ASTR2020

Observational Astronomy

Session 2, In person-scheduled-weekday, North Ryde 2024

School of Mathematical and Physical Sciences

Contents

General Information

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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

Requirement to pass the unit is a total mark equal to or greater than 50%.

Assignments: 4 assignments posted at regular intervals and due approximately a week later test content (see due dates above).

Lab reports: 4 reports are due one week after the end of the respective lab (each lab lasts 3 weeks). The reports are not formal and just follow in a question and answer style guided by the lab script.

All assignments are due at 11:55 of the deadline date. An hour grace is applied for technical difficulties. A penalty of 5% of the total assignment or lab report score is applied for each day that the assignment or lab report is late up to 7 days (including weekends). A score of 0 will be applied after the 7th day.

The **final exam** is divided into two parts each covering half of the course. Each part has 3 questions which comprise a mix of short and long answers.

The final exam is a hurdle, which means that students need to get a minimum of 40% to pass the unit. This is because a score lower than 40% in the final exam demonstrates that the student has not absorbed sufficient material to pass the unit.

If a student fails the final exam hurdle, but gets a score between 30% and 39%, then they are granted a second chance to pass the hurdle by taking a "hurdle resit" supplementary exam. The maximum score allowed in the hurdle resit is 40%, so the hurdle resit is only granted to those student who, by getting 40% in the exam, can pass the unit (i.e., obtain a score greater than 50% in the unit as a whole).

If a student falls ill or has other unforseen circumstances that cause delays or the inability to sit the final exam, they can apply for special consideration by placing a request at ask.mq.edu.au.

Assessment Tasks

Name	Weighting	Hurdle	Due
Final exam	40%	Yes	MQ examination period

Name	Weighting	Hurdle	Due
Lab reports	30%	No	18/8, 8/9, 13/10, 3/11
Assignments	30%	No	11/8, 8/9, 6/10, 27/10

Final exam

Assessment Type [1]: Examination
Indicative Time on Task [2]: 40 hours
Due: **MQ 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.

Lab reports

Assessment Type [1]: Lab report
Indicative Time on Task [2]: 16 hours
Due: **18/8, 8/9, 13/10, 3/11**
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

Assignments

Assessment Type [1]: Problem set
Indicative Time on Task [2]: 16 hours
Due: **11/8, 8/9, 6/10, 27/10**
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.

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[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

The course consists of 13 weeks with 2 hours of lecturing each week (but consider that in 2024, Week 10 will be cut short by a public holiday so that we will lose 2 hous of lecture and one, 3-hour lab).

There is also a one hour SGTA (problem solving exercises) every week and a 3-hour lab every week.

The lab is in the computer lab and consists of a mix of activities pertaining data procurement and data handling.

Unit Schedule

Week 1: overall introduction.

Week 2: Telescopes

Week 3: Description of radiation

Week 4: Interstellar medium and star formation

Week 5: Stars

Week 6: Planet formation

Week 8: The Solar System

Week 9: Exoplanet

Week 10: Public holidays (2024)

Week 11: Our Galaxy

Week 12: Other galaxies

Week 13: cosmology

Policies and Procedures

Macquarie University policies and procedures are accessible from Policy Central (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). 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) 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

COVID Information

For the latest information on the University's response to COVID-19, please refer to the Coronavirus infection page on the Macquarie website: https://www.mq.edu.au/about/coronavirus-faqs.

Remember to check this page regularly in case the information and requirements change during semester. If there are any changes to this unit in relation to COVID, these will be communicated via iLearn.

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

No major changes were made in this offering compared to the previous one. Week 10 material will have to be delivered as part of the other weeks because of the public holiday. As a result the amount of content will be overall reduced in the second part of the unit. We take student's feedback very seriously and we have therefore carefully evalulated the LET and LEU responses of the 2023 class. The feedback was overall very positive, even if a couple of people felt that there was somewhat too much material. An evaluation of the material in the unit, however shows that this class is very comparable to similar level classes in other universities, if not somewhat lighter. We have therefore not carried out any major cuts or changes.

Communication

Communication and organisation will be as follows:

All material will be posted on the unit's iLearn space. All grades will be also posted on the gradebook section of iLearn where each student will be able to monitor thier progress. All official announcemnets will be done via iLearn.

All students will also be added to a custum Slack channel where they can communicate with one another and with the lecturers. The iLearn Forum is not suitable for this unit and will not be monitored.

Students can also communicate with the lecturers using the course e-mail: ASTR2020@mq.edu.au.

Unit information based on version 2024.01R of the Handbook