

McGill University – Physics 101

(“Mechanics for the Life Sciences”)

Fall 2012 Session – General Course Information

Welcome to PHYS 101, a course of study in mechanics and waves (including optics) primarily for students intending to pursue the life sciences.

The **course components** are:

- **26 lectures:**
 - Thursday September 6 through Tuesday December 4
 - Tuesdays and Thursdays from 1:05 PM – 2:25 PM
 - in Leacock 132
- 11 problem **assignments**, using the CAPA system available through myCourses
- **6 laboratory sessions**, which are compulsory. Labs start the week of **Sept. 17**
- weekly **tutorial sessions** (optional)
- a **mid-term exam** on **Thursday October 4, in the evening (6 PM to 8 PM)**
- a **final exam** covering all material in the course (written under the invigilation of the University during the formal fall examination period in December)

A course calendar with all important dates, including the midterm, CAPA due dates, and labs, can be found on the myCourses website for the course.

The **evaluation scheme** for the course is:

Assignments:	10 %	
Laboratory reports:	20 %	(mandatory)
Mid-term exam	25 %	
Final exam:	45 %	
Bonus points	5 %	

The 5% bonus points are awarded under TWO conditions:

- a. You receive at least 60% (cumulative score over the entire term) in a series of quizzes that will precede each lecture; AND
- b. You are present in class for at least 75% of the time (as measured by ‘clicker’ participation, see below).

You must satisfy BOTH criteria to receive the 5% bonus points.

The **instructor** is:

Prof. Ken Ragan
Rutherford Physics Building, room 344
398-6518
email: ragan@physics.mcgill.ca

Please indicate PHYS 101 in the subject line of any emails, and indicate your name and ID in the body of the message!

The **textbook** is “Physics” by D. Giancoli, 6th edition, publisher Pearson/Prentice Hall (the same textbook will be used in the winter course PHYS 102 as well). We use a special edition marked “Custom Edition for McGill University” with a green and black cover. It’s available new in the bookstore (~\$150). Both the custom edition and the standard edition (white hardcover with a picture of a snowy mountain peak on the cover) may also be offered in used editions in the bookstore (~\$100), and should also be on the used textbook market. **The content of the two books, as regards this course, is identical.**

The **course material** will include large parts of Chapters 1 – 8, 11, 12, 23, 24, and 25 of Giancoli, approximately in the order that the text covers it. The **lectures** will not cover the material in the same depth as the text, but instead will briefly cover the material and then concentrate on conceptual issues and problem-solving. **Reading the appropriate material from the text in advance of the lecture is highly recommended!**

You will need to access course material through the myCourses system (www.mcgill.ca/mycourses). The site will contain this information, a link to the course schedule mentioned above, PDF files of the lecture notes, lecture recordings, the laboratory manual, a link to the CAPA system that will be used for assignments, and other useful course material.

Lectures will be held in Leacock 132 from 1:05 to 2:25 each Tuesday and Thursday. Typically I will introduce some new material, solicit discussion on the concepts, then work through some example problems. Please consider the lectures as **interactive** – please don’t hesitate to interrupt me if there is something you don’t get!

An aside for a little homily (hom-i-ly: *noun* : a lecture or discourse on or of a moral theme): I can’t tell you how to study, nor force you to attend. You’re all consenting adults. But evidence shows there’s a strong correlation between course attendance and final course grade. Lecture time – the 40 hours that we will spend together in Leacock 132 over the next 13 weeks – is valuable time where you get to ask questions, discuss the issues, answer quiz questions, watch demonstrations, and see physics happen. Lecture attendance is probably the single best way to understand the material and do well in this course. </homily>

Because of the importance that I attach to attendance, and the clarity of the data that shows this strong correlation between attendance and performance in the course, I have structured the **bonus participation points** in an attempt to do two things: encourage your attendance, AND encourage your preparation for the lectures.

Specifically, the participation points will be awarded based on two factors, as explained above. The quizzes that are mentioned there will be short (3 to 5 question) multiple

choice or short-answer quizzes, done through myCourses, and will be **time-restricted**: they will open the night before a specific lecture, and will close as the lecture starts. They will be based on material in the chapter that will be discussed in that lecture. The attendance will be based on clicker information (see more about the clickers, or “Personal Response Systems”, below).

The **lecture notes** will be available in PDF format on myCourses, in two different “versions”: a pre-lecture version without solutions to the in-class examples, and a post-lecture version with the solutions (in my sometimes-messy handwriting). In addition, the lectures will be **recorded** with a package that includes audio, PowerPoint transparencies, overhead projector feed (for problem solving) and possibly video; the resulting files are posted to myCourses (typically within 48 hours after the lecture) and available in multiple formats.

In the **lectures**, we will be using a **personal response system (“clickers”)**. Use of the clickers will be monitored (that is, I record the answers), but will **not** be graded. The clickers must be purchased from the University Bookstore (for this course and several other freshman courses). There are more details about the clickers at the end of this document.

