WPHY143

Physics 1B

MUIC Term 5 2016

Macquarie University International College

Contents

General Information

Unit convenor and teaching staff
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Credit points
3

Prerequisites

Corequisites
WMAT135

Co-badged status

Unit description
This unit, together with PHYS140, provides an overview of physics. This unit includes a broad range of topics suitable for engineering students or those majoring in any of the sciences. This unit begins with topics in classical physics: the physics of oscillations and wave motion, including sound waves, diffraction and the wave behaviour of light, leading to an introduction to geometrical and physical optics and the operation of some optical instruments. The unit then moves on to look at some of the theories of modern physics that influence the way that we view the natural world, and the fundamental laws that govern it. An introduction is given to molecular kinetic theory and the important universal laws of thermodynamics, the latter valid for everything from the boiling of a kettle to exploding black holes. Einstein's theory of special relativity and its counter-intuitive views on space and time, the uncertain world of quantum physics, and what the latter tells us about the structure of atoms and nuclei, conclude the unit. Regular guided laboratory work enables students to investigate the phenomena discussed in the lectures, using modern techniques in a well-equipped laboratory.

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:

Explain Physics concepts, within the topics listed in the unit guide, in terms of their underlying physical principles, and describe them in terms of concise mathematical models.
Analyse the description of a physical problem, be able to 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.
Analyse real-world problems,be able to develop physical problems based on this analysis, and interpret how numerical results relate to the physical world.
Record experimental data, display data graphically, analyse data, and present their conclusions in a clear, concise, and systematic manner.
Identify sources of uncertainty in physical measurements, be able to propagate these uncertainties through calculations, and express results in a meaningful way.
Use discipline specific terminology to communicate concepts and ideas relevant to this unit.

General Assessment Information

Requirements to Pass

In order to pass this unit a student must obtain a mark of 50 or more for the unit (i.e. obtain a passing grade P/ CR/ D/ HD).

For further details about grading, please refer to Schedule 1 of the Assessment Policy.

Students must also pass any hurdle assessments as stipulated in the Assessment Section of this Unit Guide.

Grading

The College will award common result grades as specified in Schedule 1 of the Assessment Policy.

Students will receive criteria and standards for specific assessment tasks, which will be aligned with the grading descriptors given in Schedule 1.

The attainment (or otherwise) of learning outcomes for a unit of study will be reported by grade and mark which will correspond to the Schedule 1 and be as outlined below.

Grade		Mark Range	Outcome	Description

HD	High Distinction	85-100	Pass	Provides consistent evidence of deep and critical understanding in relation to the learning outcomes. There is substantial originality, insight or creativity in identifying, generating and communicating competing arguments, perspectives or problem solving approaches; critical evaluation of problems, their solutions and their implications; creativity in application as appropriate to the program.
D	Distinction	75-84	Pass	Provides evidence of integration and evaluation of critical ideas, principles and theories, distinctive insight and ability in applying relevant skills and concepts in relation to learning outcomes. There is demonstration of frequent originality or creativity in defining and analysing issues or problems and providing solutions; and the use of means of communication appropriate to the program and the audience.
CR	Credit	65-74	Pass	Provides evidence of learning that goes beyond replication of content knowledge or skills relevant to the learning outcomes. There is demonstration of substantial understanding of fundamental concepts in the field of study and the ability to apply these concepts in a variety of contexts; convincing argumentation with appropriate coherent justification; communication of ideas fluently and clearly in terms of the conventions of the program.
P	Pass	50-64	Pass	Provides sufficient evidence of the achievement of learning outcomes. There is demonstration of understanding and application of fundamental concepts of the program; routine argumentation with acceptable justification; communication of information and ideas adequately in terms of the conventions of the program. The learning attainment is considered satisfactory or adequate or competent or capable in relation to the specified outcomes.
F	Fail	0-49	Fail	Does not provide evidence of attainment of learning outcomes. There is missing or partial or superficial or faulty understanding and application of the fundamental concepts in the field of study; missing, undeveloped, inappropriate or confusing argumentation; incomplete, confusing or lacking communication of ideas in ways that give little attention to the conventions of the program.
FA			Did Not Attend	Student has failed the compulsory attendance component of assessment

Final Grades not receiving a mark because the student has withdrawn after the Census Date, not submitted or completed one or more components of the assessment, has been awarded a supplementary assessment or because of an unresolved matter such as allegations of academic misconduct are outlined in Schedule 1.

Where to find information about assessment

General assessment information including the number and nature of assessments, due dates and weightings has been provided in this unit guide.

Specific assessment information including assignment instructions, questions, marking criteria and rubrics as well as examples of relevant and related assessment tasks and responses will be available in the Assessment section on iLearn. For units that have final examinations, students may access past final exam papers using MultiSearch.

Student Responsibilities

As per the Assessment Policy, students are responsible for their learning and are expected to:

- actively engage with assessment tasks, including carefully reading the guidance provided, understanding criteria, spending sufficient time on the task and submitting work on time;
- read, reflect and act on feedback provided;
- actively engage in activities designed to develop assessment literacy, including taking the initiative where appropriate (e.g. seeking clarification or advice, negotiating learning contracts, developing grading criteria and rubrics);
- provide constructive feedback on assessment processes and tasks through student feedback mechanisms (e.g. student surveys, suggestions for future offerings, student representation on committees);
- ensure that their work is their own; and
- be familiar with University policy and College procedures and act in accordance with those policy and procedures.

Submission of Assessment Tasks

Assessments must be submitted in accordance with instructions provided in this unit guide. Assessment tasks which have not been submitted as required will not be marked; they will be considered a non-submission and zero marks will be awarded for the task.

