

LAKEHEAD UNIVERSITY  
**COURSE OUTLINE**  
**INTRODUCTORY PHYSICS I: PHYSICS 1211**  
**FALL 2014**

**LECTURE HOURS:** M/W 5:30 pm - 7:00 pm ROOM BB-2006

**CREDIT WEIGHT:** Half Course (3-3, 0-0)      **CO-REQUISITE:** Mathematics 1151 or 1171

**This course is a prerequisite for Introductory Physics II (Physics 1212)**

**COURSE DESCRIPTION:**

A **calculus-based course** intended for students in the physical sciences, applied sciences and mathematics which includes the study of Newtonian mechanics for particles and rigid bodies, gravitation, accompanied by related laboratory work.

**COURSE OBJECTIVES:**

To develop a conceptual understanding of physical principles, develop reasoning and problem-solving abilities, and relate physical principles to real-life applications.

**INSTRUCTOR:** Apichart Linhananta

**Office:** CB 4025      **Phone:** 343-8016

**E-mail:** apichart.linhananta@lakeheadu.ca

**Teaching Webpage:** <http://alinhana.lakeheadu.ca>

*[click on **Teaching Webpage** then on **Phys1211** for on-line course material]*

**OFFICE HOURS:** M/W/F 10:00 AM to 2:00 PM; T/TH 1:00 PM to 5:00 PM

*Additional consultation time may be arranged with your instructor. Please see instructor after class or contact by phone, e-mail or by calling the Physics Department at 343-8461*

**LABS:**

Students are required to register in one of three lab sections: F1, F2, and F3. Sections F1 and F2 will be divided into sections F1A, F1B, F2A and F2B. Due to the large number of students, some students will be reassigned to different sections. The reassignment will be changed only if a scheduling conflict arises. However, efforts will be made to preserve the original time slots. **The first labs will begin on Tuesday 16 September. There will be no labs during the first week of class.**

SECTION	DAY	TIME	LABS
F1(A and B)	T	8:30 a.m. - 11:30 a.m.	Room CB-2010
F2(A and B)	T	2:30 p.m. - 5:30 p.m.	Room CB-2010
F3	T	7:00 p.m. - 10:00 p.m.	Room CB-2010

**TEXTBOOKS (REQUIRED) :**

Fundamental of Physics (10<sup>th</sup> edition, Extended), Halliday and Resnick, and Walker.

**Available at the university's bookstore**(choice of hardcover or binder ready).

WileyPLUS Media Package required for **Online Assignments** and **Tutorials**. This package is included with the purchase of the textbook.

Experimental Investigations in Introductory Physics, Lakehead University. **Available at the university's bookstore.**

**SUPPLEMENTARY MATERIALS:**

A **hard-cover notebook**, with graph paper on the left-hand pages, is **required** for laboratory reports and can be obtained at the Lakehead University Alumni Bookstore.

A **scientific calculator** is required for tests and examinations.

**SYLLABUS:**

**Kinematics of Particles ( 3.5 weeks)** Chapter 1 to 4

Vectors, position, displacement, velocity and acceleration, uniformly accelerated motion, free-fall motion, projectile motion, relative motion, and uniform circular motion.

**Particle Dynamics (4 weeks)** Chapter 5 to 9

Force, mass, weight, Newton's Laws, friction, kinetic energy, work, potential energy and conservation of energy, systems of particles, linear momentum, collisions.

**Rotational Kinematics and Dynamics (3.5 weeks)** Chapter 10 to 12

Rotation with constant angular acceleration, linear and angular variables, kinetic energy of rotation, work, torque, angular momentum, angular momentum of a system of particles and rigid bodies, conservation of angular momentum, centre of gravity, static equilibrium.

**Gravitation (1 week, time permitting)** Chapter 13

Newton's law of gravitation, and gravitational potential energy.

**WORKLOAD:**

**Assignments:** 8-10 Online Assignments using **WileyPlus** will be assigned approximately weekly, and due one week later. Once the deadline has passed you will no longer have online access to do the assignment.

**Laboratory Work:** 1 Calculus tutorial and 5 experiments. Completed lab reports (or solved calculus problem sheets) must be submitted in the mail slot outside Room CB 2010 on the **Tuesday** of the following week.

**Reading Assignments:** At the end of each lecture you will be given reading assignments to be completed before the next lecture.

**Quizzes:** 4-6 quizzes held at **random time**, usually at the beginning or end of a lecture. The quizzes will be on the **reading assignment** assigned at the **previous lecture**. In some cases the quizzes will be done online with **WileyPlus**.

**Online Tutorials:** 4-6 Online Tutorials using **WileyPlus**

**Tests and Exams**

2 tests

**Tentative Dates:** October 6, 2014; November 3, 2014.

1 final exam

**TBA**

To receive full marks, assignments, lab reports and tutorial exercises **MUST** be submitted/done on the due dates specified.

Laboratory work is an integral part of this course. Attendance is compulsory for all experiments. A grade of 50% or better must be obtained in the lab component of the course in order to pass the course. Submission of fewer than three (3) lab reports (not including the calculus exercise) will result in a failing grade.

Students are required to work in the lab for the **full three-hour lab period**. Only students who complete the experiment and submit a completed report may leave before the end of the lab class. **Students who do not hand in the lab report during the lab period must have their data/work signed by the TA, to be eligible to submit the lab report later.**

All tests must be written at the specified times except for the following circumstances: a) illness, in which case a medical certificate must be supplied as soon as possible; b) exceptional circumstances, deemed by the instructor as beyond the control of the student.

**EVALUATION:**

Assignments	<b>15.0%</b>
2 Tests	<b>20.0%</b>
Lab+Calculus Tutorial	<b>15.0%</b>
Quizzes	<b>5.0%</b>
Tutorials	<b>5.0%</b>
Final Exam	<b>40.0%</b>

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Total	<b>100%</b>
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**NOTE:** You will receive > 30% of your grades before the November 4 drop date.