

LAKEHEAD UNIVERSITY
OFFICIAL COURSE OUTLINE

INTRODUCTORY PHYSICS I: PHYSICS 1211 FALL 2020

LECTURE HOURS: M/W/F 4:30 pm - 5:30 pm, ZOOM Online lecture

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

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

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

Course Material will be posted on mycourselink:

<https://teachingcommons.lakeheadu.ca/mycourselink>

OFFICE HOURS: M/W/F 10:30 AM to Noon; T/TH 1:00 PM to 2:00 PM by **ZOOM**.

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

ZOOM Lectures/Office Meetings can be accessed by mycourselink. Details on how to connect to ZOOM will be sent to students soon.

LABS: Due to the COVID-19 pandemic, the University has implemented a safe-reopening policy, outlined in the link below:

<https://www.lakeheadu.ca/about/covid-19>

The Department of Physics has implemented a strict policy that will allow students to safely do labs during the Fall 2020 semester. The labs will be a combination of *in-person* (in CB 2010), and *online* labs.

Students are required to register in one of three lab sections: F1, F2, F3, and FD4.

Sections F1, F2 and F3 are recommended for students who will be in Thunder Bay during the Fall 2020 semester. These students will do a combination of in-person (in CB 2010) and online labs.

Section FD4 is recommended for students who are unable to attend in-person lab. These students will do online labs.

Details of the labs will be provided before the end week of September 7, 2020.

There will be no labs on Tuesday 8 September.

The first labs will begin on Tuesday 15 September.

TEXTBOOKS (REQUIRED):

Fundamental of Physics (11th edition, Extended), Halliday and Resnick, and Walker. **Available at the university's bookstore** (binder ready or e-book).

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. **This will be posted Online.**

SUPPLEMENTARY MATERIALS:

A **hard-cover notebook**, with graph paper on the left-hand pages, is **recommended** 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.

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: 5 experiments. Completed lab reports (or solved calculus problem sheets) must be submitted on the **Tuesday** of the following week.

There are two options for submitting Lab Reports:

1. Write your lab report on the Physics Lab Notebook. Submit the lab report in the wooden mailslot outside the Physics lab, CB 2010.
2. Submit your lab reports **electronically** by e-mail or other means.

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

Quizzes: about 5 or 6 quizzes held at **random time**, usually to be done on the same day of a lecture. The quizzes will be based on the **reading assignment** assigned at the **previous lecture**.

Tests and Exams (tentative, i.e. may be changed)

2 tests Tentative Dates: October 2, 2020; November 2, 2020

1 final exam TBA

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

Laboratory work is an integral part of this course. **A grade of at least 50% 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.**

All tests must be written at the specified times except for the following circumstances: a) illness; b) other exceptional circumstances. If you miss labs, tests, or quizzes, please contact me as soon as possible.

EVALUATION:

Assignments	10.0%
2 Tests	30.0%
Lab	15.0%
Quiz (in-class and/or take home)	10.0%
Final Exam	35.0%
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Total	100%

NOTE: You will receive > 25% of your grades before the **November 6** drop date.

Accommodations: Lakehead University is committed to achieving full accessibility for persons with disabilities. Part of this commitment includes arranging academic accommodations for students with disabilities to ensure they have an equitable opportunity to participate in all of their academic activities. If you think you may need accommodations, you are strongly encouraged to contact Student Accessibility Services (SAS) and register as early as possible. For more information, please visit: <http://studentaccessibility.lakeheadu.ca>

Regulation on Remote Lectures:

In PHYS 1211 F2020, in the context of remote instruction and participation, video and audio recordings of class activities will be made to ensure students' and instructors' easy and comprehensive access to those activities. The recordings are confidential and are intended only for the use of the course students and instructors. They may otherwise not be used or disclosed. During recording, to protect others' privacy, each student should ensure that no one else is present in the location where they are being recorded without that non-student's consent. The recordings are made under the authority of sections 3 and 14 of *The Lakehead University Act, 1965*. Questions about the collection of the images and sounds in the recordings may be directed to the Chair of Physics, Dr. Mark Gallagher, or the Dean of Science and Environmental Studies, Dr. Todd Randall.