PHYS1510

Engineering Physics

Session 1, Special circumstances, North Ryde 2021

Archive (Pre-2022) - Department of Physics and Astronomy

Contents

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 activities on campus, and most will keep an online version available to those students unable to return or those who choose to continue their studies online.

To check the availability of face-to-face 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
Lecturer and unit convener
Judith Dawes
judith.dawes@mq.edu.au
Contact via email

Lecturer and unit convener
Alex Fuerbach
alex.fuerbach@mq.edu.au
Contact via email

First year lab director
Helen Pask
helen.pask@mq.edu.au

Lab manager
Danny Cochran
danny.cochran@mq.edu.au

Lab officer
James Wood
james.b.wood@mq.edu.au

Technical Manager
Bianca Sawyer
bianca.sawyer@mq.edu.au

Tutor
Gavin Brennen
gavin.brennen@mq.edu.au

Tutor
Lee Spitler
lee.spitler@mq.edu.au

Tutor
Joanne Dawson
joanne.dawson@mq.edu.au

Director of Teaching & Learning
David Spence
david.spence@mq.edu.au

Credit points 10
Prerequisites (HSC Advanced Mathematics Band 4 and above or Extension 1 Band E2 and above or Extension 2) or MATH1000 or MATH130 or WFMA003 or WFMA0003
Corequisites
Co-badged status
Unit description The design and development of new technologies is governed and constrained by the fundamental laws of nature, as described by the principles and practice of physics. The topics studied in this unit are illustrated with everyday examples to provide an overview of physics for students studying engineering disciplines. Laboratory sessions enable physics concepts to be explored in a practical way, and build skills in experimentation, measurement, data collection and analysis.

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 foundational physics concepts in terms of their underlying physical principles and describe them in terms of concise mathematical models.

ULO2: analyse a real-world problem, break the problem into component parts relating to different areas of physics, identify known quantities and apply mathematical models to arrive at a numerical value for an unknown quantity, and interpret how the numerical results relate to the physical world.

ULO3: perform physical measurements, record experimental data, display data graphically, analyse data, and draw written conclusions in a clear, concise, and systematic manner.

ULO4: identify, record and explain sources of uncertainty in physical measurements; and undertake appropriate uncertainty analysis of results, including statistical analysis.

ULO5: demonstrate foundational learning skills including active engagement in your learning process.

ULO6: work collaboratively with peers.

General Assessment Information

Laboratory work See the lab schedule on iLearn for dates Weighting: 25%

Satisfactory completion of laboratories is a **hurdle requirement.** You **must** attend **all ten** laboratory sessions. The **first lab session is in week 1** and includes work health and safety information. Students may also be assigned to lab groups, lab books will be handed out, and computer access will be checked. It needs to be attended by all students regardless of whether this is their first Physics unit or not. It will be a little bit shorter than the other sessions, but attendance is absolutely mandatory – you can't do subsequent lab sessions if you don't attend the introductory one. The **next 9 lab sessions** involve experimental work and will be assessed. **You must obtain a mark of at least 40% for each of the laboratory sessions in order to pass the unit.**

Preparation is required for each of the lab sessions 2-10. You will find the **Prelab activities** in the Laboratory Resources section of iLearn. Your prelab work will account for some of the marks for each laboratory session.

If you miss a session or fail to achieve at least 40% for any lab session, you must complete a **"Request to schedule a Catch-up laboratory session"** form, which can be found on iLearn. See iLearn for full details about catch up classes and when they are scheduled. **No more than 3 catch ups are allowed for missed labs/lab hurdles**, except where Special Consideration has been approved. If you fail to attend the catch-up class you are booked into, then that will count as another missed lab.

Quizzes Weighting: 25%

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

Short quizzes associated with weekly SGTAs. You must complete at least 8 weekly Quizzes offered during the semester. We will include the best 10 marks from the 12 weekly quizzes.

Mid Semester Exam Weighting 10%

This will be held during SGTAs in week 7. It will cover material from weeks 1-6 of semester. It is not a hurdle assessment.

Final examination Weighting: 40%

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

The final examination is a hurdle requirement. You must obtain a mark of at least 40% in the final

exam to be eligible to pass the unit. If your mark in the final examination is between 30% and 39% inclusive, you may be a given a second and final chance to attain the required level of performance; the mark awarded for the second exam towards your final unit mark will be capped at 40%, and you will be allowed to sit the second exam only if this mark would be sufficient to pass the unit overall.

Examination in the university exam period, covering all the content from the unit.

