



# ASTR1020

## Other Worlds: Planets and Planetary Systems

Session 2, Fully online/virtual 2020

*Department of Physics and Astronomy*

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#### Disclaimer

Macquarie University has taken all reasonable measures to ensure the information in this publication is accurate and up-to-date. However, the information may change or become out-dated as a result of change in University policies, procedures or rules. The University reserves the right to make changes to any information in this publication without notice. Users of this publication are advised to check the website version of this publication [or the relevant faculty or department] before acting on any information in this publication.

#### Notice

As part of [Phase 3 of our return to campus plan](#), most units will now run tutorials, seminars and other small group learning activities on campus for the second half-year, while keeping an online version available for those students unable to return or those who choose to continue their studies online.

To check the availability of face-to-face and online activities for your unit, please go to [timetable viewer](#). To check detailed information on unit assessments visit your unit's iLearn space or consult your unit convenor.

## General Information

Unit convenor and teaching staff

Unit convenor and lecturer

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Lecturer

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Credit points

10

Prerequisites

Corequisites

Co-badged status

Unit description

This unit explores our solar system and the newly found planetary systems around other suns. We begin by examining the processes that have shaped the marvellous variety of worlds within our own solar system, from the scorched and buckled surface of Mercury, to the geysers of frozen methane on Neptune's largest moon, Triton. From this we build an understanding of how our solar system formed and subsequently evolved to become the system that we inhabit today. We then turn our attention to the ongoing discovery of a startling variety of planets around other stars and the advanced observing techniques employed. These provide a new and challenging perspective on our place in the Universe that is modifying the scientific theories of how generic planetary systems are formed. The unit highlights breaking news as the unit proceeds. As part of this unit there is the opportunity to observe the planets with the telescopes of the Macquarie University Observatory.

## Important Academic Dates

Information about important academic dates including deadlines for withdrawing from units are available at <https://www.mq.edu.au/study/calendar-of-dates>

## Learning Outcomes

On successful completion of this unit, you will be able to:

**ULO1:** Explain how using the scientific method allows science advances through observation.

**ULO2:** Describe the content of our Solar System and how we have learned about it over time.

**ULO3:** Summarise what we know of planets around stars other than the Sun.

**ULO4:** Describe how we think our Solar System was born.

**ULO5:** Identify the physical processes that are in action on Earth and in our Solar System.

**ULO6:** Compare and contrast the planets in our Solar System and describe how these differences/similarities inform about the origin of our Solar System.

**ULO7:** Explain how extra-solar planets give us a new view of our own Solar System.

## General Assessment Information

Unless otherwise advised, all assessment tasks are to be submitted via iLearn **before 11pm** on the appropriate due date. Please note that due dates may have to be adjusted to account for circumstances beyond the control of the University; however, whenever possible those changes will be made in such a way as to minimise any disadvantage to students.

For all queries please e-mail [astr1020@mq.edu.au](mailto:astr1020@mq.edu.au)

## Assessment Tasks

Name	Weighting	Hurdle	Due
<a href="#">Final Exam</a>	50%	No	University Examination Period
<a href="#">Moon observation project</a>	20%	No	Week 7 (observations 19/08 - 02/09)
<a href="#">Online quizzes</a>	30%	No	Week 4, Week 9 and Week 12

### Final Exam

Assessment Type <sup>1</sup>: Examination

Indicative Time on Task <sup>2</sup>: 20 hours

Due: **University Examination Period**

Weighting: **50%**

An examination during the University Examination period, covering all the content from the unit.

On successful completion you will be able to:

- Explain how using the scientific method allows science advances through observation.
- Describe the content of our Solar System and how we have learned about it over time.
- Summarise what we know of planets around stars other than the Sun.
- Describe how we think our Solar System was born.
- Identify the physical processes that are in action on Earth and in our Solar System.
- Compare and contrast the planets in our Solar System and describe how these differences/similarities inform about the origin of our Solar System.
- Explain how extra-solar planets give us a new view of our own Solar System.