Extensions & Late Submissions

Extensions will only be granted as a result of a Disruptions to Studies Notification for which special consideration has been awarded. To apply for an extension of time for submission of an assessment item, students must submit their Disruptions to Studies notification via ask.mq.edu.au.

Late submissions without an approved extension are possible but will be penalised at 20% per 24 hour period or thereof up to 4 days (weekend inclusive).

Example: An assignment is due at 5:00 pm on a Friday and is marked out of 100 marks.

- If a student submits at 5:02 pm on the Friday and no Disruptions to Studies or special consideration is granted, a penalty of 20% of the total marks possible (20 marks) will be deducted from their result.
- If the student submits the assignment on Sunday and no Disruptions to Studies or special consideration is granted, then a penalty of 40% (40 marks) will be deducted and so on.
- If a student submits an assessment task 5 or more days after the due date and no Disruptions to Studies or special consideration is granted, a record or submission will be made but the student will receive zero marks for the assessment task.

Retention of Originals

It is the responsibility of the student to retain a copy of any work submitted. Students must produce these documents upon request. Copies should be retained until the end of the grade appeal period each term.

In the event that a student is asked to produce another copy of work submitted and is unable to do so, they may be awarded zero (0) for that particular assessment task.

Requests for original documentation will be sent to the applicant's student email address within six (6) months of notification by the student. Students must retain all original documentation for the duration of this six (6) month period and must supply original documents to the University within ten (10) working days of such a request being made.

Final Examinations

Final examinations will typically take place or be due in Week 6 or Monday of Week 7. For unit specific details please refer to Assessment section of this unit guide.

All students must be available up until and including Monday of Week 7 to undertake final examinations.

The University will publish College Final Examination Timetable at least 4 weeks before the commencement of the final examination period and students will be able to access their final examination schedule in Week 3 of the Term.

Final Examination Requirements

As per Schedule 4 of the Assessment Policy, students will be responsible for:

- checking the final examination timetable
- knowing the examination location (including seat number allocation) and arriving at allocated examination venue on time.
- knowing the structure and format of the examination
- adhering to the final examination timetable
- ensuring they are available for the full duration of the final examination period and supplementary examination period.

Details of the structure and format of the final examination paper will be made available to students prior to the start of the final examination period. This detail will include:

- a copy of the examination coversheet, giving the conditions under which the examination will be held
- information on the types of questions the examination will contain, and
- an indication of the unit content the paper may examine.

Students must follow directions given by the Final Examination Supervisor.

Students will be required to present their Macquarie University Campus Card as photographic

proof of identity for the duration of the final examination.

Students are not permitted to:

- enter a final examination venue once one hour from the time of commencement (excluding any reading time) has elapsed
- leave a final examination venue before one hour from the time of commencement (excluding any reading time) has elapsed
- leave a final examination venue during the last 15 minutes of the examination
- be readmitted to a final examination venue unless they were under approved supervision during the full period of their absence
- obtain, or attempt to obtain, assistance in undertaking or completing the final examination script
- receive, or attempt to receive, assistance in undertaking or completing the final examination script (Unless an application for reasonable adjustment has been approved)
- communicate in any way with another student once they have entered the final examination venue

Missed assessments and examinations

The University recognises that students may experience unexpected events and circumstances that adversely affect their academic performance in assessment activities, for example illness.

In order to support students who have experienced a serious and unavoidable disruption, the University will provide affected students with an additional opportunity to demonstrate that they have met the learning outcomes of a unit. An additional opportunity provided under such circumstances is referred to as special consideration.

In order to be eligible for special consideration students must submit Disruption to Studies Notification via ask.mq.edu.au within five (5) working days of the commencement of the disruption and attach appropriate supporting evidence.

Where special consideration is granted the student will be given and an additional opportunity to demonstrate that they have met the learning outcomes of a unit in the form of a alternative or supplementary assessment task or extension.

Please refer to the Disruption to Studies Policy or the Disruptions to Studies section under Policies and Procedures below.

Supplementary Examinations

The supplementary examination period will span across Week 7 of the Term and Week 1 of the subsequent teaching term. Students who have lodged a Disruptions to Studies must be available to undertake examinations during the supplementary examination period.

Results for supplementary exams may not be available for up to two weeks following the supplementary examination. Students in their final term of study who undertake supplementary

final exams should note that formal completion of their Program will not be possible until supplementary results are released and this may impact on their ability to enrol in subsequent programs of study on time.

Accessing your Results

Students will be able to view their results for internal assessments via the Grades section in iLearn.

Grades (e.g. HD, D, CR, P, F) for all assessment tasks will be released to students once marking has concluded. Marks for individual assessments may be released as well.

Final results for the unit will be released at 00:01 on Friday of Week 7. Students will be able to view their final result for the unit via eStudent.

Calculating your GPA

A Grade Point Average (GPA) is a calculation that reflects the overall grades of a student in a coursework program. Please refer to the GPA Calculator.

Obtaining Feedback

Teaching staff will provide students with feedback about their academic progress and performance in assessment tasks or a unit of study. Where relevant, other staff such as Senior Teachers, Program Managers and members of the Student Administration and Services Team will provide feedback and advice to students about their performance in a program of study. Feedback may be provided to individual students, a group of students or a whole class and it may be written or verbal in nature.

Some examples of feedback include:

- Teaching staff member reviewing a draft submission and giving a student advice on how to improve their work before making a final submission
- Teaching staff member telling a class that they need to improve their editing of grammar in their recently submitted assignment.
- Teaching staff member discussing progress of an individual student before census date to allow the student to decide whether they should remain enrolled in the unit.
- Online feedback via announcements or forums, an online marking rubric or various iLearn activities employed in a unit
- Written marks and comments on a marking sheet or essay.
- Recorded voice comment provided in response to an essay submitted online.
- Student Services officer telling a student that they should consider withdrawing from a unit because they have missed too many classes to be able to catch up.

