



**Course Outline**

**UNIVERSITY STUDIES**

**PHYS 1130**  
**Wave Motion, Optics, and Sound**  
**Fall, 2012**

**3 CREDITS**  
**3+3 HOURS PER WEEK**  
**3.8 Engineering Units (for U. Alberta)**

**INSTRUCTOR: Jean-Pierre De Villiers**

**INSTRUCTOR:** Jean-Pierre De Villiers  
**PHONE NUMBER:** (780) 791-4940  
**E-MAIL:** Jean-Pierre.DeVilliers@keyano.ca  
**OFFICE NUMBER:** S211B

**OFFICE HOURS:**

Monday	11:00 – 11:50 AM
Tuesday	04:00 – 04:50 PM
Wednesday	04:00 – 04:50 PM
Thursday	04:00 – 04:50 PM
Friday	04:00 – 04:50 PM

**HOURS OF INSTRUCTION:**

Monday	02:00 – 04:50 PM	Room 239
Tuesday	10:00 – 10:50 AM	Room 239
Wednesday	09:00 – 11:50 PM	Room 239 (Lab)
Thursday	10:00 – 10:50 AM	Room 239

**COURSE DESCRIPTION:**

Geometrical optics, optical instruments, oscillations, waves, sound, interference, diffraction, accompanied by related laboratory work.

**PRE-REQUISITE(S):**

Math 30 or Math 30 Pure, Math 31 and Physics 30 / MATH 100 or equivalent.

**COURSE OUTCOMES:**

1. **Comprehension.** To understand at the conceptual and computational level two basic phenomena of the physical world: wave motion and light propagation.
2. **Practical.** To develop problem solving skills ranging from order-of-magnitude estimates to full algebraic/numeric solutions of multi-part verbal (word) problems in mechanics and wave propagation.
3. **Practical.** To develop basic laboratory skills: how to measure, quantify, and analyse physical phenomena; how to discuss and defend experimental results; how to communicate experimental results.

**REQUIRED RESOURCES:**

- **Physics for Scientists and Engineers;** Serway and Jewett. Brooks/Cole, 2010 (8th edition) with Web Assign.
- Physics Laboratory Notebook
- Lecture Notebook and **separate bound notebook for assignments**

**TOPICS TO BE COVERED:****Please Note:**

This course outline may be modified to facilitate unforeseen time constraints. Date and time allotted to each topic is subject to change.

Week	Chapter	Topic	Lab
1	1-8	Refresher: Calculus, Trig, Geometry, Vectors, Forces, Energy	
2	10 15	Brief intro to Rigid Body Rotation SHM	Intro to physics lab
3	15	Oscillations and SHM	Intro to measurement
4	16	Waves - Basic	SHM (physical spring)
5	16	Waves - Superposition	
6		Midterm	
7	17	Sound	Solve problem/build/test
8	18	Sound Interference	
9	34 35	EM Waves - basic Light: Reflection and Refraction	Waves on a string
10	35/36	Images, Geometric Optics	
11	36	Optics	Thin Lenses
12	37	Interference	
13	37/38	Thin films, Diffraction	Diffraction and spectroscopy
14	38	Diffraction	

**ILEARN**

Go to <http://ilearn.keyano.ca>

This course is supported through iLearn. Assignments, readings and handouts will be posted on iLearn. Login information will be provided by your instructor. For further instructions please see the iLearn handout.

**EVALUATION:**

Component	Percentage	Due Date
Assignments	2.5%	Weekly, posted at MasteringPhysics.com
Quizzes	7.5%	Weekly
Labs	20%	See below for important conditions
Midterm	25%	October XX, 2012
Final Examination	45%	Date TBA, in December

**GRADING SYSTEM:**

Letter Grade	Description	Grade Points
A+		4
A	Excellent	4
A-		3.7
B+		3.3
B	Good	3
B-		2.7
C+		2.3
C	Satisfactory	2
C-		1.7
D+		1.3
D	Minimal Pass	1
F	Failure	0

**Students intending to transfer to other institutions require a 'C-' as a minimum grade. Transfer information on each course is available at the [Alberta Council on Admission and Transfers](#).**

**Students who do not complete all the required work should not expect to pass the course.** Specifically, students must pass the lab component of the course (50% or greater aggregate score on lab reports) in order to receive a passing grade for the course. If a passing grade is obtained in the lab component, then a grade is assigned a grade based on term work using the weighting given above.

