and describe the role of an interdisciplinary approach in the search for life in the solar system and beyond.
- CL02 : Critically review and evaluate primary and secondary literature to assess the potential for life elsewhere in the solar system, and beyond.
- CL03 : Synthesise and apply knowledge about the emergence and evolution of life on Earth to the potential for life elsewhere in the solar system and beyond.
- CL04 : Investigate, observe and evaluate potential habitable environments.

Detailed Assessment Description

Students may apply for a short extension for either part of this single assessment, but not both.

Groupwork video or alternative mode of presentation

Assessment Overview

You will work in groups of 2-3 to investigate the potential for hot springs below the icy crust of Europa, a moon of Jupiter, the planned NASA and European Space Agency missions to the moon, and compare with Enceladus, an icy moon of Saturn known to have geysers that contain the elements necessary for life. You will draw on earlier learning in Assessment 1 to consider the implications of discovery of a second origin of life elsewhere in our solar system in relation to our own origin. Due end of Week 7 with marks and feedback in Week 9.

Course Learning Outcomes

- CL01 : Analyse and describe the role of an interdisciplinary approach in the search for life in the solar system and beyond.
- CL02 : Critically review and evaluate primary and secondary literature to assess the potential for life elsewhere in the solar system, and beyond.
- CL03 : Synthesise and apply knowledge about the emergence and evolution of life on Earth to the potential for life elsewhere in the solar system and beyond.

Assessment Length

Video of 4-5 minutes

Assignment submission Turnitin type

This assignment is submitted through Turnitin and students do not see Turnitin similarity reports.

Report on “Life elsewhere in the universe”

Assessment Overview

Part A: You will undertake three short-answer questions on the search for life on Mars.

Part B: You will use the Drake Equation to consider the current limits of our knowledge in answering the question “*Are we alone in the universe?*” using the content of the course to support your conclusions. A (excluding references, headings and sub-headings, and captions) Due end of Week 10. Since this assessment is in place of a final exam, marks and feedback are provided when grades are released by the university.

Course Learning Outcomes

- CLO1 : Analyse and describe the role of an interdisciplinary approach in the search for life in the solar system and beyond.
- CLO2 : Critically review and evaluate primary and secondary literature to assess the potential for life elsewhere in the solar system, and beyond.
- CLO3 : Synthesise and apply knowledge about the emergence and evolution of life on Earth to the potential for life elsewhere in the solar system and beyond.

Detailed Assessment Description

Students may apply for a short extension for either part of this single assessment, but not both.

Assessment Length

1,800-2,000 words

Submission notes

The assessment is in two parts. Part A is due July 19, 23.59.

Assignment submission Turnitin type

This assignment is submitted through Turnitin and students can see Turnitin similarity reports.

General Assessment Information

The following notes may be helpful:

1. All material from references must be paraphrased rather than quoted to demonstrate you understand the author's idea or concept. That means you may NOT include any direct quotes. You may not use the words of another author except proper nouns. If you do, you will lose marks for plagiarism, which can be up to 100% of the marks.
2. If you paraphrase another author's work, you must reference in-text and in a reference list. APA is the referencing style used in this course for in-text and listed references.
3. Use of generative AI is permitted, but you must reference the platform or platforms used. You should not copy and paste from AI because (a) that would not constitute your own work, and (b) AI-written text lacks critical thinking (you have to apply that aspect), and lack of critical thinking will impact your marks. A tutorial guide is provided on the responsible and ethical use of AI as a tutor or collaborator, which is strongly encouraged.
4. You are strongly encouraged to ask for help with concepts when needed. Weekly virtual classes to generate a learning community and one-on-one tutorials are offered, the latter upon request.

Grading Basis

Standard

Requirements to pass course

You must meet the learning outcomes of the course.

Course Schedule

Attendance Requirements

Students are strongly encouraged to attend all classes and review lecture recordings.

Course Resources

Prescribed Resources

None.