## Moon observation project

Assessment Type <sup>1</sup>: Project

Indicative Time on Task <sup>2</sup>: 25 hours

Due: **Week 7 (observations 19/08 - 02/09)**

Weighting: **20%**

A short project based on observations of the moon, with marks based on submission of observations and answers to a multiple choice quiz

On successful completion you will be able to:

- Describe the content of our Solar System and how we have learned about it over time.

## Online quizzes

Assessment Type <sup>1</sup>: Quiz/Test

Indicative Time on Task <sup>2</sup>: 20 hours

Due: **Week 4, Week 9 and Week 12**

Weighting: **30%**

A sequence of multiple choice and short-answer online tests, spread through the session.

On successful completion you will be able to:

- Explain how using the scientific method allows science advances through observation.
- Describe the content of our Solar System and how we have learned about it over time.
- Summarise what we know of planets around stars other than the Sun.
- Describe how we think our Solar System was born.
- Identify the physical processes that are in action on Earth and in our Solar System.

- Compare and contrast the planets in our Solar System and describe how these differences/similarities inform about the origin of our Solar System.
  - Explain how extra-solar planets give us a new view of our own Solar System.
- 

<sup>1</sup> If you need help with your assignment, please contact:

- the academic teaching staff in your unit for guidance in understanding or completing this type of assessment
- the [Writing Centre](#) for academic skills support.

<sup>2</sup> Indicative time-on-task is an estimate of the time required for completion of the assessment task and is subject to individual variation

## Delivery and Resources

### Lectures vs External mode

This unit is offered in S2, in Special Circumstance and Fully Online / Virtual modes. The lectures will be recorded and available online along with the slides and there will be other supporting material, including an online discussion forum.

### Lecture Times

The nominal lecture times are:

Lecture 1: Tuesday, 12 PM - 1 PM

Lecture 2: Wednesday, 2 PM - 3 PM

Lecture 3: Thursday, 1 PM - 2 PM

We will make every effort to have these lectures available online by the listed times. However, as the lectures will be recorded, you may watch them at your convenience. We do strongly recommend setting aside regular times to watch the lectures each week, so that you do not fall behind with the material; watching 12 hours of lectures in one sitting is not advised!

### Required and Recommended Texts and/or Materials

*Required Text:* Universe: The Solar System, Freedman and Kaufmann (5th Ed) **OR** Universe, Freedman, Geller and Kaufmann (10th Ed). The "Solar System" edition contains all the needed chapters, but you can also get the full textbook if you like. Recent editions of either book are suitable.

A list of recommended readings and web links will be provided as needed, and there is a wealth of supporting material available on the internet.

### Technology Used and Required

Extensive use will be made of iLearn, both to deliver content and assessment materials, as well as to collect assessment. Students will therefore need computer / smart device and internet access.

## Teaching and Learning Strategy

This unit is taught through online lectures, online assignments and online forums, and through undertaking one (at home / off-campus) field experiment. Questions on the forums or during chat rooms with moderators are strongly encouraged in this unit. You should aim to read the relevant sections of the textbook before and after lectures and discuss the content with classmates.

You may wish to discuss your essays and other assessment with other students, but you are required to hand in your own work (see the note on plagiarism below). Several assignments are provided as one of the key learning activities for this unit - they are not there just for assessment. It is by applying knowledge learned from lectures and textbooks to solve problems that you are best able to test and develop your skills and understanding of the material.

Lectures will be presented as voice narration with slides, with PDF copies of the slides made available through iLearn. Lectures will be recorded and magically appear on the iLearn system.

