Faculty of Science

School of Physics

PHYS1902: Physics 1B (Advanced)

Semester 2, 2016 | 6 Credit Points | Coordinator: Dr Helen Johnston (h.johnston@physis.usyd.edu.au)

1 Introduction

PHYS 1902 is the second part of the broad 3-semester overview of physics at Advanced Junior and Intermediate levels commenced in PHYS 1901. Together with either PHYS 1901 and 12 credit points of Junior Mathematics, PHYS 1902 provides the necessary background knowledge and practice of scientific skills for students who wish to enrol in Advanced Intermediate units of study in physics, in the environmental, medical and life sciences, or in engineering.

1.1 Assumed Knowledge and Prohibitions

It is assumed that students have an ATAR of at least 85 or HSC Physics result in Band 6, or PHYS 1901 or Distinction or better in PHYS 10001, 1002 or an equivalent unit. Recommended concurrent units of study are MATH1003/1903 and MATH1005/1905. PHYS1902 may not be counted with PHYS1003 or PHYS1004

2 Course Aims, Learning Objectives and Graduate Attributes

2.1 Course Aims

The focus of this unit is to introduce you to the key concepts in three foundation areas of physics: fluids, electromagnetism and quantum phenomena, using technological applications familiar to students of engineering and the physical sciences, for example, the lift on aeroplane wings and metal detectors.

The unit is designed to help you develop appropriate methods of study that will allow you to become an independent learner, capable of organising new information into a coherent conceptual framework and applying it in both familiar and unfamiliar situations. In the accompanying laboratory segment, students are introduced to basic skills in the use of electrical measuring instruments and work in teams to plan, carry out and report on an independent scientific investigation.

2.2 Learning Outcomes

After successfully completing this unit, you should be able to demonstrate:

1. an understanding of the key concepts of the behaviour of fluids, the interaction between electricity, magnetism and matter, and the fundamental concepts of quantum physics and its application to modern technology;
2. the ability to apply these concepts to develop models, and to solve qualitative and quantitative problems in scientific and engineering contexts with particular reference to applications in modern technology ;
3. basic experimental skills in the use of electrical measuring instruments and the ability to devise and carry out a scientific investigation that includes measuring physical quantities, analysis and interpretation of results;
4. the ability to find and analyse information and judge its reliability and significance;
5. the ability to communicate scientific information appropriately, both orally and through written work;
6. the ability to engage in team and group work for scientific investigations and for the process of learning;
7. a sense of responsibility, ethical behaviour and independence as a learner and as a scientist.

2.3 Graduate Attributes

Graduate Attributes are generic attributes that encompass not only technical knowledge but additional qualities that will equip students to be strong contributing members of professional and social communities in their future careers. The overarching graduate attributes identified by the University relate to a graduate's attitude or stance towards knowledge, towards the world, and towards themselves. These are understood as a combination of five overlapping skills or abilities, the foundations of which are developed as part of specific disciplinary study. For further details please refer to the Science faculty website at: http://www.itl.usyd.edu.au/graduateAttributes/facultyGA.cfm?faculty=Science

