



ASTR2020

Observational Astronomy

Session 2, In person-scheduled-weekday, North Ryde 2023

School of Mathematical and Physical Sciences

Contents

| | |
|---|---|
| <u>General Information</u> | 2 |
| <u>Learning Outcomes</u> | 2 |
| <u>General Assessment Information</u> | 3 |
| <u>Assessment Tasks</u> | 4 |
| <u>Delivery and Resources</u> | 5 |
| <u>Unit Schedule</u> | 6 |
| <u>Policies and Procedures</u> | 6 |
| <u>Changes from Previous Offering</u> | 8 |
| <u>Changes since First Published</u> | 8 |

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General Information

Unit convenor and teaching staff

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Credit points

10

Prerequisites

PHYS201 or PHYS2010

Corequisites

Co-badged status

Unit description

This unit delivers key elements of Astronomy and Astrophysics with an observational focus. Lectures, are designed to deliver and discuss content, while labs and workshops consolidate the concepts learned in class and provide students with the tools needed to design and execute an open-ended observational project later in the degree. Topics on observational astronomy (e.g. galaxies, stars, exoplanets) are covered alongside data and instrumentation requirements (the working of a telescope, and its instrumentation). Python programming for image processing and analysis of large datasets are introduced and developed in the labs.

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: describe, discuss and connect key topics of modern Astronomy and Astrophysics. They will be able to understand the relationship between advances in research in these areas and the underlying tools and techniques.

ULO2: demonstrate an understanding of a range of instrumentation topics and how they are connect to astronomical discoveries.

ULO3: Apply python computer programming to solve laboratory problems

ULO4: Critically discuss astronomical topics in small teams to come up with effective solutions to problems.

General Assessment Information

Assignments

Four assignments are worth 30% of the unit's total grade. The first one will assess the first three weeks of content. It will be posted on Monday in Week 3 and due on Sunday night in Week 3. The second assignment will test content from Weeks 4-7. It will be posted on Monday in Week 7 and it will be due on on Sunday at the end of the semester break. The Third assignment will assess content from Weeks 8 and 9, it will be posted on Monday in Week 9 and it will be due on Sunday night in Week 9. The final assignment will test content from Weeks 10-12. It will be posted on Monday in Week 12 and due on Sunday night in Weeks 12. The assignments will not be weighted equally as they test variable amounts of content. The first and last assignments will be worth 7% of the total unit's grade, the second will be worth 11% and the third will be worth 5%.

Lab reports

Lab sessions run from Week 1 to Week 13. In Week 1 we will just setup your workspaces. There are four "experiments" (these are conducted in the computer laboratory), each of the duration of 3 weeks. Together they are worth 30% of the unit's grade and they are all equally weighted. Each "experiment" will have an examined report due on the Sunday night after the last lab session. This means that reports will be due on Sunday night in Weeks 4, 7, 10, 13.

Exam

A final exam will test all content delivered in the unit. This will take place in the Macquarie examination period. The final exam is worth 40% of the unit's grade. The exam is a hurdle which means that a minimum score of 40% is necessary to pass the unit. If a person gets a grade in the exam between 30 and 39% a hurdle resit is possible. However the score in the hurdle resit exam can only be as high as 40%.

To pass the unit

You will need a final overall mark of 50% or above in order to pass the unit, once all your marks have been weighted and added together. The final exam is a hurdle, which means a minimum of 40% must be obtained to pass the unit. If a grade between 30 and 39% is achieved the student is given a second chance to pass the hurdle: this is a supplementary exam where the maximum score is 40%.

Late submission

Late submission (assignments and Lab reports) are penalised at 5% of that assignment or lab report total grade, per day. There is no late submission past one week from the submission deadline. Special considerations submitted through the normal channels will be considered.

Assessment Tasks

| Name | Weighting | Hurdle | Due |
|--------------------|-----------|--------|-------------------------------------|
| <u>Assignments</u> | 30% | No | 13/8/23,24/9/23,8/10/23, 29/10/23 |
| <u>Lab reports</u> | 30% | No | 20/8/23; 10/9/23; 15/10/23; 5/11/23 |
| <u>Final exam</u> | 40% | Yes | University examination period |

Assignments

Assessment Type ¹: Problem set

Indicative Time on Task ²: 16 hours

Due: **13/8/23,24/9/23,8/10/23, 29/10/23**

Weighting: **30%**

A set of assignments related to the lecture and lab content.