*Students should consult:*

[http://www.keyano.ca/current\\_students/examinations/index.htm](http://www.keyano.ca/current_students/examinations/index.htm)

**IMPORTANT DATES:**

September 18, 2012	Courses dropped after this date will be designated “W”. (A withdrawal (W) is not reflected in your GPA)
Week of October 8, 2012	Mid-term examination
October 26, 2012	Courses dropped after this date will be designated “WF”. (A withdrawal failure (WF) counts as a 0 in your GPA)
December 7, 2012	Last day of classes
December 10-19, 2012	Final Exams

**COLLEGE POLICIES****Equality, Equity and Respect**

The Keyano College is committed to providing an environment of equality, equity and respect for all people within the College community. All members of this community are considered partners in developing teaching and learning contexts that are welcoming to all. Faculty, staff, and students are encouraged to use inclusive language to create a classroom atmosphere in which students' experiences and views are treated with equal respect and valued in relation to their gender, ethnic and cultural background, and sexual orientation.

*Students should consult:*

[http://www.keyano.ca/Committees/IRA/Individual\\_Rights\\_Policy.asp](http://www.keyano.ca/Committees/IRA/Individual_Rights_Policy.asp)

**Plagiarism and Cheating**

Every student expects to be treated and evaluated fairly in a course. Plagiarism and cheating robs everyone of this right.

No student may submit words, ideas or data of another student or person as his or her own in any writing, project, assignment, quiz, electronic presentation, exam etc. Any work used that is not the student's own must be clearly cited as belonging to someone else. There are penalties for using other's work and not citing it. The Student's Rights & Responsibilities document clearly outlines these penalties and the appeal process.

- No learner can obtain information from another student during an exam.
- No learner can bring unauthorized information (paper or electronic) into an exam or quiz.
- No student can submit work done in another course for grading in this course without the written prior approval of the course instructor.
- No student can submit copyright protected or commercially produced materials as part or all of an assignment without proper citation & permission.

**Student Rights & Responsibilities**

Students should consult the Keyano College Credit Calendar or online at:

<http://www.keyano.ca/Media/Collections/Calendars/Keyano.Calendar1112-10-full.pdf>

## Specialized Supports and Duty to Accommodate

### *Disability Support Services: Learner Assistance Program*

If you have a documented disability or you think that you would benefit from some assistance from a Disabilities Counsellor, please call or visit the Disability Supports Office 780-792-5608 to book an appointment (across from the library). Services and accommodations are intended to assist you in your program of study, while maintaining the academic standards of Keyano College. We can be of assistance to you in disclosing your disability to your instructor, providing accommodations, and supporting your overall success at Keyano College.

### *Specialized Supports and Duty to Accommodate*

Specialized Support and Duty to Accommodate are aligned with the office of Disability Support Services: Learner Assistance Program (LAP) guided by federal and provincial human rights legislation, and defined by a number of Keyano College policies. Keyano College is obligated by legislation to provide disability-related accommodations to students with identified disabilities to the point of undue hardship.

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## COURSE-SPECIFIC POLICIES

### iLearn and Lecture Notes

You are responsible for keeping a complete record of classroom work (lecture notes, interactive problems, classroom exercises) in a proper notebook. **Lecture overheads are posted to iLearn at the end of each week and do not constitute a complete record of lecture materials.**

### Attendance Policy

You are expected to attend all lectures, tutorials, and laboratories without exception. Failure to do so may jeopardize your standing in the course; please consult the Keyano College Calendar, also available on-line at <http://www.keyano.ca/calendar/>.

- Valid reasons for absences include illness, medical appointments, and family emergencies.
- You are expected to **notify your instructor** of your absence by **email** (preferred) or by **telephone** on or before the date of the absence; failure to do so will result in your absence being recorded as unexcused.
- You may be required to provide **written proof** justifying your absence at the instructor's discretion. Such proof will be required to obtain an excused absence from a quiz, tutorial, lab or exam.