The **assignments**, done on the web through the **CAPA** system (link available through myCourses), will be available for one week each, with the first assignment starting by Tuesday September 11. After the one-week time period for each assignment, results will be posted and there will be no further credit granted. The one-week period will close (ie, assignments will be due) at **midnight Montreal time on Mondays**, starting Monday, September 17. There will be a gap early in October for the week of your midterm. The final (11th) assignment will be due Monday December 3 at midnight.

The CAPA system allows us to create individual assignments for each student, generally by randomizing the numbers in the problems. It also allows you to respond multiple times (usually 6 for problems requiring computation) until the correct response is given. You will not be docked points for using the multiple chances (that is, you get full marks if you finally get the question right, even if it takes you 6 tries to do so). The heart of doing physics is problem-solving; used correctly, the assignments allow you to hone your problem-solving skills. CAPA does have some idiosyncracies that take some getting used to, though.

Laboratory sessions are in room 0070 in the Wong Building (across from the Rutherford Physics Building), and reports are to be handed in to your lab demonstrator **at the end of the lab session**. Labs start **during the week of September 17** – for other lab weeks, see the course calendar I referred to above. Please do not attend other lab sections than the one for which you are registered. If you must miss a lab for a valid reason, contact the instructor or the head lab TA (an announcement will be posted on myCourses about this). For those having valid excuses (such as illness) for missing labs, there will be a period of make-up labs at the end of the course; contact the instructor or the head lab TA for details.

The **labs are mandatory** and you must pass the lab component in order to pass the class. The labs are meant to provide hands-on experience with some of the phenomena introduced in the course, as well as a general introduction to the issues of measurement and uncertainty.

Tutorials will be offered several times per week for those who would like to have more help. Tutorial attendance (like class attendance!) is **not compulsory**. Tutorials give you the chance to meet with teaching assistants to discuss particular ideas, concepts, or problems that you may be having trouble with. The tutorial times will be discussed in class and announced on the web; it will take us a week or so to get them set up.

Both **exams** will be a mix of conceptual questions (either multiple-choice questions, or questions requiring short written answers) and problems requiring numerical solutions. The 2-hour midterm will likely have several (5 to 8) conceptual questions and 4 to 5 problems (each perhaps with several parts); the 3-hour final exam will have up to 10 conceptual questions and 6 to 8 problems. **The final will be cumulative.**

A **scientific calculator** with trig functions, square roots, and logs is essential for the course and for the examination. Graphing calculators are fine but this feature is **not** necessary (nor, in my opinion, very useful!). A suggested calculator model is the Sharp 510, available for about \$11 in the bookstore.

My **office hours** are on Tuesdays from 2:30 PM to 4:00 PM and on Fridays from 10:30 AM to noon. However, there will be times when I won't be able to make those times due to meetings. In general, though, if I'm in my office and my door is open, you're welcome to knock and I will usually be available to help you. **Please do NOT be shy about coming to see me if you are having difficulties.**

I hope you've all seen the standard McGill legal warning about academic integrity:

“McGill University values academic integrity. Therefore all students must understand the meaning and consequences of cheating, plagiarism and other academic offences under the Code of Student Conduct and Disciplinary Procedures (see <http://www.mcgill.ca/students/srr/honest> for more information).”

Here's another bit of legalese that I'm supposed to bring to your attention:

In accord with McGill University's Charter of Students' Rights, students in this course have the right to submit in English or in French any written work that is to be graded.

And finally, a little bit more about the **Student Response System** (“clickers”). Clickers will be used in this course to enhance engagement, to increase interactivity, and to aid *you* in evaluating your progress.

New and used clickers are available at the McGill Bookstore, for \$50 (new) and about \$37 (used). Purchase only **one** clicker for **all** your courses – all freshman Science courses use the same clicker system.

One clicker **cannot** be shared between multiple students (see Student Code of Conduct, www.mcgill.ca/secretariat/policies/students). Doing so is considered an academic offense.

Register your clicker to your McGill ID by going to one of your course in *myCourses*, clicking on the link “Register your clicker,” and following the instructions. You don’t need to do this for each course – once you’ve registered the clicker for one, it will carry over to your other courses. If you want to be eligible for the **bonus points**, I must know what your clicker ID is – and so **you must register your clicker!**

Lost clickers must be replaced at your own expense and re-registered using the link in *myCourses*.

For verification that a clicker is working correctly, please come to me (**after** class), or consult the ICS Service Desk (688 Sherbrooke, room 285) between 9:00 am and 5:00 pm. For any other questions, please see the clicker info page (link on the *myCourses* course homepage).

We’ve been using clickers for several years now in Physics 101. The response has been very favorable. Their use allows me to understand more fully if the physics concepts we encounter have been understood. That, in turn, allows me to tailor the lectures, including the examples I use and the time I spend on them, to facilitate your understanding. I encourage your feedback on the clickers (and indeed, on all other aspects of the course!).