## Unit Schedule

### Lectures

Week	Lecturer	Topics	Chapters*
Week 1	Dan	Introduction, orienting yourself in the night sky	1, 2
Week 2	Matt	The Sun, the Moon and the planets: overview, the early observers and the Scientific Method	3, 4
Week 3	Matt	The Earth and the Moon	7, 9, 10
Week 4	Dan	Terrestrial planets: Mercury, Venus and Mars	11
Week 5	Dan	Terrestrial planets 2	11
Week 6	Dan	Moons	13, 14.6-14.10
Week 7	Matt	Gas giants	12.1-12.11
		Mid-Semester Break	
Week 8	Matt	Gas giants, dwarf planets	14.1-14.5, 14.9, 14.10
Week 9	Dan	Meteorites, asteroids, comets	15
Week 10	Dan	Extrasolar planets	4, 5, 6 as needed, 8.7
Week 11	Dan	Extrasolar planets 2 / Formation of the Solar System	4, 5, 6 as needed, 8.7, 18*, 8.1-8.6
Week 12	Dan / Matt	Formation of the solar system / Life in the Universe	18*, 8.1-8.6, 27
Week 13	Matt / Dan	Revision	

Note that this schedule may be subject to change. Chapters refer to those in either of the recommended books. The small amount of material in Chapter 18 (not in the "Solar System" book) will have equivalent iLearn readings.

## Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central](https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central) (<https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central>). Students should be aware of the following policies in particular with regard to Learning and Teaching:

- [Academic Appeals Policy](#)
- [Academic Integrity Policy](#)
- [Academic Progression Policy](#)
- [Assessment Policy](#)
- [Fitness to Practice Procedure](#)
- [Grade Appeal Policy](#)
- [Complaint Management Procedure for Students and Members of the Public](#)
- [Special Consideration Policy](#) (**Note:** *The Special Consideration Policy is effective from 4 December 2017 and replaces the Disruption to Studies Policy.*)

Students seeking more policy resources can visit the [Student Policy Gateway](https://students.mq.edu.au/support/study/student-policy-gateway) (<https://students.mq.edu.au/support/study/student-policy-gateway>). It is your one-stop-shop for the key policies you need to know about throughout your undergraduate student journey.

If you would like to see all the policies relevant to Learning and Teaching visit [Policy Central](https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central) (<https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central>).

## Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: <https://students.mq.edu.au/study/getting-started/student-conduct>

## Results

Results published on platform other than [eStudent](#), (eg. iLearn, Coursera etc.) or released directly by your Unit Convenor, are not confirmed as they are subject to final approval by the University. Once approved, final results will be sent to your student email address and will be made available in [eStudent](#). For more information visit [ask.mq.edu.au](https://ask.mq.edu.au) or if you are a Global MBA student contact [globalmba.support@mq.edu.au](mailto:globalmba.support@mq.edu.au)

## Student Support

Macquarie University provides a range of support services for students. For details, visit <http://students.mq.edu.au/support/>

## Learning Skills

Learning Skills ([mq.edu.au/learningskills](http://mq.edu.au/learningskills)) provides academic writing resources and study strategies to help you improve your marks and take control of your study.

- [Getting help with your assignment](#)
- [Workshops](#)
- [StudyWise](#)
- [Academic Integrity Module](#)

The Library provides online and face to face support to help you find and use relevant information resources.

- [Subject and Research Guides](#)
- [Ask a Librarian](#)

## Student Services and Support

Students with a disability are encouraged to contact the [Disability Service](#) who can provide appropriate help with any issues that arise during their studies.

## Student Enquiries

For all student enquiries, visit Student Connect at [ask.mq.edu.au](http://ask.mq.edu.au)

If you are a Global MBA student contact [globalmba.support@mq.edu.au](mailto:globalmba.support@mq.edu.au)

## IT Help

For help with University computer systems and technology, visit [http://www.mq.edu.au/about\\_us/offices\\_and\\_units/information\\_technology/help/](http://www.mq.edu.au/about_us/offices_and_units/information_technology/help/).

When using the University's IT, you must adhere to the [Acceptable Use of IT Resources Policy](#). The policy applies to all who connect to the MQ network including students.

## Changes from Previous Offering

All lectures for the unit will be entirely online.

## Changes since First Published

Date	Description
23/07/2020	Updated nominal lecture times.