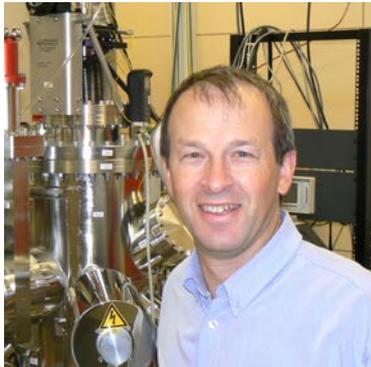


**PHYS111-21S1**  
**INTRODUCTORY PHYSICS FOR PHYSICAL SCIENCES AND ENGINEERING**  
**15 points, Semester 1 2021**

<p>Professor Mike Reid  <b>Course Coordinator</b>          Beatrice Tinsley 622          (03) 369-4252  <a href="mailto:mike.reid@canterbury.ac.nz">mike.reid@canterbury.ac.nz</a></p> <p><b>General Queries</b></p> 	<p>Professor Roger Reeves  <b>Term 2 Lecturer</b>          Beatrice Tinsley 421          (03) 369-5943  <a href="mailto:roger.reeves@canterbury.ac.nz">roger.reeves@canterbury.ac.nz</a></p> 	<p>Cliff Franklin  <b>Laboratory Supervisor</b>          Ernest Rutherford 322  <a href="mailto:cliff.franklin@canterbury.ac.nz">cliff.franklin@canterbury.ac.nz</a></p> <p><b>Queries about laboratory and tutorial allocations.</b></p> 
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**Course Objectives:** To learn the basic laws of physics AND to see that physics can be interesting and relevant to your daily experiences! PHYS111 is a course designed for students who do not have a strong background in Physics. Success in PHYS111 will give you a good foundation for PHYS101 (offered in Semester 1 and Semester 2). PHYS111 is a ‘non-calculus’ course but does assume previous knowledge of Physics and Mathematics. If you have no background in Physics or Mathematics then you will have to work hard to keep up. Note that it is also possible to take PHYS111 in Semester 2, and this is recommended if you have no previous background in physics.

**Course textbook:** *College Physics: A Strategic Approach, Global Edition (3e)*, by Knight, Jones and Field: <http://www.pearsoned.co.nz/9781292057156> and available at the Bookstore.

**Lectures: (begin on Monday 22nd February). Monday, Tuesday, Wednesday.**

Login to your UC timetable (<https://mytimetable.canterbury.ac.nz/>) or check the Course Information website (<http://www.canterbury.ac.nz/courses/>) before lectures to find the up-to-date location of your classes and to allocate yourself to laboratories and tutorials.

**Website:** Weekly quizzes, ‘hand-outs’ and various other resources are available online via UC Learn at <http://learn.canterbury.ac.nz>.

### Course content

Weeks 1-6: Motion in one and two dimensions; Newton’s laws; work and energy; centre of mass; momentum; collisions; rotations; oscillations and waves.

Weeks 7-12: Electromagnetic waves; polarization; reflection and refraction; lenses; light as a wave; electrical circuits; nuclear physics.

NOTE: A more detailed course outline with reading assignments for each lecture will be distributed at the start of each section. The **lectures, tutorials, homework, and laboratories** are designed to help you to make sense of the above course work and, while the lecturer, tutors and lab demonstrators are willing to assist you, it is your responsibility to learn and understand the material.

## CREDIT

**A satisfactory performance in the laboratory work and a 40% mark in the final exam are required to pass the course.**

5%	Tutorial. Marks for <i>active</i> participation.
5%	Online homework problems pre (due end of Thursday) and post (due end of following Tuesday) tutorials.
20%	Two Term tests of 1 hour
15%	Laboratory (10% lab book checkpoint marking; 5% for best of two lab reports)
55%	Final examination three hours. Date to be announced

## FINAL EXAMINATION

The final examination will be a three-hour written exam: date time place to be announced. This will count 55% toward your final mark in the course. It tests your grasp of the lectures, problems done on-line and in tutorials, and reading material. Bring your own calculator. Calculators must be approved – look out for announcements on how to get this done.

Previous exam papers are downloadable from the library website.

## TERM TESTS

Tests are scheduled in Week 4 and Week 9.

## LEARN

This course will make extensive use of *Learn*: <http://www.learn.canterbury.ac.nz/>. *Learn* is a web-based learning resource. **All course announcements, handouts, and homework will be on *Learn*.**

## ONLINE PROBLEMS

There will be 12 weekly sets of pre- and post-tutorial online problems, on *Learn*, **starting in week 1. The pre-tutorial problems are designed to provide practice before the tutorial, and the post-tutorial problems test what you learned in the tutorial.**

**The pre-tutorial homework will usually have a deadline of 11:59 pm Thursday, before the Friday Tutorial.**

**The post-tutorial homework will usually have a deadline of 11:59 pm on the Tuesday following the Friday Tutorial.**

For some questions you can have several attempts to get the correct answer – others there will be only ONE!