Recommended Resources

There is no text book. A reading list is provided with online access via the library.

Additional Costs

There are no additional costs associated with this course.

Course Evaluation and Development

Student feedback is applied to course content and delivery, particularly feedback provided in MyExperience at the end of the course.

Staff Details

Position	Name	Email	Location	Phone	Availability	Equitable Learning Services Contact	Primary Contact
Convenor	Carol Oliver		401c, Floor 4, Building D26	0417477612	On request, seven days a week.	No	Yes

Other Useful Information

Academic Information

Upon your enrolment at UNSW, you share responsibility with us for maintaining a safe,

harmonious and tolerant University environment.

You are required to:

- Comply with the University's conditions of enrolment.
- Act responsibly, ethically, safely and with integrity.
- Observe standards of equity and respect in dealing with every member of the UNSW community.
- Engage in lawful behaviour.
- Use and care for University resources in a responsible and appropriate manner.
- Maintain the University's reputation and good standing.

For more information, visit the [UNSW Student Code of Conduct Website](https://student.unsw.edu.au/conduct).

Academic Honesty and Plagiarism

Referencing is a way of acknowledging the sources of information that you use to research your assignments. You need to provide a reference whenever you draw on someone else's words, ideas or research. Not referencing other people's work can constitute plagiarism.

Further information about referencing styles can be located at <https://student.unsw.edu.au/referencing>

Academic integrity is fundamental to success at university. Academic integrity can be defined as a commitment to six fundamental values in academic pursuits: honesty, trust, fairness, respect, responsibility and courage. At UNSW, this means that your work must be your own, and others' ideas should be appropriately acknowledged. If you don't follow these rules, plagiarism may be detected in your work.

Further information about academic integrity, plagiarism and the use of AI in assessments can be located at:

- The [Current Students site](https://student.unsw.edu.au/current-students),
- The [ELISE training site](https://student.unsw.edu.au/elise), and
- The [Use of AI for assessments](https://student.unsw.edu.au/use-of-ai) site.

The Student Conduct and Integrity Unit provides further resources to assist you to understand your conduct obligations as a student: <https://student.unsw.edu.au/conduct>

Submission of Assessment Tasks

Penalty for Late Submissions

UNSW has a standard late submission penalty of:

- 5% per day,
- for all assessments where a penalty applies,
- capped at five days (120 hours) from the assessment deadline, after which a student cannot submit an assessment, and
- no permitted variation.

Any variations to the above will be explicitly stated in the Course Outline for a given course or assessment task.

Students are expected to manage their time to meet deadlines and to request extensions as early as possible before the deadline.

Special Consideration

If circumstances prevent you from attending/completing an assessment task, you must officially apply for special consideration, usually within 3 days of the sitting date/due date. You can apply by logging onto myUNSW and following the link in the My Student Profile Tab. Medical documentation or other documentation explaining your absence must be submitted with your application. Once your application has been assessed, you will be contacted via your student email address to be advised of the official outcome and any actions that need to be taken from there. For more information about special consideration, please visit: <https://student.unsw.edu.au/special-consideration>

Important note: UNSW has a “fit to sit/submit” rule, which means that if you sit an exam or submit a piece of assessment, you are declaring yourself fit to do so and cannot later apply for Special Consideration. This is to ensure that if you feel unwell or are faced with significant circumstances beyond your control that affect your ability to study, you do not sit an examination or submit an assessment that does not reflect your best performance. Instead, you should apply for Special Consideration as soon as you realise you are not well enough or are otherwise unable to sit or submit an assessment.

Faculty-specific Information

Additional support for students

- [The Current Students Gateway](#)
- [Student Support](#)
- [Academic Skills and Support](#)
- [Student Wellbeing, Health and Safety](#)
- [Equitable Learning Services](#)
- [UNSW IT Service Centre](#)

- Science EDI Student [Initiatives](#), [Offerings](#) and [Guidelines](#)