Graduate Attributes		Learning Outcomes
A Research and Inquiry		
A1.	Apply scientific knowledge and critical thinking to identify, define and analyse problems, create solutions, evaluate opinions, innovate and improve current practices.	2, 3, 4
A2.	Gather, evaluate and deploy information relevant to a scientific problem.	2, 3, 4
A3.	Design and conduct investigations, or the equivalent, and analyse and interpret the resulting data.	2, 3, 4
A4.	Critically examine the truth and validity in scientific argument and discourse, and evaluate the relative importance of ideas.	2, 3, 4
A5.	Disseminate new knowledge and engage in debate around scientific issues.	4, 5
A6.	Value the importance of continual growth in knowledge and skills, and recognise the rapid, and sometimes major, changes in scientific knowledge and technology.	4, 5, 7
B Information Literacy		
B1.	Use a range of searching tools (such as catalogues and databases) effectively and efficiently to find information.	4
B2.	Access a range of information sources in the science disciplines, for example books, reports, research articles, patents and company standards.	4
B3.	Critically evaluate the reliability and relevance of information in a scientific context.	2, 3, 4
B4.	Consider the economic, legal, social, ethical and cultural issues in the gathering and use of information.	7
B5.	Use information technology to gather, process, and disseminate scientific information.	4, 5
C Communication		
C1.	Explain and present ideas to different groups of people in plain English.	5
C2.	Write and speak effectively in a range of contexts and for a variety of different audiences and purposes.	5
C3.	Use symbolic and non-verbal communication, such as pictures, icons and symbols as well as body language and facial expressions, effectively.	5
C4.	Present and interpret data or other scientific information using graphs, tables, figures and symbols.	3, 5
C5.	Work as a member of a team, and take individual responsibility within the group for developing and achieving group goals.	6
C6.	Take a leadership role in successfully influencing the activities of a group towards a common goal.	6, 7
C7.	Actively seek, identify, and collaborate with others in a professional and social context.	5, 6, 7
D Ethical, Social and Professional Understanding		
D1.	Demonstrate an understanding of the significance and scope of ethical principles, both as a professional scientist and in the broader social context, and a commitment to apply these principles when making decisions.	7
D2.	Appreciate the importance of sustainability and the impact of science within the broader economic, environmental and socio-cultural context.	7
D3.	Demonstrate empathy with, and sensitivity towards, another's situation, feelings and motivation.	6, 7
E Personal and Intellectual Autonomy		

E1.	Evaluate personal performance and development, recognise gaps in knowledge and acquire new knowledge independently.	3, 4, 7
E2.	Demonstrate flexibility in adapting to new situations and dealing with uncertainty.	3, 7
E3.	Reflect on personal experiences, and consider their effect on personal actions and professional practice.	7
E4.	Set achievable and realistic goals and monitor and evaluate progress towards these goals.	7
E5.	Demonstrate openness and curiosity when applying scientific understanding in a wider context.	7

For further details on course learning outcomes see the Specific Objectives listed in the Lecture Module Outlines available on the unit eLearning site.

3 Study Commitment

Students enrolled in any 6-credit point unit of study offered by the Faculty of Science should consider spending up to 12 hours per week on that unit during the 13 teaching weeks and the study vacation. In PHYS 1902 this involves:

Lectures

You will have 38 one-hour lectures divided into 3 lecture modules:

- **Electricity and Magnetism** (20 lectures) - electrostatics, electric charge, electric fields, Gauss's Law, electric potential, capacitance, electromagnetism. This module will be taught from the viewpoint of the operation of devices commonly used in the technical world.
- **Fluids** (6 lectures) - density, pressure, buoyancy, surface tension, flow, turbulence, viscosity.
- **Quantum Physics** (12 lectures) - atomic spectra, photons, wave nature of particles, potential wells and barriers, the hydrogen atom.

The lectures are intended to guide you in your study of the textbook.

Tutorials/Workshops

You will have 12 one-hour **Workshop tutorials** based on and supporting the lecture modules. You will work in groups of four on a selection of qualitative and quantitative questions and problems, and investigate physical phenomena with demonstration apparatus. Tutors are present to assist you.

Assignments

You will be given 6 web-based *MasteringPhysics* sets of Assignment questions. *MasteringPhysics* provides questions that use a 'Socratic dialogue' - when you get stuck in answering a problem it offers a simpler problem and provides feedback tailored to your answers. It also offers the opportunity to develop your understanding of concepts and your problem solving ability through compulsory assignment questions and optional extra questions

Laboratory Work

You will have 9 three-hour laboratory sessions. You will work in groups of three on a range of experiments, with tutors to assist. You will work in groups of six on a project, with tutors to assist. Your understanding of Circuits concepts introduced in the laboratory will be tested in the Mid-Semester Test.

Independent Study

You are expected to do up to 6 hours (per week) of independent study. Use this time to:

- read through and understand relevant sections of the textbook
- work through the assigned examples in the text
- attempt the *MasteringPhysics* questions
- study for the mid-semester test and the final examination

In class activities	Hours
Lectures (38 @ 1 hr each)	38
Workshop Tutorials (12 @ 1 hr each)	12

Independent Study	Hours
6 web-based MasteringPhysics sets (3 hr each)	18
Reading of text for lectures (38 @ 0.5 hr each)	19

Laboratory sessions (9 @ 3 hrs each)	27
Total	**77**

Reading of lecture notes after lectures (38 @ 0.25 hr each)	10
Revision and self-assessment (13 @ 1 hr each week)	13
Preparation for Laboratory sessions (10 @ 0.5 hr each)	5
Preparation for mid-semester test	3
Outside work on Lab Project	10
Library on-line exercise	1
Total	**79**

Study Tips

You are now in control of your own study strategy, and as an adult learner it is up to you to devise a study plan that best suits you. If you attend classes regularly and involve yourself in all of these learning experiences, you will gain a good understanding of the course work. This will have a considerable impact on your exam preparation and performance.