These homework problems will be marked online immediately. Each week will have the same assessment weight even if they have different numbers of questions. The best 8 weekly marks for pre-and post-tutorial homework will be counted towards your final grade.

## TUTORIALS

PHYS111 would normally have 12 tutorial sessions, **starting on Friday of Week 1**. However, this year the last Friday of Term 1 is a holiday, so there are only 11 sessions.

These will be small group parallel sessions. Students should allocate themselves to a tutorial via the timetable interface.

A tutor will guide your approach to solutions of the problems. Your participation in tutorials is essential – you learn physics by solving problems – and is important preparation for the test and exam. You will receive credit for participation. Your mark will be the best 8 tutorials.

## DROPIN/HELPDESK

Tutors will be available for the Monday and Wednesday Dropin Sessions, starting from Week 2. When decided, these times will be posted on the Learn site. The tutors are there to help you, and we really hope you will make use of this opportunity to ask questions and have your problems solved throughout the semester.

You are welcome to discuss online problems (but don't expect to be given the answers!) as well as the course material in general.

## LABORATORIES

**Supervisor:** Cliff Franklin, Ernest Rutherford 322  
[cliff.franklin@canterbury.ac.nz](mailto:cliff.franklin@canterbury.ac.nz)

The course includes 9 laboratory sessions of 3 hours each, running through terms 1 and 2. Please allocate yourself to a laboratory stream.

**Please attend the lab stream to which you have been assigned.  
Contact Cliff for timetabling problems with Laboratories or Tutorials.**



The laboratory work complements the lecture material. Some experiments introduce you to particular experimental techniques. Others illustrate lecture topics. Satisfactory performance in the laboratory work is required to pass the course as a whole.

The laboratories are in Ernest Rutherford 312.

The introductory session (**week 2**, week beginning 1<sup>st</sup> March) is to:

- Familiarise you with the laboratory procedures
- Discuss any timetabling problems

**It is essential for you to attend this introductory session.** You must purchase a Physics lab book from the Bookstore before your introductory lab in week 2. Cost is approximately \$15.

As well as the daily summary, you will be required to write up **TWO** of the experiments you perform as **formal reports**. The best ONE of the marks will be used in the Laboratory Mark. Thus if you are happy with your first report mark, there is no need to complete the second. More

information on formal report writing will be given early in the course and you will be given an example to follow.

## ABSENCES FROM EXAMS AND TESTS

If you are **absent** from the test or exam, or if you consider that your performance in the test or exam was impaired, then you can apply for *Special Consideration*. Action **MUST** be taken within 5 days of the assessment.

The link with details can be found at

<https://www.canterbury.ac.nz/study/special-consideration/>

Note that an individual lab session is **NOT** available for Special Consideration. If you are absent or have impairment for a lab session then contact the Laboratory Supervisor.

Grades for students who are approved for a special consideration for the test or exam will be determined as follows: If they missed the test, then a mark will be allocated based on their exam results (and vice versa). Students who missed both test and exam will be considered on a case-by-case basis.

## GENERAL INFORMATION

The School has general policies that apply to all courses regarding such matters as Dishonest Practice, Allowed types of calculators, Marks and Grades boundaries, Late Work, Academic Liaison, Assistance for Students with Disabilities, Reconsideration of Grades, Aegrotat Applications, Missing Tests etc. This information is available on the *Physics & Astronomy Undergraduate Courses* section of the Learn site.

## EXPECTATIONS AND REQUIREMENTS OF STUDENT PARTICIPATION IN PHYSICS AND ASTRONOMY COURSES

**An important principle operating in all our courses will be that of  
*LEARNING THROUGH ACTIVE PARTICIPATION.***

This means that you must be prepared to attend all the lectures, laboratories and tutorials and attempt all the homework assignments and all course tests. If you are unable to meet all these commitments, then you may not be well suited to studying physics.

The only exceptions to full participation in all aspects of the course will be

- students who have been issued with a written laboratory exemption;
- students who produce a doctor's certificate (or other evidence) to the Laboratory Supervisor (in the case of missed laboratory work) or to the Course Coordinator (in case of missing other work).

### READING, HOMEWORK AND STUDY

You will get as much out of this (or any) course as you put in to it. **Here are some ways you can best help yourself.**

- **Reading.** *Read* the relevant part of the text before each lecture (a reading list will be circulated). You will understand and enjoy it more, and learn much faster.
- **Problem-solving.** Nothing teaches more thoroughly than solving problems. *Attempt* the set work. If you cannot solve the problems ask questions during the tutorial.
- **Tutorials.** Attend tutorials and participate. In the tutorials you will discuss the assigned problems, and other problems.
- **Study.** *Work over* your lecture notes with the text and problems. *Write a digest* of your notes, summarizing key points in your own way on one sheet of paper for each lecture. These summaries are invaluable in problem solving, in laboratories and in revising.