It is a student's responsibility to act promptly on feedback and advice provided.

If you are unsure how feedback has been or will be provided, or you feel that feedback provided is not sufficient, you must approach relevant teaching or administrative staff and request

additional feedback in a timely manner during the term. Students may seek general feedback about performance in a unit up to 6 months following results release.

Contacting Teaching Staff Obtaining Help

Students may contact teaching staff at any time during the term by using the contact details provided in this guide. Students should expect a response within 1-2 business days. Teaching staff are unable to accept assessment submissions via email, all assessments must be submitted as outlined in the unit guide.

For all university related correspondence, students must use their official Macquarie University student email account which may be accessed via the Macquarie University Student Portal. Inquiries from personal email accounts will not be attended to.

Academic Honesty

Using the work or ideas of another person, whether intentionally or not, and presenting them as your own without clear acknowledgement of the source is called Plagiarism.

Macquarie University promotes awareness of information ethics through its Academic Honesty Policy. This means that:

- all academic work claimed as original must be the work of the person making the claim
- all academic collaborations of any kind must be acknowledged
- academic work must not be falsified in any way
- when the ideas of others are used, these ideas must be acknowledged appropriately.

All breaches of the Academic Honesty Policy are serious and penalties apply. Students should be aware that they may fail an assessment task, a unit or even be excluded from the University for breaching the Academic Honesty Policy.

Turnitin

To uphold principles of Academic Honesty, Macquarie University employs online anti-plagiarism Software called Turnitin. Turnitin compares electronically submitted papers to a database of academic publications, internet sources and other student papers that have been submitted to the system to identify matching text. It then produces an Originality Report which identifies text taken from other sources, and generates a similarity percentage. Teaching staff will use the report to judge whether plagiarism has occurred and whether penalties should apply for breaches of the Academic Honesty Policy.

All text based assessments must be submitted through Turnitin as per instructions provided in the unit guide. It is the student's responsibility to ensure that work is submitted correctly prior to the due date. No hard copies of assessments will be accepted and only Turnitin records will be taken as records of submission.

Multiple submissions may be possible via Turnitin prior to the final due date and time of an assessment task and originality reports may be made available to students to view and check their work.

There is no set percentage which indicates whether plagiarism has occurred; all identified

matching text should be reconsidered carefully. If plagiarism has occurred or is suspected and resubmission is possible prior to the due date, students are advised to edit their work before making a final submission. Help may be sought from teaching staff. Students may also access research resources provided by the library or Learning Skills.

Students should note that the system will not immediately produce the similarity score on a second or subsequent submission - it will take 24-36 hours for the report to be generated. This may be after the due date so students should plan any resubmissions carefully.

Please refer to these instructions on how to submit your assignment through Turnitin and access similarity reports and feedback provided by teaching staff.

Should you have questions about Turnitin or experience issues submitting through the system, you must inform your teacher immediately. If the issue is technical in nature may also lodge a OneHelp Ticket, refer to the IT help page.

Assessment Tasks

Name	Weighting	Due
Laboratory work	20%	Weekly
Assignments	10%	Lesson 6 of Week 4 and Week 6
Tests	15%	Lesson 6 of Week 2, 4 and 5
Final Examination	55%	MUIC Final Examination Period

Laboratory work

Due: **Weekly**
Weighting: **20%**

The laboratory work is designed to introduce students to some of the basic skills and techniques that are used in experimental physical science, and forms an important component of their learning in WPHY143.

This assessment is a hurdle assessment task. In order to pass this unit, students **must** attend and successfully complete the experiments scheduled in at least 2/3 of the laboratory sessions. This means that students must attend at least 8 out of the 12 scheduled lab sessions and successfully complete relevant experiments for those sessions. To be deemed to have successfully completed an experiment students must satisfy the required criteria which will be provided for each assessment task. Where, after 12 scheduled lab sessions a student has not satisfied the hurdle requirement (has failed to attend and successfully complete at least 8 scheduled lab sessions and experiment), no further opportunities to meet the hurdle will be granted as the additional opportunity has already been offered in the four additional session scheduled. Students who do not meet this hurdle requirement will not pass the unit. Students are responsible for ensuring that they complete experiments as required during their registered laboratory classes.

All laboratory work must be recorded directly into a laboratory notebook. Detailed instructions will be provided in iLearn and in the laboratory about the laboratory notebook. The notebook will stay in the laboratory throughout the term and will be assessed at the end of each session.

This is an individual task. Feedback will be provided in class.

On successful completion you will be able to:

- Explain Physics concepts, within the topics listed in the unit guide, in terms of their underlying physical principles, and describe them in terms of concise mathematical models.
- Analyse real-world problems,be able to develop physical problems based on this analysis, and interpret how numerical results relate to the physical world.
- Record experimental data, display data graphically, analyse data, and present their conclusions in a clear, concise, and systematic manner.
- Identify sources of uncertainty in physical measurements, be able to propagate these uncertainties through calculations, and express results in a meaningful way.
- Use discipline specific terminology to communicate concepts and ideas relevant to this unit.

Assignments

Due: **Lesson 6 of Week 4 and Week 6**
Weighting: **10%**

Problem solving is at the heart of physics and engineering. During the term students will be provided with a set of *assignment problems* based on the previous weeks' topics. Students will be required to complete two assignments. These are individual tasks.

Please refer to late submission section above.

Feedback will be provided in class and marks in Gradebook.

On successful completion you will be able to:

- Explain Physics concepts, within the topics listed in the unit guide, in terms of their underlying physical principles, and describe them in terms of concise mathematical models.
- Analyse the description of a physical problem, be able to 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.
- Analyse real-world problems,be able to develop physical problems based on this analysis, and interpret how numerical results relate to the physical world.
- Identify sources of uncertainty in physical measurements, be able to propagate these

uncertainties through calculations, and express results in a meaningful way.
- Use discipline specific terminology to communicate concepts and ideas relevant to this unit.