Good study habits are also very important - we offer some suggestions on our Learning Physics web page (http://sydney.edu.au/science/physics/current/learningphysics.shtml).

As **preparation**, you should read *How to Succeed in Physics by Really Trying* on pages vii - viii of the textbook, preferably before the start of semester. You should also read and understand Section 1.5, *Uncertainty and Significant Figures*, and Section 1.6, *Estimates and Orders of Magnitude*.

4 Learning and Teaching Activities

WEEKLY SCHEDULE

Lectures

You will attend three one-hour lectures per week in the lecture theatre indicated. All lectures are held in the Physics Building.

Lectures commence Tues 26 July and end Thur 27 October

Slade Lecture Theatre - Tues 2pm, Wed 2pm, Thurs 2pm

Please consult your personal timetable on myUni for more details.

NB: There will be no lecture or tutorial classes during the mid-semester break and Labour Day Holiday (Monday 26 September to Monday 3 October inclusive).

Tutorials/Workshops

You should attend a single one-hour workshop tutorial per week. Times and venues will be displayed on the unit Blackboard pages. Workshop tutorials start in the *second* week of semester commencing Monday, 1 August. The final tutorial will be in the week commencing Monday, 24 October.

Note that participation in Workshop Tutorials will be recorded.

Laboratory Work

The laboratory component is divided into several sections:

- 5 weeks - electrical circuits
- 4 weeks - projects and student presentations

You will be scheduled into one, three-hour laboratory session per week in the Carslaw Building on Level 4 - Rooms 401, 402, 407 and 408.

Your first laboratory session is during the *second* week of semester commencing Monday 1 August. The final laboratory session for Monday classes will be on Monday 24 October; for all other classes it will be in the week commencing Monday, 17 October. **Some weeks there are no laboratory classes - consult the timetable on the back cover of your Lab Manual for details.**

Mastering Physics

All assignments are done using the *MasteringPhysics* system. *MasteringPhysics* is accessed only through links from the eLearning system (also known as Blackboard). Detailed registration instructions for new users or for those students changing textbooks can be found on the "Mastering Physics" main link from Blackboard.

If you used *MasteringPhysics* in semester 1 your access should continue unaffected. If you have not used *MasteringPhysics* before or you have problems with your access, you should contact Dr Pulin Gong, mastering_physics@physics.usyd.edu.au

Note that this free access to *MasteringPhysics* does not provide access to the textbook. Please see the section on resources for information on the textbook access options.

Questions in *MasteringPhysics* are presented in groups (called 'assignments' by the system) with a title such as Electromagnetism - Assignment 1 and Tutorial Questions. There are six 'assignments' for this unit of study. 'Introduction to *MasteringPhysics'* is an extra, short assignment illustrating the features of the system. This assignment is not worth marks, but you should do it if you are unfamiliar with the system, or if you need to refresh your understanding.

Assignment questions must be completed by 7pm (local time) on the due date. Available marks ramp down to zero in the five hours after the assignment deadline. It is therefore essential that you seek permission if you need to submit the assignment late. All assignment questions remain accessible to you for review (but no more marks will be awarded!) until the end of the semester.

Help in using *MasteringPhysics* can be obtained from links from Blackboard, or

- Extensive on-line help
- A discussion group on eLearning for this unit is monitored by Physics staff.
- email the *MasteringPhysics* coordinator, Dr Pulin Gong, mastering_physics@physics.usyd.edu.au

5 Teaching Staff and Contact Details

Unit Coordinator	Email
Dr Helen Johnston	h.johnston@physis.usyd.edu.au

Teaching Staff	Email	Room	Phone	Note
Prof. Geraint Lewis	geraint.lewis@sydney.edu.au	Rosehill St Building, Room 213	9351 5184	Electricity and Magnetism
Dr Shelley Wickham				Fluids
Dr Helen Johnston	h.johnston@sydney.edu.au	Physics, Room 213	9036 9259	Quantum Physics

6 Learning Resources

Textbook

The lecture modules are based on the textbook:

University Physics with Modern Physics, 14th Edition, by Young and Freedman (Y&F). Published by Pearson.

