

# McGill University – Physics 101

(“Mechanics for the Life Sciences”)

## Fall 2017 Session – General Course Information

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

The **course components** are:

- **26 lectures:**
  - Tuesday September 5 through Thursday November 30
  - Tuesdays and Thursdays from 1:05 PM – 2:25 PM
  - in Leacock 132
- 10 problem **assignments**, using the CAPA system available through myCourses
- 5 **laboratory sessions**, which are compulsory. Labs start the week of **Sept. 25**
- Four-times weekly **tutorial sessions** (optional)
- a **mid-term exam** on **Monday October 16, 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 %	
<b>Bonus points</b>	<b>5 %</b>	

Once your final percentage grade in the course is determined according to the scheme above, the standard McGill scale of letter grades is used (see [www.mcgill.ca/study/2017-2018/university\\_regulations\\_and\\_resources/undergraduate/gi\\_grading\\_and\\_grade\\_point\\_averages](http://www.mcgill.ca/study/2017-2018/university_regulations_and_resources/undergraduate/gi_grading_and_grade_point_averages)); only the letter grade will be reported to you (and to Minerva).

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 – in particular, you will need to register your clicker).

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

The **course instructor** is:

Prof. Ken Ragan  
Rutherford Physics Building, room 344  
398-6518  
email: [ragan@physics.mcgill.ca](mailto: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, 7<sup>th</sup> edition, publisher Pearson/Prentice Hall (the same textbook will be used in the winter course PHYS 102 as well). It is available in the McGill bookstore, for ~\$200 (new). They also have many used copies (at \$150). Prior to 2012, this course used the 6<sup>th</sup> edition of the same textbook (very similar content) which you may be able to find on the used market.

The **course material** will include large parts of Chapters 1 – 8, 11, 12, 24, and 25 of Giancoli, approximately in the order that the text covers it (a document of the material covered in the course and the desired learning outcomes is posted on mycourses). The **lectures** will not cover the material in the same depth as the text, but instead will **very** 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](http://www.mcgill.ca/mycourses) or through myMcGill). 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. Our lectures will not follow a traditional “sit and listen” format. They will be interactive – using the clickers – and involve group problem-solving and peer instruction, aided by undergrad mentors (who have already taken the course and excelled in it). Only a small amount of time (or none!) will be spent actually presenting the material and **so you will need to read ahead**.

Let me say that again, because you might have missed it: **you will need to read ahead** to get the most (or indeed, maybe anything!) out of the lectures.

The **lecture notes** will be available in PDF format on myCourses, in two different “versions”: a pre-lecture version without annotations or solutions to the in-class examples, and a post-lecture version with annotations and 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.

Given that the lecture notes are online, and the lectures are recorded, you might be asking “Why would I bother to come to lectures?”. So it’s time for a little homily (hom·i·ly: *noun* : a lecture or discourse on or of a moral theme):

<homily> I can't tell you how to study, nor force you to attend class. 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 (typically 4 questions) 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 shortly before the lecture starts. In principle, they will be based on material that will be discussed in that lecture. **That is, it will be material we have not yet seen in class.** And that's exactly the point: to fully understand the quiz material **you will need to read ahead.** The attendance will be based on clicker information. Specifically, the attendance percentage will be the number of responses from your device divided by the total number of clicker questions asked during the term. It doesn't matter if your clicker response was "correct" or not – just that you responded.

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. For details on the clicker app, and to register, go to **mcgill.ca/polling**. The clicker app (called "ResponseWare") can be downloaded from the Apple Store or iTunes © (for iOS) or the Google PlayStore © (for android), or you can go to a website (rwpoll.com) - in all cases, you will eventually need a Session ID, and for this course, that is:

### **Session ID: Phys1012017**

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 approximately Thursday September 14. 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 **noon Montreal time on Fridays**, starting Friday, September 22. There will be a gap in October for the week of your midterm. The final (10<sup>th</sup>) assignment will be due in the last week of classes.

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 – there is a "CAPA Help and Hints" file posted on myCourses that you should refer to before you start.

**Laboratory sessions** are in room 0070 in the basement of 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 25** – 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 **may** 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 (ie, achieve 55% or better) 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** (in collaboration with other freshman science courses – our name for this is FRezCa) 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 and undergraduate mentors 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.

The **exam format** has **not yet been finalized**, but past exams have been a mix of conceptual questions (either multiple-choice questions, or questions requiring short written answers) and problems requiring numerical solutions, with 2-hour midterms having 5 to 8 conceptual questions and 4 to 5 problems (each perhaps with several parts) and 3-hour final exams having about 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!). Good and inexpensive calculators are available at the bookstore.

My **office hours** are on Tuesdays from 10:00 AM to 11:30 AM (however, there will be times when I won't be able to make those times due to meetings). If you can't make that time but would like to talk to me, feel free to email and we can set up an appointment, or simply drop-in: in general, 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.

This year, "clickers" as physical devices are being replaced by apps on your smartphones or tablets, or web access through your phone, tablet or laptop (your choice). There is no cost to you. You must download the app (ResponseWare) or connect to the website (rwpoll.com), and indicate the Session ID as given above.

Sadly, here's yet another bit of legalese that I need to apprise you of:

**Since polling records may be used to compute a portion of course grades, responding as someone other than yourself is considered an academic offense. During class, possession of more than one response device or using the credentials of another student will be interpreted as intent to commit an academic offense. Please refer to McGill's policy on Academic Integrity and Code of Conduct.**

You must register your clicker. At the time I'm writing this, the exact procedure is unclear, but the link "Polling @McGill" (or similar) in the upper navigation bar on your mycourses entry page (NOT the page for PHYS 101) will walk you through the process. 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!** More information on clickers is available at [mcgill.ca/polling](http://mcgill.ca/polling).

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!).

Welcome to McGill, and I hope you enjoy the course!