### Laboratory Work:

- Students must keep a proper record of experimental results in a hardcover physics laboratory manual (available at bookstore). **IF YOU DO NOT BRING YOUR LOGBOOK TO A LAB, YOU WILL BE EXCUSED FROM THE LAB.**
- Laboratory attendance is compulsory and no unexcused absences will be tolerated. An unexcused absence will result in a grade of zero for the missed lab and may result in **course failure**. See attendance policy.
- A properly formatted, **laboratory report** produced using Microsoft Word and Excel is due at the end of the lab session.

- **Pre-lab: you are expected to arrive at a lab having read all advance material (posted on iLearn). A prelab exercise is due before the start of the lab period. If this exercise is not completed by the deadline, it must be completed during the lab period; the remaining time in the lab period will then be available for the experiment.**
- A passing grade must be obtained in the lab portion of the course in order to **pass the course**. Specifically, students must achieve a 50% or greater aggregate score on lab reports in order to avoid an automatic grade of F. If a passing grade is obtained in the lab component, then a grade is assigned a grade based on term work using the weighting given above.
- **Laboratory safety** is a primary concern.
  - WHMIS certification is a prerequisite for participating in labs.
  - Any unsafe operation or abuse of laboratory equipment will result in expulsion from the lab and a grade of zero.
  - Serious safety breaches may be pursued as an academic matter.

### Assignments, Quizzes, and Tutorials

#### Assignments:

This course uses web-based assignments: you will need to use the **Mastering Physics access kit** purchased with your textbook to access the assignments; instructions will be provided in the first lecture. Assignments must be completed via the Mastering Physics web site before the posted due dates; partially completed assignments receive the score achieved before the due date.

- **You are expected to keep fully worked out solutions to your assignments in a bound notebook; your instructor may ask to see these solutions at anytime, and you should be prepared to produce these solutions when demanded. The best approach is to have your solution book with you during lectures, labs, and tutorials.**
- You may rework assignments after the due date for practice purposes; this will have no effect on your score.
- **NOTE: missed or incomplete assignments will result in a grade of F for the course.**
- **Your mark for an assignment is not released until you have shown your written work to your instructor.**

#### Quizzes:

You are expected to keep current will lecture materials by reviewing your notes, reading your textbook, and making effective use of office hours. To encourage this, there will be **weekly, unannounced quizzes** consisting of simple conceptual questions. These quizzes may be done via Mastering Physics or on paper, depending on enrollment (due to limited in-class computing resources).

#### Mentoring

All engineering students will be assigned a mentor (a faculty member). Brief meetings between student and mentor will take place at regular intervals, usually weekly, to help students manage the demands of the engineering program. Typical topics discussed with a mentor include study strategies, guidance, monitoring academic progress, among others.

## Plagiarism and Cheating

**There is a zero tolerance policy in Physics for all forms of academic dishonesty.** Plagiarism of any kind, the use of illegal study aids, or the fabrication of experimental results will be dealt with according to Keyano College policy. Specifically for this course:

- **Cheating on assignments:** if you are suspected of having obtained assignment solutions through dishonest means, you will be required to convince your instructor that you are able to reproduce any solution on the given assignment or tutorial; failure to do so will result, at minimum, in a grade of zero for the assignment or tutorial.
- **Plagiarizing components of a lab report:** submitting plagiarized material for any portion of a lab report will result, at minimum, with a grade of zero for the lab report in question.
- Attempting to submit a **lab report where data was fabricated** is a major academic offense that goes to your integrity as a scientist. The minimum penalty for such an infraction will be a failing grade for the course.
- **Cheating during an examination (including quizzes)** will result, at minimum, with a failing grade in the course

Repeat offenses will be penalized with, at minimum, a failing grade in the course.

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**Faculty of Arts and Science**

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Jean-Pierre De Villiers, Instructor

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Date

**Reviewed and approved by:**

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Louis Dingley, Chairperson

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Date

**Guy Harmer, Dean**

**Date**