ISBN: 9781292100319

This text and resource package can be purchased from the University Co-Op bookshop or directly from Pearson online at pearson.com.au. The School of Physics will provide the online assignment component, MasteringPhysics. You do not need to purchase any MasteringPhysics product, either alone or bundled with books.

The options you have are:

1. Printed text Traditional hard copy

www.pearson.com.au/9781292100319 (FREE DELIVERY) $150

http://www.coop.com.au/bookshop/show/university-physics-wmodern-physics-pearson-new-international-edition-young-freedman/9781292020631/

$150

2. eBook of the full text

http://www.pearson.com.au/9781292033907 ~$60

This is a fully downloadable eBook which does not expire. You can load this copy onto an iPad/tablet and/or a computer using the VitalSource Bookshelf app.

3. eText of the full book to accompany MasteringPhysics

Refer to Blackboard and follow the links to MasteringPhysics. Once logged in successfully, click on the eText link and follow prompts to purchase an eText directly. The price is US$44. This is strictly the US edition of the 14th edition and contains a couple of additional appendices. Note: do not purchase this outside of your Blackboard site otherwise it will not link to your unit. This will provide access to the eText for the length of your unit. You can also access this on an iPad or tablet using the Pearson eText app. You will need to be online to view the eText version.

4. A second-hand hard copy

You may be able to find a used hard copy. Ideally this will be the US or New International versions of the 13th edition. The 12th edition has some differences but at a pinch is still workable.

Laboratory Manual

The laboratory segment of the unit is covered by:

PHYS 1902 Physics 1 (Advanced) Semester 2, Circuits - Advanced & Projects Laboratory Manual, prepared by the School of Physics

Laboratory Manuals are available from the Copy Centre, or online from the eLearning site.

Lecture Module Outlines

There is a module outline for each of the three lecture modules, available on the eLearning pages for this unit. These list specific objectives that define what you should learn and understand about the detailed content of each chapter of the textbook. Understanding a term or concept means that you should be able to:

- explain its meaning in writing and give examples;
- interpret it correctly when you read or hear it;
- use it correctly in your own writing; and
- apply it correctly to examples and problems.

The module outline also lists what sections of the textbook are relevant and recommended questions.

Web Resources

The University eLearning system elearning.sydney.edu.au provides resources to help you with your studies, please spend time getting acquainted with this site. *MyUni* sydney.edu.au/myuni is the student portal providing University information and services. Access to *MyUni* and eLearning requires a Unikey username and password that is issued with your confirmation of enrolment. The University provides computer facilities described on the *Student IT* pages at http://sydney.edu.au/ict/student/. The 'Current Student' link on the School of Physics web page sydney.edu.au/science/physics also provides resources to help you with your studies.

Email

The University provides you with email access based on your username. We may use this email address to provide you with important information regarding this unit of study. **We expect you to periodically read your email account or to forward mail from it to an account you do read (eg a gmail account).**

Where to go for help

If you need help, you can:

- as a first step, always check your unit eLearning pages for information, documents and links
- ask other students using the Discussion Board on the unit eLearning page.
- go to the Physics Student Services Office, Room 210 in the Physics building, or phone 9351 3037
- ask your lecturer or tutor
- ask a Duty Tutor - a staff member who is available Monday, Tuesday, Thursday and Friday, 1-2 pm, in Sydney

Nanoscience Hub Seminar Room 4001 to help you with problems with physics course material - available from Week 3 of semester.