On successful completion you will be able to:

- describe, discuss and connect key topics of modern Astronomy and Astrophysics. They will be able to understand the relationship between advances in research in these areas and the underlying tools and techniques.
- demonstrate an understanding of a range of instrumentation topics and how they are connect to astronomical discoveries.
- Critically discuss astronomical topics in small teams to come up with effective solutions to problems.

Lab reports

Assessment Type ¹: Lab report

Indicative Time on Task ²: 16 hours

Due: **20/8/23; 10/9/23; 15/10/23; 5/11/23**

Weighting: **30%**

Reports from laboratory experiments.

On successful completion you will be able to:

- describe, discuss and connect key topics of modern Astronomy and Astrophysics. They will be able to understand the relationship between advances in research in these areas and the underlying tools and techniques.
- demonstrate an understanding of a range of instrumentation topics and how they are connect to astronomical discoveries.
- Apply python computer programming to solve laboratory problems

Final exam

Assessment Type ¹: Examination

Indicative Time on Task ²: 40 hours

Due: **University examination period**

Weighting: **40%**

This is a hurdle assessment task (see [assessment policy](#) for more information on hurdle assessment tasks)

Exam on the lecture and lab content.

On successful completion you will be able to:

- describe, discuss and connect key topics of modern Astronomy and Astrophysics. They will be able to understand the relationship between advances in research in these areas and the underlying tools and techniques.
- demonstrate an understanding of a range of instrumentation topics and how they are connect to astronomical discoveries.

¹ 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.

² 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

There are two hours of lectures per week, on Monday at 11A-1P. These will be delivered live. It is important that students attend all lectures. However, all lectures are recorded.

Lab

There is a 3-hour lab on Mondays at 2pm. This lab will be executed in the computer lab. It is critical that all students come to all labs. Labs start in Week 1 and finish in Week 13. The first week is mostly used to setup your workspaces. During these sessions we will conduct 4 individual lab "experiments".

SGTA

There is one hour of workshop per week on Wednesdays at 3PM. This is designed to solve problems in a group settings, discussing the solutions in class. These classes are not recorded.

Unit Schedule

- Monday 11-1P Lecture 1CC 217
- Monday 2-5P Lab PC Lab 14 Sir Christopher Ondaatje 209
- Wednesday 3-4P workshop 14 Sir Christopher Ondaatje 209

Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central \(https://policies.mq.edu.au\)](https://policies.mq.edu.au). 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](#)
- [Assessment Procedure](#)
- [Complaints Resolution Procedure for Students and Members of the Public](#)
- [Special Consideration Policy](#)

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

To find other policies relating to Teaching and Learning, visit [Policy Central \(https://policies.mq.edu.au\)](https://policies.mq.edu.au) and use the [search tool](#).

Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: <https://students.mq.edu.au/admin/other-resources/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 or if you are a Global MBA student contact globalmba.support@mq.edu.au

Academic Integrity

At Macquarie, we believe [academic integrity](#) – honesty, respect, trust, responsibility, fairness and courage – is at the core of learning, teaching and research. We recognise that meeting the expectations required to complete your assessments can be challenging. So, we offer you a range of resources and services to help you reach your potential, including free [online writing and maths support](#), [academic skills development](#) and [wellbeing consultations](#).

Student Support

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

The Writing Centre

[The Writing Centre](#) provides resources to develop your English language proficiency, academic writing, and communication skills.

- [Workshops](#)
- [Chat with a WriteWISE peer writing leader](#)
- [Access StudyWISE](#)
- [Upload an assignment to Studiosity](#)
- [Complete the 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

Macquarie University offers a range of [Student Support Services](#) including:

- [IT Support](#)
- [Accessibility and disability support](#) with study
- Mental health [support](#)
- [Safety support](#) to respond to bullying, harassment, sexual harassment and sexual assault

- [Social support including information about finances, tenancy and legal issues](#)
- [Student Advocacy](#) provides independent advice on MQ policies, procedures, and processes

Student Enquiries

Got a question? Ask us via [AskMQ](#), or contact [Service Connect](#).

IT Help

For help with University computer systems and technology, visit 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

The 2023 cohort have likely never seen any university level Astrophysics because they have taken no first year Astrophysics units. This unit was therefore completely redeveloped to be a general Astrophysics unit with broad content delivered over 26 hours of lectures. The 13 weeks of laboratory contain 4 experiments which help the students consolidate the content. There are also 13 practicals to learn to do problems.

Changes since First Published

| Date | Description |
|------------|--|
| 25/09/2023 | Replace tutorials with workshop/practicals |
| 19/07/2023 | Fixed the SGTA time ... |
| 19/07/2023 | Managed to update |