UNSW Course Outline

PHYS1231 Higher Physics 1B - 2024

Published on the 25 Aug 2024

General Course Information

Course Code : PHYS1231
Year : 2024
Term : Term 3
Teaching Period : T3
Is a multi-term course? : No
Faculty : Faculty of Science
Academic Unit : School of Physics
Delivery Mode : In Person
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

This is the second of the two introductory courses in Physics. The course is examined at two levels, with Higher Physics 1B being the higher of the two levels. The teaching activities in the course are lectures (students can choose between online asynchronous and face-to-face), labs

and problem-solving workshops. The course covers electromagnetism: electrostatics, Gauss's law, electric potential, capacitance and dielectrics, magnetic fields and magnetism, Ampere's law, the Biot-Savart law, Faraday's law, induction and inductance; as well as Physical Optics: light, interference, diffraction, gratings and spectra, polarization; and Introductory quantum theory.

Course Aims

This course gives an introduction to electromagnetism, optics and modern physics, and to the techniques of analysis and problem solving in the physical world. With its companion subject (Physics 1A, Higher Physics 1A or (Special) Higher Physics 1A), this constitutes a broad introduction to physics. This background supports higher level study in physics and engineering.

Course Learning Outcomes

Course Learning Outcomes
CLO1 : Safely conduct experiments in a modern physics laboratory and analyse the results, including reliable estimates of the uncertainties in the measurements.
CLO2 : Apply critical thinking skills in a range of advanced conceptual physical situations.
CLO3 : Use appropriate mathematical techniques, including calculus, to solve problems involving electromagnetism, optics and introductory quantum mechanics.
CLO4 : Draw and interpret graphs and diagrams to describe physical phenomena.
CLO5 : Model the behaviour of non-uniform objects using appropriate mathematical techniques.

Course Learning Outcomes	Assessment Item
CLO1 : Safely conduct experiments in a modern physics laboratory and analyse the results, including reliable estimates of the uncertainties in the measurements.	• Laboratories
CLO2 : Apply critical thinking skills in a range of advanced conceptual physical situations.	• Test 1 • Test 2
CLO3 : Use appropriate mathematical techniques, including calculus, to solve problems involving electromagnetism, optics and introductory quantum mechanics.	• Test 1 • Test 2
CLO4 : Draw and interpret graphs and diagrams to describe physical phenomena.	• Laboratories • Test 1 • Test 2
CLO5 : Model the behaviour of non-uniform objects using appropriate mathematical techniques.	• Test 1 • Test 2

Learning and Teaching Technologies

Moodle - Learning Management System

Assessments

Assessment Structure

Assessment Item	Weight	Relevant Dates
Laboratories Assessment Format: Individual	30%	Start Date: Not Applicable Due Date: Not Applicable
Test 1 Assessment Format: Individual	35%	Start Date: Weeks 3 and 5 Due Date: Week 3 and 5
Test 2 Assessment Format: Individual	35%	Start Date: Weeks 8 and 10 Due Date: Weeks 8 and 10

Assessment Details

Laboratories

Assessment Overview

You will attend lab each week and complete a laboratory exercise related to the course content. You should ensure you come to lab prepared, complete the online prelab exercise, and then work with a partner to complete the exercise. Demonstrators are there to help you.

You will complete 8 labs over the term.You need to complete the prelab to pass the lab. The feedback for the prelab online exercise is immediate, while the lab exercises are marked during class.

Course Learning Outcomes

- CLO1 : Safely conduct experiments in a modern physics laboratory and analyse the results, including reliable estimates of the uncertainties in the measurements.
- CLO4 : Draw and interpret graphs and diagrams to describe physical phenomena.

Assignment submission Turnitin type

Not Applicable

Generative AI Permission Level

No Assistance

This assessment is designed for you to complete without the use of any generative AI. You are not permitted to use any generative AI tools, software or service to search for or generate information or answers.