- consult one of the many services provided by the University, such as the Maths Learning Centre. These can be found by choosing *Junior Physics Resources and Links* from the unit eLearning page or your *MyUni* pages sydney.edu.au/myuni.
- for Lab issues contact Dr Joe Khachan, Lab Coordinator, joe.khachan@sydney.edu.au
- for *MasteringPhysics* issues contact Dr Pulin Gong, mastering_physics@physics.usyd.edu.au

Providing us with feedback

We welcome comments on all aspects of this unit. You should feel free to contact your lecturers, tutors or the First Year Coordinator by email using the People@Physics list on the Physics web pages. There is also a formal opportunity for feedback at the Staff-Student Liaison meeting, held one lunch time towards the end of semester with staff and student representatives from the various units of study, including this one.

7 Assessment Tasks

Assessment

Assessment tasks are intended to allow you to demonstrate what you have learned related to the goals of this unit. They also serve to encourage you to work with the material, but should not dominate your approach to learning. See them as another learning activity, accompanying and complementing those listed earlier.

Assessment of this unit of study is based on achievement of specific learning objectives (listed in the module outlines) demonstrated in a combination of assignments, tests examination and laboratory work.

Satisfactory performance in ALL aspects of assessment is necessary to ensure a pass in this unit.
In addition, students in physics must be able to express themselves accurately by clear, efficient use of the English language in their written work. Spelling, grammar, punctuation and correct use of language will be taken into account when written reports and examination work are assessed. Students should refer to the University's WriteSite (http://writesite.elearn.usyd.edu.au/) if they are looking for guidance on grammar and other aspects of academic and professional writing.

You are responsible for understanding the University policy regarding assessment and examination, which can be found in the University Policy Register at http://sydney.edu.au/policies/

The method of combining marks from various assessment tasks is perhaps a little different to what you may be used to in other units, although this should not affect your approach to each assessment task. **ALL** assessment tasks are compulsory.

Your final grade will be based principally on your performance in the final exam and mid-semester test. All Summative Assessments are marked and have mark standards that must be achieved to be eligible for each grade in your final result. Refer to section 7.2 on Assessment Grading to see exactly how marks in each assessment determine your final grade.

Minimum standards for achievement in each assessment task are as follows:

	Exam + mid semester test (/100)	Assignments (/100)	Tutorials (/12)	Laboratory (/24)
HD	85.0	80	9	20
DI	75.0	65	9	18
CR	65.0	50	6	16
PS	45.0			14

See more details in *Assessment Grading* below.

7.1 Summative Assessments

Assessment Task	Brief Description	Due Date	Learning Outcomes
Introduction to Mastering Physics	**Category:** Submitted work **Type:** Assignment **Individual or group assessment:** Individual	Week 2 Friday, 05 August 2016	1, 2, 4
Electricity and Magnetism - Assignment 1 and Tutorial Questions	**Category:** Submitted work **Type:** Assignment **Individual or group assessment:** Individual	Week 3 Friday, 12 August 2016	1, 2, 4
Electricity and Magnetism - Assignment 2 and Tutorial Questions	**Category:** Submitted work **Type:** Assignment **Individual or group assessment:** Individual	Week 5 Friday, 26 August 2016	1, 2, 4
Electricity and Magnetism - Assignment 3 and Tutorial Questions	**Category:** Submitted work **Type:** Assignment **Individual or group assessment:** Individual	Week 7 Friday, 09 September 2016	1, 2, 4
Fluids - Assignment 4 and Tutorial Questions	**Category:** Submitted work **Type:** Assignment	Week 9 Friday, 23 September 2016	1, 2, 4
Quantum Physics - Assignment 5 and Tutorial Questions	**Category:** Submitted work **Type:** Assignment **Individual or group assessment:** Individual	Week 11 Friday, 14 October 2016	1, 2, 4
Quantum Physics - Assignment 6 and Tutorial Questions	**Category:** Submitted work **Type:** Assignment	Week 13 Friday, 28 October 2016	1, 2, 4
Workshop Tutorials	**Category:** In-class assessment **Type:** Tutorial quiz or small test or small continuous assessment **Individual or group assessment:** Individual	Weekly (weeks: 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12 and 13)	3, 4, 5, 6, 7
Laboratory Work - Circuits	**Category:** In-class assessment **Type:** Tutorial quiz or small test or small continuous assessment **Individual or group assessment:** Individual	Weekly (weeks: 2, 3, 4, 5 and 6)	1, 3, 4, 5, 6, 7
Mid-semester Test	**Category:** In-class assessment **Type:** Tutorial quiz or small test or small continuous assessment **Individual or group assessment:** Individual	Week 7 (week starting Sunday, 04 September 2016)	1, 2, 3, 4, 5, 6, 7
Laboratory Project	**Category:** Submitted work **Type:** Assignment **Individual or group assessment:** Group	Weekly (weeks: 9, 10, 11 and 12)	1, 2, 5, 6, 7
Final Examination	**Category:** Exam **Type:** Final exam **Individual or group assessment:** Individual	Exam Period	1, 2, 4, 5