Tests

Due: **Lesson 6 of Week 2, 4 and 5**
Weighting: **15%**

Three tests will be given to students in Week 2, 4 and 5 in the class. Each test will be about 30 minutes long. The tests will cover the previous week's topics. Further details will be provided in lessons leading up to each test. These are individual tasks.

Feedback will be provided in class and marks on Gradebook.

The following materials are permitted for use during the examination:

- Non programmable calculators. Calculators with text retrieval abilities “run”, “exe” or “calc” keys, and/or those with a full alphabet on the keyboard ARE NOT permitted. Candidates must supply their own materials as these will not be supplied at the examination venue.
- No other aids are permitted.

Materials permitted in the examination may not be shared among students.

On successful completion you will be able to:

- Explain Physics concepts, within the topics listed in the unit guide, in terms of their underlying physical principles, and describe them in terms of concise mathematical models.
- Analyse the description of a physical problem, be able to 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.
- Analyse real-world problems,be able to develop physical problems based on this analysis, and interpret how numerical results relate to the physical world.
- Identify sources of uncertainty in physical measurements, be able to propagate these uncertainties through calculations, and express results in a meaningful way.
- Use discipline specific terminology to communicate concepts and ideas relevant to this unit.

Final Examination

Due: **MUIC Final Examination Period**
Weighting: **55%**

The final examination will be 3 hours in duration with 10 minutes reading time and will cover all content covered during the term, Week 1 to Week 6 inclusive. The examination is a closed book exam.

The following materials are permitted for use during the examination:

- Non programmable calculators. Calculators with text retrieval abilities “run”, “exe” or “calc” keys, and/or those with a full alphabet on the keyboard ARE NOT permitted. Candidates must supply their own materials as these will not be supplied at the examination venue.
- A resource sheet of relevant equations and physical constants will be provided as part of the examination paper.
- No other aids are permitted.

Materials permitted in the examination may not be shared among students.

Final examinations will typically take place or be due in Week 6 or Monday of Week 7. Please refer to Disruptions to Studies for procedure for missed assessments.

Details of the structure and format of the final examination paper will be made available to students prior to the start of the final examination period.

On successful completion you will be able to:

- Explain Physics concepts, within the topics listed in the unit guide, in terms of their underlying physical principles, and describe them in terms of concise mathematical models.
- Analyse the description of a physical problem, be able to 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.
- Analyse real-world problems,be able to develop physical problems based on this analysis, and interpret how numerical results relate to the physical world.
- Identify sources of uncertainty in physical measurements, be able to propagate these uncertainties through calculations, and express results in a meaningful way.
- Use discipline specific terminology to communicate concepts and ideas relevant to this unit.

Delivery and Resources

Term Dates & College Calendar

Details of key dates during the term can be found on the Important Dates calendar.

Enrolment and Timetables

General timetable information is available via Macquarie University's Timetable page.

Students will be able to enrol in units and register for classes via eStudent and also view their personal timetable. It is the student's responsibility to ensure that classes they have registered for do not clash.

Students are only permitted to attend classes in which they have registered via eStudent, unless they have written approval from the Students Services and Administration Manager. To seek approval, students must email muic@mq.edu.au or speak to a member of the Student Services and Administration Team at E3A Level 2 Reception. Approval will only be granted in exceptional circumstances.

Swapping groups is not possible after the enrolment period has concluded. The last day to do so is Tuesday of Week 1 and this must be finalised by the student in eStudent by the end of the day.

Attendance Requirements – All Students

All students are expected to attend 100% of scheduled class time.

Attendance will be monitored in each lesson & students will be able to see their current attendance percentage to date and potential attendance percentage for each unit they have enrolled in via iLearn.

- **Current attendance Percentage** will reflect the percentage of classes a student has attended so far (based only on the lessons held to date).
- **Potential Attendance Percentage** will reflect the percentage of classes a student can potentially attended by the end of the term, taking into consideration lessons attended and assuming the student also attends all future lessons scheduled (based only on the total number of lessons in the Term).

Where a student is present for a part of a lesson (for example arrives late, leaves early, leaves the class frequently or for lengthy periods, engages in inappropriate or unrelated activities or does not participate actively in the majority of the lesson) the teacher reserves the right to mark a student absent for that part of the lesson.

In cases of unavoidable non-attendance due to illness or circumstances beyond their control, students should lodge a Disruption to Studies Notification via ask.mq.edu.au within 5 working days and supply relevant supporting documentation, even if they have not missed a formal assessment task. This will ensure that that appropriate records of unavoidable absences can be kept.

Public Holidays and Make-up Lessons

If any scheduled class falls on a public holiday a make-up lesson may be scheduled on an alternate day. Attendance will be taken for any scheduled make-up lessons. Where a make-up lesson is scheduled, students will be informed in class and via iLearn.

If appropriate, teaching staff may instead organise an online make-up lesson requiring students to complete additional activities outside of class. Students will be informed of any such

arrangements in class and/or via iLearn.

