



## UNSW Course Outline

# PHYS1160 Introduction to Astronomy - 2024

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## General Course Information

**Course Code :** PHYS1160

**Year :** 2024

**Term :** Term 2

**Teaching Period :** T2

**Is a multi-term course? :** No

**Faculty :** Faculty of Science

**Academic Unit :** School of Physics

**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

Is there life beyond the Earth? What do we learn from modern day telescopes and satellites? In this course, students will be introduced to the physics of the Universe from scales ranging from our Solar System and extrasolar planets to the origin and fate of the Universe, gaining an

understanding and appreciation of what is known about the Universe and the techniques scientists use to make discoveries. Students will also gain experience in effectively communicating knowledge to different audiences and in how to separate science fact from science fiction.

Topics to be covered include: astronomical techniques, history of astronomy across cultures, beginnings of the Universe, formation and evolution of galaxies, origin of life on Earth and search for life elsewhere, stellar structure and evolution, planet formation, black holes, and compact objects.

This course has asynchronous lectures and no face-to-face classes. This course is intended primarily as a general education subject with no assumed prior knowledge. Students wishing to proceed on to PHYS2116 and PHYS3116, or with a good prior background in physics and astronomy, may instead wish to take PHYS1116 Astrophysics, which is a more technical version of the subject intended for physics majors and science students.

## Course Aims

The aim of this course is to give students an introduction to the Universe and the study of astronomy. Topics covered include the Big Bang, galaxy evolution, the formation of stars and planets, and the formation of the Earth. Students will develop their scientific writing and research skills, and gain exposure to the practice of astronomy.

## Course Learning Outcomes

Course Learning Outcomes
CLO1 : Describe key concepts in astronomy and astrobiology, including the formation of stars, planets, and galaxies; the history of life on Earth; and the beginning and ultimate fate of the Universe.
CLO2 : Synthesise multiple scientific perspectives to distinguish between scientific fact and pseudoscience.
CLO3 : Search appropriate literature to identify and explain supporting evidence for or against scientific claims.
CLO4 : Justify how, using experimental techniques (such as simple data analysis), astrophysical phenomena can be observed and used to demonstrate our understanding of the Universe.
CLO5 : Communicate concepts in astronomy accurately in written and verbal forms and at an appropriate level for general audiences.

Course Learning Outcomes	Assessment Item
CLO1 : Describe key concepts in astronomy and astrobiology, including the formation of stars, planets, and galaxies; the history of life on Earth; and the beginning and ultimate fate of the Universe.	<ul style="list-style-type: none"> <li>• Experiment</li> <li>• Short Report</li> <li>• Project on 'Astronomy Picture of the Day' (APOD)</li> <li>• Weekly Quizzes</li> </ul>
CLO2 : Synthesise multiple scientific perspectives to distinguish between scientific fact and pseudoscience.	<ul style="list-style-type: none"> <li>• Short Report</li> </ul>
CLO3 : Search appropriate literature to identify and explain supporting evidence for or against scientific claims.	<ul style="list-style-type: none"> <li>• Project on 'Astronomy Picture of the Day' (APOD)</li> <li>• Short Report</li> </ul>
CLO4 : Justify how, using experimental techniques (such as simple data analysis), astrophysical phenomena can be observed and used to demonstrate our understanding of the Universe.	<ul style="list-style-type: none"> <li>• Experiment</li> </ul>
CLO5 : Communicate concepts in astronomy accurately in written and verbal forms and at an appropriate level for general audiences.	<ul style="list-style-type: none"> <li>• Project on 'Astronomy Picture of the Day' (APOD)</li> </ul>

## Learning and Teaching Technologies

Moodle - Learning Management System

## Assessments

### Assessment Structure

Assessment Item	Weight	Relevant Dates
Experiment Assessment Format: Individual Short Extension: Yes (2 days)	25%	
Short Report Assessment Format: Individual Short Extension: Yes (2 days)	25%	
Project on 'Astronomy Picture of the Day' (APOD) Assessment Format: Individual Short Extension: Yes (2 days)	40%	
Weekly Quizzes Assessment Format: Individual	10%	

# **Assessment Details**

## **Experiment**

### **Assessment Overview**

You will be expected to choose an experiment to complete that tests your understanding and use of experimental techniques in astronomy. You will submit preliminary results (worth 5% of your course marks) earlier in the term for feedback through a marked rubric. In week 10, you will submit a video of your final results and answer a set of required questions provided on Moodle (worth 20% of your course marks). You will receive feedback in the form of a marked rubric within 2 weeks of submission.