Descriptions of Summative Assessments

Introduction to Mastering Physics

Each assignment (apart from the Introduction to MasteringPhysics) is divided into two components.

- **Tutorial Questions** feature the full MasteringPhysics Socratic dialogue - when you get stuck in answering a problem it offers a simpler problem and provides feedback tailored to your answers. These have been selected by your lecturers to help your understanding and problem solving ability. They are not assessed but we strongly recommend you look at some of these questions, which will remain available after the assignment deadline until the end of the semester.
- **Assignment Questions** are compulsory questions and represent the minimum use you should make of the system. 8 questions are offered, each worth 5 marks even though some are a little longer than others. The questions are a mix: tutorial-style questions teaching you concepts and problem solving techniques; and end-of-chapter problems from the textbook. The tutorial-style questions have full hints and feedback, while the end-of-chapter questions do not.

The marking scheme gives a small reward when answers are achieved without using the hints, but no penalty if you do use them. See the *MasteringPhysics* FAQ at sydney.edu.au/science/physics/pdfs/current/jphys/MP_faq.pdf for more details.

Read each problem, then work on it before trying to enter your answer. We don't want you to sit down and type in the answers without working on and thinking about them first. Try the problem without a hint first, then, if you get stuck, try the hint. For assignment questions, we give you eight chances to get the correct answer (although there is a small penalty for wrong answers). The objective is to get the right answer using as much help as it takes.

Your answers need to be formatted correctly so be smart and use the help the system provides:

- Values of constants can be found using the 'constants' button near the top of the page.
- See the Help linked from "?" at the right end of relevant boxes for more help with formatting.
- Move your mouse over symbols in the question to see how to type then in the correctly.

We encourage students to cooperate in understanding all the questions since the objective is to understand concepts and develop your problem solving ability. However all Assignment Questions using *MasteringPhysics* must be completed individually. Simply copying the work of another person without acknowledgment is plagiarism and contrary to University policies on Academic Dishonesty and Plagiarism in Coursework (see http://sydney.edu.au/policies/).

MasteringPhysics marks the assignments automatically and you immediately know your result. Worked solutions to all Assignment Questions will be posted on the web, although you should have the answer once you complete each *MasteringPhysics* question. Note that some assignment questions use randomised values - i.e. different students see the question with different values.

Workshop Tutorials

Contributing to Workshop Tutorials is an important part of success in this Unit of Study. We measure your contribution by collecting group answer sheets. To obtain the highest grades you must participate in at least 9 out of 12 workshops.

Laboratory Work - Circuits

Assessment in the laboratory is based on successful completion of laboratory work. For each laboratory session, you are awarded a mark for successfully completing each checkpoint. Satisfactory performance in Laboratory work is necessary for a pass in the unit, but if you work well in the laboratory you will learn a lot and be well on the way to passing this unit.

Mid-semester Test

After the last circuits session you will undertake a mid-semester test, based on the circuits experiments and the first lecture module (Electricity and Magnetism). This will be done in week 7 in your regular lab time, and will form 20% of your final grade.

7.2 Formative Assessments

Assessment Task	Date Available	Learning Outcomes
Academic Honesty Education Module	Always Available	7

Descriptions of Formative Assessments

Academic Honesty Education Module
The Academic Honesty Education Module appears as a compulsory extra unit of study (AHEM1001) on every new student's eLearning page if you are a commencing student from Semester 1 2016 at the University of Sydney. It is compulsory because the University wants all commencing students to have a basic understanding of academic integrity and honesty. When you understand these concepts and how they relate to your studies, you will be able to start your university journey better prepared to succeed. We strongly advise you to complete this module while you are preparing for your first assignment. The module contains nine quizzes, each of which must be completed with full marks before you are able to progress. The initial attempt at each quiz is intended to be challenging, so do not be discouraged if you get tripped up. The module will probably take you up to 90 minutes but you do not have to complete it in one sitting because your progress will be saved. It is available for you to complete until the end of this semester. A record will be made on your academic transcript when you have successfully completed the module. The concepts covered in this module will be also contextualised in activities presented within the particular units in which you are enrolled.