Technology Used and Required

- Access to internet (Available on Campus using Macquarie OneNet and in designated E3A Self-Access Computer Laboratories)
- iLab - iLab is Macquarie University's personal computer laboratory on the Internet, enabling students to use the Microsoft Windows applications they require to do their university work from anywhere, anytime, on anything.
- Access to iLearn
- Access to Macquarie University Library catalogue (MultiSearch)
- Access to Microsoft Office Suite (available in E3A Self-Access Computer Laboratories and via iLab)

iLearn

iLearn is Macquarie's online learning management system and a principal teaching and learning resource which will be used throughout the term. Students must access iLearn at least 3 times per week to access important information including:

- Announcements and News Forums - Teaching staff will communicate to the class using iLearn announcements. Announcements may also be emailed to students' Macquarie University email address but students should check the News Forum regularly.
- Attendance – current and potential attendance percentage for the Term.
- Unit Guide and staff contact details
- Set unit readings available through MultiSerach (library).
- Lesson materials and recordings where available
- Learning and teaching activities and resources, questions and solutions
- Assessment instructions, questions, marking criteria and sample tasks
- Assessment submission links such as Turnitin
- Links to support materials and services available at the University
- Evaluation Surveys for the unit

For any resource related iLearn questions contact your teacher. For any technical or support issues using iLearn, please contact the IT helpdesk (Ph. 02 9850 4357) or lodge a ticket using OneHelp.

Useful Study Resources

StudyWise is an iLearn resource created by Learning Skills, which is specifically designed to help you to manage your studies, strengthen your study techniques, write effective assignments and improve your English language proficiency. Once you enrol in StudyWISE, you can access it from your iLearn course list under the category "Student Support".

InfoWise will help you improve your research skills by teaching you how to use MultiSearch, decode citations, identifying key search terms and use advanced search techniques.

Lib Guides provide students with links to electronic sources and websites that are good starting points for research in different fields or disciplines.

MultiSerach will connect you to Macquarie University Library and allow you to search library resources, databases, unit readings and past exam papers

Academic Language and Learning Workshops are designed to help you with Study Skills, Assignment Writing, Referencing and Academic Language

Research resources provide information about:

- Researching for your assignments
- How to manage your references
- Referencing style guides
- Subject and research guides

Unit Schedule

Week	Course Material	Textbook Chapters and Assessment Due Dates	Laboratory/Practical Lesson Schedule
1	Introduction to mechanics of waves Sound and hearing.	Chapters 16.1 to 16.13, and 17.1 to 17.6	Introductory lesson Lab 1: Unit 1 **Assignment 1 released**
2	Sound and hearing continue. Nature and propagation of light Pre-census Feedback	Chapters 17.1 to 17.6, 17.8 to 17.10, 33.1 to 33.5, and 33.7 to 33.9 **Test 1**	Lab 2: Unit 2 Lab 3: Experiment
3	Geometrical optics and optical instruments Interference	Chapters 34.1 to 34.9, and 35.1 to 35.8	Lab 4: Experiment Lab 5: Experiment
4	Diffraction Temperature, heat, thermal properties of matter, and heat capacities	Chapters 36.1 to 36.5, 36.7, and 18.1 to 18.9 **Test 2**	Lab 6: Experiment Lab 7: Experiment **Assignment 2 released**
5	First law of thermodynamics, and heat capacities of ideal gases Relativity	Chapters 18.10 to 18.12, 19.1 to 19.11, and 37.1 to 37.9 **Test 3**	Lab 8: Experiment Lab 9: Experiment

6	Photons, electrons, atoms, the wave nature of particles, and nuclear physics	Chapters 38.1 to 38.6, 38.8, 39.8, 42.1 to 42.6, and 43.1 to 43.6	Revision	
	FINAL EXAM		Final examinations will typically take place or be due in Week 6 or Monday of Week 7.	

Learning and Teaching Activities

Lessons

There will be lessons where the content of the unit will be explained, example problems will be solved and physics principles demonstrated.

Practical lessons

There will be practical lessons each week where students will work through problems related to the previous week's course content.

Laboratory

Laboratory lessons will be held during the 6 weeks of the term; each lesson will be three hours long. During these students will engage in practical exercises to further their understanding of the physics concepts discussed in other lessons and to develop their skills at measurement, analysis and verification of physical models.

Policies and Procedures

Macquarie University policies and procedures are accessible from Policy Central. Students should be aware of the following policies in particular with regard to Learning and Teaching:

Academic Honesty Policy http://mq.edu.au/policy/docs/academic_honesty/policy.html

New Assessment Policy in effect from Session 2 2016 http://mq.edu.au/policy/docs/assessment/policy_2016.html. For more information visit http://students.mq.edu.au/events/2016/07/19/new_assessment_policy_in_place_from_session_2/

Assessment Policy prior to Session 2 2016 http://mq.edu.au/policy/docs/assessment/policy.html

Grading Policy prior to Session 2 2016 http://mq.edu.au/policy/docs/grading/policy.html

Grade Appeal Policy http://mq.edu.au/policy/docs/gradeappeal/policy.html

Complaint Management Procedure for Students and Members of the Public http://www.mq.edu.au/policy/docs/complaint_management/procedure.html

Disruption to Studies Policy http://www.mq.edu.au/policy/docs/disruption_studies/policy.html *The Disruption to Studies Policy is effective from March 3 2014 and replaces the Special Consideration Policy.*

In addition, a number of other policies can be found in the Learning and Teaching Category of Policy Central.

Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: https://students.mq.edu.au/support/student_conduct/

Results

Results shown in *iLearn*, 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.

Academic Honesty

Using the work or ideas of another person, whether intentionally or not, and presenting them as your own without clear acknowledgement of the source is called Plagiarism.

Macquarie University promotes awareness of information ethics through its Academic Honesty Policy. This means that:

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- all academic collaborations of any kind must be acknowledged
- academic work must not be falsified in any way
- when the ideas of others are used, these ideas must be acknowledged appropriately.

All breaches of the Academic Honesty Policy are serious and penalties apply. Students should be aware that they may fail an assessment task, a unit or even be excluded from the University for breaching the Academic Honesty Policy.

Assessment Policy

Students should familiarise themselves with their responsibilities under the Assessment Policy, and notably Schedule 4 (Final Examination Requirements).

