UNSW Course Outline

PHYS1131 Higher Physics 1A - 2024

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General Course Information

Course Code : PHYS1131
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 course provides an introduction to Physics. It is a calculus based course. The course is examined at two levels, with Higher Physics 1A being the higher of the two levels. While the same content is covered as Physics 1A, Higher Physics 1A features more advanced assessment.

Mechanics: particle kinematics in one dimension, motion in two and three dimensions, particle dynamics, work and energy, momentum and collisions, rotation

Thermal physics: temperature, kinetic theory and the ideal gas, heat and the first law of thermodynamics.

Waves: oscillations, wave motion, sound waves.

Assumed Knowledge : HSC Physics and Mathematics Extension 1 or equivalent. If you have not reached this level of physics and mathematics you may wish to take PHYS1111 Fundamentals of Physics before enrolling in this course. Students planning on taking Physics 1B should take MATH1131/1141/1151 as the corequisite for PHYS1131.

Course Aims

This course gives an introduction to mechanics, thermal physics and waves, and to the techniques of analysis and problem solving in the physical world. With its companion subject (Physics 1B, Higher Physics 1B or (Special) Higher Physics 1B), 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, 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 elaborate problems involving mechanics, thermal physics and waves.
CLO4 : Draw and interpret graphs and diagrams to describe complex physical phenomena.
CLO5 : Model the behaviour of non-uniform objects using appropriate mathematical techniques.

Course Learning Outcomes	Assessment Item
CLO1 : Safely conduct experiments, 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 • Laboratories
CLO3 : Use appropriate mathematical techniques, including calculus, to solve elaborate problems involving mechanics, thermal physics and waves.	• Test 1 • Test 2 • Laboratories
CLO4 : Draw and interpret graphs and diagrams to describe complex physical phenomena.	• Test 1 • Test 2 • Laboratories
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
Test 1 Assessment Format: Individual	40%	
Test 2 Assessment Format: Individual	40%	
Laboratories Assessment Format: Group	20%	

Assessment Details

Test 1

Assessment Overview

You will answer 4 three part questions on the mechanics part of the course. This will be invigilated and is a hurdle task. You will have access to the bank of questions these quiz questions are pulled from in order to practice for this test. Students must score at least 50% on this test in order to pass.

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 elaborate problems involving mechanics, thermal physics and waves.
- CLO4 : Draw and interpret graphs and diagrams to describe complex physical phenomena.
- CLO5 : Model the behaviour of non-uniform objects using appropriate mathematical techniques.

Assignment submission Turnitin type

Not Applicable

Hurdle rules

Students must score at least 50% to pass this hurdle.

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 2

Assessment Overview

You will answer 4 three part questions on the waves and oscillations part of the course. This will be invigilated and is a hurdle task. You will have access to the bank of questions these quiz questions are pulled from in order to practice for this test. Students must score at least 50% on this test in order to pass.

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 elaborate problems involving mechanics, thermal physics and waves.
- CLO4 : Draw and interpret graphs and diagrams to describe complex physical phenomena.
- CLO5 : Model the behaviour of non-uniform objects using appropriate mathematical techniques.

Assignment submission Turnitin type

Not Applicable

Hurdle rules

Students must score at least 50% to pass this hurdle.

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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Laboratories

Assessment Overview

You will attend the lab each week and complete a laboratory exercise related to the course content. You should ensure you come to the lab prepared, complete the online pre-lab exercise, and then work with a partner to complete the exercise. Demonstrators are there to help you. Each in-person lab will be marked as Pass (1), Partial Pass (0.5) or Fail (0). You must score at least 6.5 out of 8 in the labs to pass the course.

Course Learning Outcomes

- CLO1 : Safely conduct experiments, 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 elaborate problems involving mechanics, thermal physics and waves.
- CLO4 : Draw and interpret graphs and diagrams to describe complex physical phenomena.

Hurdle rules

Students must pass the required amount of labs to pass this hurdle. This exact passing requirement is on Moodle.

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

Satisfactory

Requirements to pass course

Students must pass all three hurdles to pass the course. The hurdles are: Test 1, Test 2, and Labs.

Course Schedule

Teaching Week/Module	Activity Type	Content
Week 1 : 9 September - 15 September	Lecture	2 x 2-hour lectures
	Workshop	2-hour workshop
Week 2 : 16 September - 22 September	Lecture	2 x 2-hour lectures
	Laboratory	2-hour laboratory
	Workshop	2-hour workshop
Week 3 : 23 September - 29 September	Lecture	2 x 2-hour lectures
	Laboratory	2-hour laboratory
	Workshop	2-hour workshop
Week 4 : 30 September - 6 October	Lecture	2 x 2-hour lectures
	Laboratory	2-hour laboratory
	Workshop	2-hour workshop
Week 5 : 7 October - 13 October	Lecture	2 x 2-hour lectures
	Laboratory	2-hour laboratory
	Workshop	2-hour workshop
Week 7 : 21 October - 27 October	Lecture	2 x 2-hour lectures
	Laboratory	2-hour laboratory
	Assessment	Test 1 Attempt 1 runs this week
Week 8 : 28 October - 3 November	Lecture	2 x 2-hour lectures
	Laboratory	2-hour laboratory
	Workshop	2-hour workshop
Week 9 : 4 November - 10 November	Lecture	2 x 2-hour lectures
	Laboratory	2-hour laboratory
	Workshop	2-hour workshop
Week 10 : 11 November - 17 November	Laboratory	2-hour laboratory
	Assessment	Test 2 Attempt 1 runs this week
Week 11 : 18 November - 24 November	Assessment	Test 1 Attempts 2 and 3 run this week
Week 12 : 25 November - 1 December	Activity	Test 2 Attempts 2 and 3 run this week

Attendance Requirements

Students are strongly encouraged to attend all classes and review lecture recordings.

Course Resources

Additional Costs

N/A

Staff Details

Position	Name	Email	Location	Phone	Availability	Equitable Learning Services Contact	Primary Contact
Lab director	Thomas Dixon					No	No
Convenor	Kate Jackson					Yes	Yes
Lecturer	Yvonne Wong					No	No
	Rajib Rahman					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