7.3 Assessment Grading

Final grades in this unit are awarded at levels of HD (High Distinction), DI (Distinction), CR (Credit), PS (Pass) and FA (Fail) as defined by the Academic Board Assessment Coursework Policy 2014. These achievement levels are described below. Details of the policy are available on the University's 'Policy Online' website athttp://www.sydney.edu.au/policies/.

The assessments for this unit are described in this unit of study outline. This description includes the purpose, timing and weighting of each assessment item and an explanation of how task relate to the learning outcomes of the unit. Students are responsible for actively engaging with these assessments, including carefully reading the guidance provided, spending sufficient time on the task, ensuring their work is authentic and their own (whether individual or group work), completing work on time and acting on feedback provided.

The grading system used in this unit of study is somewhat different from that used in most other units. It is based on setting appropriate standards in different types of assessment. **ALL** assessment tasks are compulsory.

Your final grade will be based principally on your performance in the two examination-style exams assessments where you are working by yourself:

- final exam (80%)
- mid-semester test (20%)

The minimum standard to achieve a pass mark in this unit is:

- Final exam + mid-semester test: ≥ 45%

AND

- Lab: ≥ 14/24 checkpoints

You must meet BOTH of these standards to pass this unit.

However, ALL assessments contribute to your final grade if you want to get more than a bare pass.

Each higher grade has a minimum mark that MUST be achieved to be eligible for that Grade in your final result – i.e. to achieve a High
Distinction (HD) you must achieve a HD standard in ALL assessments. If
you do not meet this standard, your mark will drop to the middle of
the grade below.

Standards for achievement in each assessment task are as follows:

	Exam + mid semester test (/100)	Assignments (/100)	Tutorials (/12)	Laboratory (/24)
HD	85.0	80	9	20
DI	75.0	65	9	18
CR	65.0	50	6	16
PS	45.0			14

For example:

If you did poorly in the mid-semester test (8/20), but much better in the final exam (68/80), your total mark for the three examination-style assessments would be 76% for the two exams. This is a Distinction (DI) standard. However, for this to be your final result, you would also need to achieve at least Distinction standard in ALL your other assessments -- i.e.

- at least 65% in your assignments
- participated in at least 9/12 tutorials
- completed at least 18/24 checkpoints in the lab

Most Distinction students will achieve these standards relatively easily as part of their conscientious work during the semester.

However, if (for instance) you didn't submit any assignments, then your 78% in the exams is dropped to a grade of 70 CR – the middle of the Credit range.

A more dramatic change would result if you had only completed 10/24 checkpoints in the lab. You have then not achieved one of the two minimum standards required to pass this unit and you would receive a 49 FA.

Of course, if you have a valid reason for missing an assessment which is approved via the Special Consideration process, your marks will be adjusted to allow for this.

The way to succeed in this unit is to do well in the various tests (as always) and to complete most (preferably all) of the other assessment tasks.

In Junior Physics, our aim is to give everyone a chance of a high grade, irrespective of their unit of study. To achieve this, we compare the units by having parts of the assessment in common. In the final examination for example, some questions are common on the various papers. We look at average marks for common and non-common questions to prevent one class being disadvantaged by, say, a difficult question that isn't on other papers. The result of this moderation process is a higher percentage of HDs and Ds in the Advanced unit (as you might expect), but the process also ensures there are HDs and Ds awarded in the other units of study to students who excel.

Grades:

High Distinction (HD)

At HD level, a student demonstrates a flair for the subject and comprehensive knowledge and understanding of the unit material. A ‘High Distinction’ reflects exceptional achievement and is awarded to a student who demonstrates the ability to apply subject knowledge to novel situations.

Distinction (DI)

At DI level, a student demonstrates an aptitude for the subject and a solid knowledge and understanding of the unit material. A ‘Distinction’ reflects excellent achievement and is awarded to a student who demonstrates an ability to apply the key ideas of the subject.