Disruptions to studies

The Disruption to Studies Policy applies only to *serious and unavoidable* disruptions that arise after a study period has commenced. Students with a pre-existing disability/health condition or prolonged adverse circumstances may be eligible for ongoing assistance and support. Such support may be sought through Campus Wellbeing and Support Services.

The University classifies a disruption as **serious and unavoidable** if it:

- could not have reasonably been anticipated, avoided or guarded against by the student; and
- was beyond the student's control; and
- caused substantial disruption to the student's capacity for effective study and/or completion of required work; and

- occurred during an event critical study period and was at least three (3) consecutive days duration, and / or
- prevented completion of a final examination.

To be eligible for Special Consideration, a student must notify the University of a *serious and unavoidable* disruption within five (5) working days of the commencement of the disruption (Disruption to Studies notification). All Disruption to Studies notifications are to be made online via the University's Ask MQ system. A Disruption to Studies notification must be supported by documentary evidence.

Students should note that in cases of medical disruptions they must see a registered healthcare professional and present a Professional Authority Form. Medical certificates will not be accepted. Overseas students may use their OSHC insurance for the purpose of seeing a registered healthcare professional.

In submitting a Disruption to Studies notification, a student is acknowledging that they may be required to undertake additional work. The time and date, deadline or format of any required extra assessable work as a result of a disruption to studies notification is not negotiable and in submitting a disruption to studies notification, a student is agreeing to make themselves available to complete any extra work as required. This means that as a result of special consideration being awarded, a student may be required to complete a different type of assessment for example an exam instead of a presentation or vice versa.

The student will retain all original documentation submitted regarding the disruption, and must understand that this may be requested by the University at any time. In this event, students will be provided 10 business days to submit the original documentation.

Please refer to the Disruption to Studies Policy for further details.

Final Examination Script Viewings

A student may request to view their final examination script once results have been released but scripts remain the property of Macquarie University.

Students should view their final examination paper prior to submitting a grade appeal, if this is relevant to their case. The viewing will be conducted in a secure location under supervision.

To request a final examination script viewing, please lodge a ticket via ask.mq.edu.au.

Grade Appeals

A student who has been awarded a final grade for a unit has the right to appeal that grade as outlined in the Grade Appeal Policy. Grade appeals apply to the final mark and grade a student receives for a unit of study. They do not apply to results received for individual assessment tasks.

Grade appeals must be submitted via ask.mq.edu.au within 20 working days from the published result date for the relevant unit. Before submitting a Grade Appeal, please ensure that you read the Grade Appeal Policy and note valid grounds for appeals.

Students are expected to seek feedback on individual assessment tasks prior to the award of a

final grade. Students also have the right to request generic feedback from the teaching staff on their overall performance in the unit, including in a final examination. This can be done at any time in the six month period starting from the day on which the final grade of the relevant unit is published.

Course Progression

The College closely monitors Foundation students' academic progress as per the Progression Policy for Programs delivered by Macquarie University International College.

To maintain Satisfactory Academic Progress, a student must successfully complete (pass) 50% or more of their enrolled units in a Term of study. To successfully complete a unit, students must obtain a passing grade and meet any other requirements to pass listed in the unit guide.

Students who fail to make Satisfactory Academic Progress will be classified as "at risk" and will be notified in writing. At-risk students may be required to undergo academic counselling, undertake certain initiatives or have conditions placed upon their enrolment to help them make satisfactory progress.

Students must also pass 50% or more of the units in 2 or more terms in order to meet Minimum Rate of Progress (MRP) requirements. A student is deemed not to be making Minimum Rate of Progress if they fail more than 50% of their enrolled units in two consecutive Terms of study, or if they have failed more than 50% of their units after studying two or more terms.

Any domestic student who has been identified as not meeting Minimum Rate of Progress requirements will be issued with an Intention to Exclude letter and may subsequently be excluded from the program.

Any international student who has been identified as not meeting MRP will be issued with an Intention to Report letter and may subsequently be reported to the Department of Immigration and Border Protection (DIBP) for not meeting visa requirement and be subject to exclusion from the program. International students must comply with the MUIC Progress Policy in order to meet the conditions of their visa.

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 improve your marks and take control of your study.

- Workshops
- StudyWise
- Academic Integrity Module for Students
- Ask a Learning Adviser

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

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.

Graduate Capabilities

Creative and Innovative

Our graduates will also be capable of creative thinking and of creating knowledge. They will be imaginative and open to experience and capable of innovation at work and in the community. We want them to be engaged in applying their critical, creative thinking.

This graduate capability is supported by:

Assessment tasks

- Laboratory work
- Assignments
- Tests
- Final Examination

Learning and teaching activities

- There will be practical lessons each week where students will work through problems related to the previous week's course content.

Capable of Professional and Personal Judgement and Initiative

We want our graduates to have emotional intelligence and sound interpersonal skills and to demonstrate discernment and common sense in their professional and personal judgement. They will exercise initiative as needed. They will be capable of risk assessment, and be able to handle ambiguity and complexity, enabling them to be adaptable in diverse and changing environments.

This graduate capability is supported by:

Learning outcomes

- Analyse the description of a physical problem, be able to 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.
- Analyse real-world problems,be able to develop physical problems based on this analysis, and interpret how numerical results relate to the physical world.

Assessment tasks

- Laboratory work
- Assignments
- Final Examination

Learning and teaching activities

- Laboratory lessons will be held during the 6 weeks of the term; each lesson will be three hours long. During these students will engage in practical exercises to further their understanding of the physics concepts discussed in other lessons and to develop their skills at measurement, analysis and verification of physical models.

Commitment to Continuous Learning

Our graduates will have enquiring minds and a literate curiosity which will lead them to pursue knowledge for its own sake. They will continue to pursue learning in their careers and as they participate in the world. They will be capable of reflecting on their experiences and relationships with others and the environment, learning from them, and growing - personally, professionally and socially.