For more information on Generative AI and permitted use please see here.

Test 1

Assessment Overview

Test 1 assesses your knowledge of the first half (weeks 1-4) of the course.

In week 3, you will answer 4 questions on content from weeks 1-2 of the course, and in week 5, you will answer 4 questions from weeks 3-4 of the course. Each test (of which there are two in total assessing the first half) takes 40 minutes and will be invigilated.

You will have access to the bank of questions the test questions are pulled from to practice for these tests. Feedback is provided in the practice tests for incorrect answers.

Course Learning Outcomes

- CLO2 : Apply critical thinking skills in a range of advanced conceptual physical situations.
- CLO3 : Use appropriate mathematical techniques, including calculus, to solve problems involving electromagnetism, optics and introductory quantum mechanics.
- CLO4 : Draw and interpret graphs and diagrams to describe physical phenomena.
- CLO5 : Model the behaviour of non-uniform objects using appropriate mathematical techniques.

Assignment submission Turnitin type

Not Applicable

Generative AI Permission Level

No Assistance

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Test 2

Assessment Overview

Test 2 assesses your knowledge of the second half (weeks 5, 7-9) of the course.

In week 8, you will answer 4 questions on content from weeks 5 and 7 of the course, and in week 10, you will answer 4 questions from weeks 8-9 of the course. Each test (of which there are two in total assessing the second half) takes 40 minutes and will be invigilated.

You will have access to the bank of questions the test questions are pulled from to practice for these tests. Feedback is provided in the practice tests for incorrect answers.

Course Learning Outcomes

- CLO2 : Apply critical thinking skills in a range of advanced conceptual physical situations.
- CLO3 : Use appropriate mathematical techniques, including calculus, to solve problems involving electromagnetism, optics and introductory quantum mechanics.
- CLO4 : Draw and interpret graphs and diagrams to describe physical phenomena.
- CLO5 : Model the behaviour of non-uniform objects using appropriate mathematical techniques.

Assignment submission Turnitin type

Not Applicable

Generative AI Permission Level

No Assistance

This assessment is designed for you to complete without the use of any generative AI. You are not permitted to use any generative AI tools, software or service to search for or generate information or answers.
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General Assessment Information

Grading Basis

Standard

Requirements to pass course

You must score 50 or above to pass the course.

Course Schedule

Teaching Week/Module	Activity Type	Content
Week 1 : 9 September - 15 September	Lecture	2 x 2 hour lectures
Week 2 : 16 September - 22 September	Lecture	2 x 2 hour lectures
	Workshop	2 hour problem solving workshop
	Laboratory	2 hour laboratory
Week 3 : 23 September - 29 September	Lecture	2 x 2 hour lectures
	Laboratory	2 hour laboratory
	Assessment	Test 1
Week 4 : 30 September - 6 October	Lecture	2 x 2 hour lectures
	Workshop	2 hour problem solving workshop
	Laboratory	2 hour laboratory
Week 5 : 7 October - 13 October	Lecture	2 x 2 hour lectures
	Laboratory	2 hour laboratory
	Assessment	Test 2
Week 7 : 21 October - 27 October	Lecture	2 x 2 hour lectures
	Workshop	2 hour problem solving workshop
	Laboratory	2 hour laboratory
Week 8 : 28 October - 3 November	Lecture	2 x 2 hour lectures
	Laboratory	2 hour laboratory
	Assessment	Test 3
Week 9 : 4 November - 10 November	Lecture	2 x 2 hour lectures
	Workshop	2 hour problem solving workshop
	Laboratory	2 hour laboratory
Week 10 : 11 November - 17 November	Lecture	2 x 2 hour lectures
	Laboratory	2 hour laboratory
	Assessment	Test 4

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	Thomas Dixon		OMB G61B			Yes	Yes
Lecturer	Jan Hamann					No	No
	Michael Schmidt					No	No

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 Plagarism

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