Credit (CR)

At CR level, a student demonstrates a good command and knowledge of the unit material. A 'Credit' reflects solid achievement and is awarded to a student who has a broad understanding of the unit material but has not fully developed the ability to apply the key ideas of the subject.

Pass (PS)

At PS level, a student demonstrates proficiency in the unit material. A 'Pass' reflects satisfactory achievement and is awarded to a student who has threshold knowledge of the subject.

8 Learning and Teaching Policies

EQUITY, ACCESS AND DIVERSITY STATEMENT

The School of Physics is strongly committed to providing equity of access and opportunity to all students, and to make our environment supportive for everyone. The School has three Equity Officers who act as a point of contact for students who may have a query or concern about any issues relating to equity, access and diversity. If you feel you have not been treated fairly, discriminated against or disadvantaged in any way, you are encouraged to talk to one of the Equity Officers or any member of the Physics staff. More information can be found at http://sydney.edu.au/science/physics/about/equity.shtml

Any student who feels she/he may need an accommodation based on the impact of a disability should contact Disability Services http://sydney.edu.au/current_students/disability/ who can help arrange support.

CONSIDERATION OF FACTORS AFFECTING YOUR STUDY

While studying at the University of Sydney, a student may need to apply for special consideration or special arrangements as follows:

Special Consideration may be granted where well-documented illness, injury or misadventure occurs to the student (or someone the student has carer's responsibility for) during semester or the exam period.

Longer term health or emotional issues are best managed with adjustments to course assessments as part of an Academic Plan developed in discussion between the student and Disabilities Services

Special Arrangements may be granted for certain personal circumstances - for example the birth of a child, or religious or cultural commitments - or for essential community commitments - for example compulsory legal absence (e.g. Jury duty), elite sporting or cultural commitments (representing the University, state or country), or Australian Defence Force or Emergency Service commitments (e.g. Army Reserve).

Note that, unlike some other faculties, the Faculty of Science does not offer 'Simple Extensions' for assessments.
ALL requests for an extension of time on an assessment must be made by applying for Special Consideration or Special Arrangements as outlined above.

Further information on eligibility, document requirements and how to apply is available at http://sydney.edu.au/science/cstudent/ug/forms.shtml#special_consideration. Applications must be made using the University's formal online application process no later than **three (3) working days** after the assessment occurrence or due date (unless a reasonable explanation for a delay is provided).

You should not submit an application of either type if

- there is no assessment associated with a missed class, or
- you have a reasonable opportunity to make up any work you missed.

Students unsure what type of Consideration is appropriate, or unhappy with a Consideration decision, should consult the Student Centre.

For full details of applicable university policies and procedures, see the web site at sydney.edu.au/policy.

Replacement assessments for end of semester examinations

Students who apply for and are granted either special arrangements or special consideration for end of semester examinations in units offered by the Faculty of Science will be expected to sit any replacement assessments in the two weeks immediately

following the end of the formal examination period. Later dates for replacement assessments may be considered where the application is supported by appropriate documentation and provided that adequate resources are available to accommodate any later date.

ACADEMIC DISHONESTY/PLAGIARISM

The School of Physics will NOT accept assessments that are simply copied. Copying the work of another person without acknowledgment is plagiarism and contrary to University policies on Academic Honesty and Plagiarism as described on the University Policy Register web site (https://sydney.edu.au/policy/). An outline of what constitutes Academic Dishonesty and Plagiarism can be found at https://sydney.edu.au/science/physics/local/acadhonesty.shtml.

Student Appeals

Students have the right to appeal any academic decision made by a school or the faculty. The appeal must follow the appropriate procedure so that a fair hearing is obtained. The formal application form can be obtained at:

https://sydney.edu.au/science/cstudent/ug/forms.shtml#appeals

Other University Policies

University Policies most relevant to an undergraduate coursework student are:

- Learning and Teaching Policy
- Coursework Policy
- Assessment Procedures
- Academic Honesty in Coursework
- Student Appeals against Academic Decisions

For full details of these and other university policies and procedures, see the University Policy Register web site at sydney.edu.au/policy.

Relevant forms and procedures are also available on the Faculty website at https://sydney.edu.au/science/cstudent/ug/forms.shtml