This graduate capability is supported by:

Assessment task

- Tests

Learning and teaching activity

- There will be lessons where the content of the unit will be explained, example problems will be solved and physics principles demonstrated.
- There will be practical lessons each week where students will work through problems related to the previous week's course content.
- Laboratory lessons will be held during the 6 weeks of the term; each lesson will be three hours long. During these students will engage in practical exercises to further their understanding of the physics concepts discussed in other lessons and to develop their skills at measurement, analysis and verification of physical models.

Discipline Specific Knowledge and Skills

Our graduates will take with them the intellectual development, depth and breadth of knowledge, scholarly understanding, and specific subject content in their chosen fields to make them competent and confident in their subject or profession. They will be able to demonstrate, where relevant, professional technical competence and meet professional standards. They will be able to articulate the structure of knowledge of their discipline, be able to adapt discipline-specific knowledge to novel situations, and be able to contribute from their discipline to inter-disciplinary solutions to problems.

This graduate capability is supported by:

Learning outcomes

- Explain Physics concepts, within the topics listed in the unit guide, in terms of their underlying physical principles, and describe them in terms of concise mathematical models.
- Analyse the description of a physical problem, be able to 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.
- Record experimental data, display data graphically, analyse data, and present their conclusions in a clear, concise, and systematic manner.
- Identify sources of uncertainty in physical measurements, be able to propagate these uncertainties through calculations, and express results in a meaningful way.
- Use discipline specific terminology to communicate concepts and ideas relevant to this unit.

Assessment tasks

- Laboratory work
- Assignments
- Tests
- Final Examination

Learning and teaching activities

- There will be lessons where the content of the unit will be explained, example problems will be solved and physics principles demonstrated.
- Laboratory lessons will be held during the 6 weeks of the term; each lesson will be three hours long. During these students will engage in practical exercises to further their understanding of the physics concepts discussed in other lessons and to develop their skills at measurement, analysis and verification of physical models.

Critical, Analytical and Integrative Thinking

We want our graduates to be capable of reasoning, questioning and analysing, and to integrate and synthesise learning and knowledge from a range of sources and environments; to be able to critique constraints, assumptions and limitations; to be able to think independently and systemically in relation to scholarly activity, in the workplace, and in the world. We want them to have a level of scientific and information technology literacy.

This graduate capability is supported by:

Learning outcomes

- Record experimental data, display data graphically, analyse data, and present their conclusions in a clear, concise, and systematic manner.
- Identify sources of uncertainty in physical measurements, be able to propagate these uncertainties through calculations, and express results in a meaningful way.

Assessment tasks

- Laboratory work
- Assignments
- Tests
- Final Examination

Learning and teaching activities

- There will be lessons where the content of the unit will be explained, example problems will be solved and physics principles demonstrated.
- There will be practical lessons each week where students will work through problems related to the previous week's course content.
- Laboratory lessons will be held during the 6 weeks of the term; each lesson will be three hours long. During these students will engage in practical exercises to further their understanding of the physics concepts discussed in other lessons and to develop their skills at measurement, analysis and verification of physical models.

Problem Solving and Research Capability

Our graduates should be capable of researching; of analysing, and interpreting and assessing data and information in various forms; of drawing connections across fields of knowledge; and they should be able to relate their knowledge to complex situations at work or in the world, in order to diagnose and solve problems. We want them to have the confidence to take the initiative in doing so, within an awareness of their own limitations.

This graduate capability is supported by:

Learning outcomes

- Explain Physics concepts, within the topics listed in the unit guide, in terms of their underlying physical principles, and describe them in terms of concise mathematical models.
- Analyse the description of a physical problem, be able to 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.
- Analyse real-world problems,be able to develop physical problems based on this analysis, and interpret how numerical results relate to the physical world.
- Record experimental data, display data graphically, analyse data, and present their conclusions in a clear, concise, and systematic manner.

Assessment tasks

- Laboratory work
- Assignments
- Tests
- Final Examination

Learning and teaching activities

- There will be lessons where the content of the unit will be explained, example problems will be solved and physics principles demonstrated.
- There will be practical lessons each week where students will work through problems related to the previous week's course content.
- Laboratory lessons will be held during the 6 weeks of the term; each lesson will be three hours long. During these students will engage in practical exercises to further their understanding of the physics concepts discussed in other lessons and to develop their skills at measurement, analysis and verification of physical models.

Effective Communication

We want to develop in our students the ability to communicate and convey their views in forms effective with different audiences. We want our graduates to take with them the capability to read, listen, question, gather and evaluate information resources in a variety of formats, assess, write clearly, speak effectively, and to use visual communication and communication technologies as appropriate.

This graduate capability is supported by:

Learning outcomes

- Explain Physics concepts, within the topics listed in the unit guide, in terms of their

underlying physical principles, and describe them in terms of concise mathematical models.
- Analyse the description of a physical problem, be able to 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.
- Analyse real-world problems,be able to develop physical problems based on this analysis, and interpret how numerical results relate to the physical world.
- Record experimental data, display data graphically, analyse data, and present their conclusions in a clear, concise, and systematic manner.
- Use discipline specific terminology to communicate concepts and ideas relevant to this unit.

Assessment tasks

- Laboratory work
- Assignments
- Tests
- Final Examination

Learning and teaching activities

- There will be practical lessons each week where students will work through problems related to the previous week's course content.
- Laboratory lessons will be held during the 6 weeks of the term; each lesson will be three hours long. During these students will engage in practical exercises to further their understanding of the physics concepts discussed in other lessons and to develop their skills at measurement, analysis and verification of physical models.