### **Course Learning Outcomes**

- CLO1 : Describe key concepts in astronomy and astrobiology, including the formation of stars, planets, and galaxies; the history of life on Earth; and the beginning and ultimate fate of the Universe.
- CLO4 : Justify how, using experimental techniques (such as simple data analysis), astrophysical phenomena can be observed and used to demonstrate our understanding of the Universe.

## **Short Report**

### **Assessment Overview**

You will prepare a report on a task of your choice from a list provided, due mid-term. The stimuli may include questions to research and answer or pseudoscience scenarios to debunk. You will receive feedback within 2 weeks of submission via a marked rubric.

### **Course Learning Outcomes**

- CLO1 : Describe key concepts in astronomy and astrobiology, including the formation of stars, planets, and galaxies; the history of life on Earth; and the beginning and ultimate fate of the Universe.
- CLO2 : Synthesise multiple scientific perspectives to distinguish between scientific fact and pseudoscience.
- CLO3 : Search appropriate literature to identify and explain supporting evidence for or against scientific claims.

### **Assignment submission Turnitin type**

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

# **Project on 'Astronomy Picture of the Day' (APOD)**

## **Assessment Overview**

You will be expected to complete a project covering one option from multiple randomly assigned images broadly related to course content, written to a level to be comprehensible to the general public. In a standard 10-week term, you will receive your images in week 2 and submit a plan (worth 5%) for your project to Turnitin in week 5. You will receive feedback on your plan through a marked rubric in week 7. You will submit your final project (worth 35%) via Turnitin in week 9. Feedback will be provided through a marked rubric and written comments.

## **Course Learning Outcomes**

- CLO1 : Describe key concepts in astronomy and astrobiology, including the formation of stars, planets, and galaxies; the history of life on Earth; and the beginning and ultimate fate of the Universe.
- CLO3 : Search appropriate literature to identify and explain supporting evidence for or against scientific claims.
- CLO5 : Communicate concepts in astronomy accurately in written and verbal forms and at an appropriate level for general audiences.

## **Assignment submission Turnitin type**

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

# **Weekly Quizzes**

## **Assessment Overview**

In weeks 2-10 (except week 6), you will be expected to complete a timed weekly quiz (8 in total, worth 1.25% each) that tests your knowledge of concepts covered recently in the course. You will receive solutions when the quiz has closed.

## **Course Learning Outcomes**

- CLO1 : Describe key concepts in astronomy and astrobiology, including the formation of stars, planets, and galaxies; the history of life on Earth; and the beginning and ultimate fate of the Universe.

# **General Assessment Information**

## **Grading Basis**

Standard

# Course Schedule

Teaching Week/Module	Activity Type	Content
Week 1 : 27 May - 2 June	Topic	What is historical astronomy? What is modern astronomy? Lecture 1: What is astronomy?
Week 2 : 3 June - 9 June	Topic	How did the Universe begin? Lecture 2: What physics is important to astronomy? Lecture 3: What is cosmology?
	Assessment	Quiz 1
Week 3 : 10 June - 16 June	Topic	What are galaxies? Lecture 4: What are galaxies? Lecture 5: The Milky Way Galaxy
	Assessment	Quiz 2
Week 4 : 17 June - 23 June	Topic	What are stars? Lecture 6: What are stars?
	Assessment	Quiz 3 Short Report
Week 5 : 24 June - 30 June	Topic	What is the Solar system? Lecture 7: What is so special about the Sun? Lecture 8: What is the Solar system?
	Assessment	Quiz 4 APOD Assessment Plan
Week 6 : 1 July - 7 July	Topic	Additional Optional Lecture: Astronomy as a professional practice
Week 7 : 8 July - 14 July	Topic	Is there life in the Solar system? Lecture 9: What is the Earth? Lecture 10: What is life? Lecture 11: Is there life in the Solar system?
	Assessment	Quiz 5 Experiment: Preliminary Results
Week 8 : 15 July - 21 July	Topic	What is beyond the Solar system? Lecture 12: What is beyond the Solar system?
	Assessment	Quiz 6
Week 9 : 22 July - 28 July	Topic	Is there life in the Universe? Lecture 13: How do we find life on other worlds? Lecture 14: How else can we find life?
	Assessment	Quiz 7 APOD Assessment
Week 10 : 29 July - 4 August	Topic	How will it all end? Lecture 15: What are supernovae and stellar remnants? Lecture 16: What are gravitational waves? Lecture 17: How will the universe end?
	Assessment	Quiz 8 Experiment: Final Video

## Attendance Requirements

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

## Staff Details

Position	Name	Email	Location	Phone	Availability	Equitable Learning Services Contact	Primary Contact
Convenor	Sarah Brough					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](#).

## 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](#),
- The [ELISE training site](#), and
- The [Use of AI for assessments](#) 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](#)