

# Mechanics and Waves

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## 1. What is this course all about?

What [Brock calendar entry](#) says:

Kinematics, Newton's laws and their applications to equilibrium and dynamics with examples from biomechanics; waves and sound.

**What do I need to bring into the course?**

This course is suitable for students with a high school science background. High school calculus or Grade 12 Physics are *not* required, but skills in elementary algebra, geometry, and trigonometry are necessary: the course is *quantitative* in nature. A good scientific calculator is required.

**Textbook**

*College Physics*, by Young and Geller, 8th Edition, Pearson/Addison Wesley, 2007. *Student Study Guide*, *Student Pocket Companion*, and other ancillary materials are available to order from the Bookstore, if desired. See the Preface in the textbook or the companion website, [http://www.aw-bc.com/young\\_geller](http://www.aw-bc.com/young_geller).

## 2. Lectures, tutorials, and labs

<b>Instructor</b>	A. Knigavko
<b>Lectures</b>	Tue Thu 19:00-22:00 AS217
<b>Tutorials</b>	Tue Thu 18:00-19:00 AS217
<b>Labs (1P91 only)</b>	<b>will start in Sept. 2007.</b> For more details contact Frank Benko (B210A, <a href="mailto:fabenko@brocku.ca">fabenko@brocku.ca</a> )

**Tutorials**

are conducted **every Tuesday, Thursday starting May 8, 2007** and consist of two distinct phases:

**Phase 1: Help Session** (30 mins)

This is the time you should take the help of the TAs to clarify all your doubts, questions related to the homework problems and related problems from the text book. You will get individual or small-group attention during this help session.

**Phase 2: in-class quiz** (30 mins)

Two or three problems similar to (*but not necessarily from!*) the ones assigned as home work. A typical quiz will consist of two qualitative multiple-choice problems, and one problem that requires calculations.

The tutorial test marks contribute a significant fraction of the [final grade](#) in the course, and their **attendance is mandatory**. There will be no alternate test

times. University regulations stipulate that only valid medical excuses can be accepted, with the marks scaled accordingly.

### **PHYS 1P91 laboratories**

will be in MC H200 during fall semester (September 2007). For more details, contact Frank Benko (B210A, [fabenko@brocku.ca](mailto:fabenko@brocku.ca))

## **3. Other sources of help**

### **Office hours**

A. Knigavko (B230, ext.4434, [Anton.Knigavko@brocku.ca](mailto:Anton.Knigavko@brocku.ca))

**Frank Benko** (B210A, ext.3417, [fabenko@brocku.ca](mailto:fabenko@brocku.ca)): TBA

**Phil Boseglav** (B211, ext.4109, [fbosegla@brocku.ca](mailto:fbosegla@brocku.ca)): TBA

### **On-line electronic documentation**

Course descriptions, weekly tutorial problem assignments (*i.e.*, homework), and some selected supplementary materials is available from the Web server of the Physics Department, <https://www.physics.brocku.ca/courses/> (follow the link to 1P21/1P91).

## **4. Topics to be covered**

As time permits, some topics not listed below may be added, while some other topics from the listed chapters may not be covered during lectures and tutorial sessions.

1. Kinematics: motion in one and two dimensions
  - Displacement vectors
  - Algebra of vectors
  - Speed, velocity, and acceleration
  - Kinematics in 2D
2. Dynamics
  - Newton's Laws
  - Gravity
  - Contact forces
3. Rotational motion:
  - Kinematics of rotational motion
  - Dynamics of uniform rotation
  - Torque
4. Work, energy, momentum
  - Work and energy
  - Linear momentum
5. Oscillations and waves
  - Simple harmonic oscillator
  - Waves in elastic media
  - Sound waves

## **5. Tests and the marking scheme**

Component	PHYS 1P21	PHYS 1P91	Comments
tutorial tests	40%	40%	Attendance is mandatory
midterm exam	25%	15%	On May 17, 2006, during the regular tutorial time slots
final exam	35%	25%	June 2, 2006, 1900 - 2200 (Location: AS 204). You must pass the final exam (40% or more) in order to pass the course.
laboratories	-	20%	All labs must be completed <b>in the fall semester (sept-dec 2007)</b> to obtain a final mark in the course. To complete a lab you must perform the experiment, submit a Lab Report for marking <i>and</i> a copy of the report Discussion to <b>turnitin.com</b> . More details will be available in Septemeber 2007.

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The material on this page is shared by *all* sections of the course.

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