Engaged and Ethical Local and Global citizens

As local citizens our graduates will be aware of indigenous perspectives and of the nation's historical context. They will be engaged with the challenges of contemporary society and with knowledge and ideas. We want our graduates to have respect for diversity, to be open-minded, sensitive to others and inclusive, and to be open to other cultures and perspectives: they should have a level of cultural literacy. Our graduates should be aware of disadvantage and social justice, and be willing to participate to help create a wiser and better society.

This graduate capability is supported by:

Learning outcome

- Analyse real-world problems,be able to develop physical problems based on this analysis, and interpret how numerical results relate to the physical world.

Assessment tasks

- Laboratory work
- Assignments
- Tests
- Final Examination

Learning and teaching activities

- There will be lessons where the content of the unit will be explained, example problems will be solved and physics principles demonstrated.

Socially and Environmentally Active and Responsible

We want our graduates to be aware of and have respect for self and others; to be able to work with others as a leader and a team player; to have a sense of connectedness with others and country; and to have a sense of mutual obligation. Our graduates should be informed and active participants in moving society towards sustainability.

This graduate capability is supported by:

Learning outcome

- Analyse real-world problems,be able to develop physical problems based on this analysis, and interpret how numerical results relate to the physical world.

Assessment tasks

- Laboratory work
- Assignments
- Tests
- Final Examination

Learning and teaching activities

- There will be lessons where the content of the unit will be explained, example problems will be solved and physics principles demonstrated.

Course Contact Hours

Weekly face to face contact for this unit will be 15 hours (90 hours per term).

There will be 6 lessons per week consisting of 3 x 3 hour lessons (9 hours) and 3 x 2 hour workshops in the physics laboratory (6 hour).

Laboratory Details

Laboratory Requirements

The laboratory component is considered an essential component of learning and so counts for an appreciable fraction of the final assessment (20%).

The laboratory work is designed to introduce students to some of the basic skills and techniques that are used in experimental physical science. Some of the activities in the laboratory may not relate directly to textbook material. This is because the laboratory activities are intended not only to illustrate physical concepts but also to introduce students to some techniques of measurement.

This work is designed to be carried out independently from the textbook material - although some of these topics will be discussed in lessons. By providing students with instructional material in the form of the Laboratory Notes manual, together with help from the laboratory demonstrators, the laboratory work has been designed to be tackled independently of the textbook material. Indeed there is some advantage in becoming familiar with a topic in an experimental situation before students meet it in face-to-face lessons. That is often the case in real life! All the information students need for each experiment is contained in the Laboratory Manual. There is no need to spend a long time outside the laboratory hours in preparation, however a quick read through the lab notes beforehand will allow students to make better use of their time in the laboratory

Location of the 100-level Physics Laboratory

The laboratory is located on the ground floor of building E7B, at the NE corner (room 114). Entry is from the courtyard at the opposite end to the main staircase.

What to Bring

Students will need to bring a copy of the Physics IB Laboratory Notes, which are available from the Coop Bookshop (or online - check iLearn).

Students are also required to buy and use a standard "science book" (with ruled and graph pages, not spiral bound). ALL LABORATORY WORK MUST BE RECORDED DIRECTLY INTO THE LABORATORY NOTEBOOK. Loose sheets of paper must not be used. If students feel that their notes are incomprehensible or untidy students may rewrite a more legible report in the same book and simply cross out the original notes.

Both these items (the laboratory notebook and manual) should be brought with students to the first lab session.

Laboratory Attendance Requirements

Students are required to attend at least two third of scheduled laboratory sessions. If a student miss more than one third of the sessions without a written explanation then he or she will not be considered to have satisfactorily completed the laboratory component of the unit. Each time students attend the laboratory they must sign in and out (legibly) in the attendance book.

If a student miss a laboratory session and wish to lodge a "disruption to studies" request students can start this process at ask.mq.edu.au.

How to use a Laboratory Notebook

More details are on page (ii) of the Laboratory Notes manual.

The notebook should show students' collected data and the calculations and graphs resulting from the data. At the end of each section students must summarise the findings and answer any questions posed in the guiding notes.

At the completion of each laboratory session students must show their books to the laboratory supervisor who will check them and collect them for marking. The marker (one of the laboratory demonstrators) will be checking their books to see whether students have kept a satisfactory record of what they have done and what they have concluded. The marked notebooks will be available at the start of next scheduled laboratory. Students must check their books for comments from the markers as this will help them to refine the laboratory technique (and increase the laboratory mark). The notebook will be kept in the laboratory, and must not be removed from the laboratory at any time; this includes any previously filled notebook.

Laboratory Assessment

Details of the laboratory assessment will be outlined in the first session.

Laboratory Safety

Students are required to follow all safety guidelines given in the lab manual, and as outlined by their lab supervisor. **Food and drink cannot be taken into the laboratory and students without suitable covered footwear will be refused admission**.

Laboratory Schedule

Introduction to laboratories start in the first week of the term. The schedule of labs is posted in the lab and on the WPHY143 iLearn page. Students must attend their nominated laboratory session.

Unit Specific Texts and Materials

The following texts have been prescribed for this unit.

Required Textbook:

Halliday, Resnick, and Walker, 2014, Fundamentals of Physics, extended 10th edition (with Wiley Plus).

The content of the unit is based on the following chapters of the textbook:

• Waves: Chapters 16 and 17

• Light: Chapters 33 to 36

• Heat and Thermodynamics: Chapters 18 to 19

• Relativity: Chapter 37

• Atomic and Quantum Physics: Chapters 38 to 39

• Nuclear Physics: Chapter 42 to 43

Required Resources

A copy of the WPHY143 Laboratory Manual should be purchased from the Coop notes bookshop before the laboratory sessions begin, and a soft copy of the manual will be available on iLearn.