Assessment Tasks

Name	Weighting	Hurdle	Due
Lab book	25%	Yes	weekly during lab sessions
Quizzes	25%	Yes	weekly during SGTA classes
Midsession exam	10%	No	week 7 during SGTA classes
Final examination	40%	Yes	Examination period

Lab book

Assessment Type [1]: Lab book
Indicative Time on Task [2]: 10 hours
Due: **weekly during lab sessions**
Weighting: **25%**
This is a hurdle assessment task (see assessment policy for more information on hurdle assessment tasks)

Assessment of in-lab record of experimental activities, including any pre-lab work.

On successful completion you will be able to:

- perform physical measurements, record experimental data, display data graphically, analyse data, and draw written conclusions in a clear, concise, and systematic manner.
- identify, record and explain sources of uncertainty in physical measurements; and undertake appropriate uncertainty analysis of results, including statistical analysis.
- work collaboratively with peers.

Quizzes

Assessment Type [1]: Quiz/Test
Indicative Time on Task [2]: 0 hours
Due: **weekly during SGTA classes**

Weighting: **25%**
This is a hurdle assessment task (see assessment policy for more information on hurdle assessment tasks)

Short quizzes taken during the weekly SGTAs.

On successful completion you will be able to:

- explain foundational physics concepts in terms of their underlying physical principles and describe them in terms of concise mathematical models.
- analyse a real-world problem, break the problem into component parts relating to different areas of physics, identify known quantities and apply mathematical models to arrive at a numerical value for an unknown quantity, and interpret how the numerical results relate to the physical world.
- perform physical measurements, record experimental data, display data graphically, analyse data, and draw written conclusions in a clear, concise, and systematic manner.
- demonstrate foundational learning skills including active engagement in your learning process.

Midsession exam

Assessment Type [1]: Quiz/Test
Indicative Time on Task [2]: 10 hours
Due: **week 7 during SGTA classes**
Weighting: **10%**

Short exam on the content from the first half of the unit, taken during an SGTA session.

On successful completion you will be able to:

- explain foundational physics concepts in terms of their underlying physical principles and describe them in terms of concise mathematical models.
- analyse a real-world problem, break the problem into component parts relating to different areas of physics, identify known quantities and apply mathematical models to arrive at a numerical value for an unknown quantity, and interpret how the numerical results relate to the physical world.

Final examination

Assessment Type [1]: Examination
Indicative Time on Task [2]: 20 hours
Due: **Examination period**
Weighting: **40%**
This is a hurdle assessment task (see assessment policy for more information on hurdle assessment tasks)

Examination in the university exam period, covering all the content from the unit.

On successful completion you will be able to:

- explain foundational physics concepts in terms of their underlying physical principles and describe them in terms of concise mathematical models.
- analyse a real-world problem, break the problem into component parts relating to different areas of physics, identify known quantities and apply mathematical models to arrive at a numerical value for an unknown quantity, and interpret how the numerical results relate to the physical world.

---

[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

We will offer laboratories and SGTAs in person, with related assessments marked regularly. Problem-solving is a key skill to develop in this subject, supported by lecture content, textbook readings, and examples of worked solutions to tutorial questions. This will be assessed through regular quizzes, mid semester and final examination.

Laboratory Sessions

The laboratory component is an essential component of your studies and it contributes an appreciable fraction of your final assessment. You will be introduced to some of the basic skills and techniques required of practising physicists, scientists and engineers. **You will be issued with a Laboratory Notebook,** provided with instructional material in the form

of **Laboratory Notes** which can be found in the Laboratory Resources section of iLearn, and assisted in the laboratory by a team of demonstrators. For each laboratory session, except in week 1, you are required to complete some preparatory work (**Pre-Lab**) before attending your nominated Lab session. To figure out which Prelab to do, please consult the **Laboratory Schedule** on iLearn.

Location: There are two laboratories used for 1st year physics they are both in **14 SCO (formerly E7B):**

Room 114 (Ground floor at the North-East corner of building)

Room 254 (First floor, north-facing side of the atrium)

Please check your timetable to see where your lab class will take place.

Problem-solving classes

SGTAs will be held every week, with assigned problems posted online. Please check your timetable to see where and when your class will be held. Students will work on solving the problems in the class and tutors will be available to advise.

Quizzes will be assigned each week, and marks recorded.

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
- Grade Appeal Policy
- Complaint Management 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

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) 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

If you are a Global MBA student contact 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/.

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

We will offer quizzes during SGTAs, and we will include a mid semester exam instead of

assignments.