McGill University – Physics 101
("Mechanics for the Life Sciences")

Fall 2009 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.

Your **instructor** is:

Prof. Ken Ragan
Rutherford Physics Building, room 344
514-398-6518
email: ragan@physics.mcgill.ca

The **course components** are:

- 26 **lectures**, given Tuesdays/Thursdays at 11:30 AM – 1:00 PM in Leacock 132, starting Tuesday September 1, 2008 and going through Tuesday, December 1 (note that Thursday, December 3 ***is*** a class day but is considered a "Monday" for McGill teaching purposes, and there will be **no** PHYS 101 lecture that day).
- 12 problem **assignments**, using the CAPA system available through mycourses
- 6 **laboratory sessions**, which are compulsory. Labs start the week of **Sept. 14**. Please note that labs are NOT ALWAYS every second week – see the calendar for the labs attached to this handout (also posted on mycourses).
- weekly **tutorial sessions** (optional)
- a **mid-term exam** on **Thursday October 22 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)

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

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

OR:

Assignments:	10 %	
Laboratory reports:	20 %	(mandatory)
Mid-term exam	15 %	
Final exam:	55 %	

You do **not** have to make a choice as to which pertains to you: I will choose the option that gives you the best grade possible!

The **textbook** is "Physics" by D. Giancoli, 6th edition, publisher Pearson/Prentice Hall. Available in the bookstore and also in the used textbook market. It will be used in the winter course PHYS 102 as well. There is also a special McGill edition with just the material that we use in the course – it's smaller and slimmer than the full text. The full text has a white spine and a picture of K2 (the mountain) on the cover, and the special edition has a green and black design with an optical fibre on the front; **the content is identical**! If you purchase a new copy of the special edition in the bookstore, it comes bundled with access to Pearson's "Mastering Physics" website which **we will not use for the grading in the course**, but which allows you to practice on Giancoli questions online.

The **course material** will include large parts of Chapters 1 – 8, 11, 12, 23, 24, and 25 of Giancoli, approximately in the order that Giancoli 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 problem-solving. **Reading the appropriate material from the text in advance of the lecture will be necessary!**

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

Lectures will be held in Leacock 132 from 11:35 to 12:55 each Tuesday and Thursday. Typically I will introduce some new material, try to solicit discussion on the concepts, then work through some example problems. You should consider the lectures as **interactive** – please don't hesitate to interrupt me if there is something you don't get!

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** and posted on mycourses in streaming format.

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. 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 Monday September 8. 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 Wednesdays**, starting Wednesday, September 9 through Wednesday, December 2. There will be **no assignment** for the week prior to the midterm (that is, there is no assignment due on Wednesday, October 21st). Thus, there are **12 weekly assignments** for the course.

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.

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**. Attached you will find a schedule of the course that includes the lab sessions; they start **during the week of September 14**. For those having valid excuses for missing labs (such as illness), 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 **a passing mark on the labs** (ie, at least 55%) **is required in order to pass the course**. 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; they are essential in truly understanding these issues.

Tutorials are 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 announced in class and on the web, but in general they will be a few afternoons a week. In addition, your professor will be running a single one-hour tutorial session each week.

Both the midterm and the final **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 (~6 to 8) conceptual questions and 3 to 4 problems (each perhaps with several parts); the 3-hour final exam will have up to 10 conceptual questions and 5 to 6 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 2:00 PM to 3:30 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.**

Here's a little bit more about the **Student Response System** ("clickers") that I mentioned above:

Clickers will be used in this course to enhance engagement, increase interactivity, and aid *you* and your instructor in evaluating your progress.

New and used clickers are available at the McGill Bookstore, and can be sold back to the bookstore at the end of the term or the end of the academic year. Many of the other freshman Science courses are also using clickers – purchase only **one** clicker for **all** your courses. Only one type of clicker is supported at McGill. Lost clickers must be replaced at your own expense (and re-registered through *mycourses*, see below).

One clicker **cannot** be shared between multiple students. Doing so is considered an academic offense.

Register your clicker to your McGill ID in *mycourses*: in any course, click on the link "Register your clicker," and follow the instructions. You only need to register your clicker in (any) one of the courses that use clickers.

For verification that a clicker is working correctly, please come to me (**after** class), or consult the ICS Service Desk in 688 Sherbrooke St. West, room 285. For any other questions, please see www.mcgill.ca/tls/projects/srs/faq/

We have been using clickers in Physics 101 for a few years, and 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!).

I may use information gathered with clickers in this course to analyse student responses and correlate those responses to grades. This may result in published work. This will be done anonymously (it will be impossible to identify YOU or YOUR responses or grades from information that I will make public) but please tell me if you would prefer that I exclude your data from any of my studies.

Finally, some legalese:

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 www.mcgill.ca/students/srr/honest) for more information).**"

… and here's something you might not have known:

"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. This right applies to all written work that is to be graded, from one-word answers to dissertations."