INQ 250 PH: Take a Dive – How Things Work Fall 2024

Instructor: Dr. Truong Le (he,him)
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Credits for the course: 1
Lectures Time: MWF 1:10-3:10 PM
Lectures Room: Trexler 273

Office Hours: MWF (10:00-11:30 am) or by appointment.

Course Description: This scientific reasoning course is based on the theme of sky diving and deep sea diving, designed to address the fundamental questions "why study motion and what factors contribute to the motion of an object?". The basic laws of physics applicable to motion will be investigated through experimentation. **There is no prerequisites for this course.**

Class Environment: This classroom is a respectful and inclusive space for everyone, regardless of age, background, belief, or identity. All members are expected to foster a welcoming environment. Let me know early in the course if you prefer an alternate name or pronoun, so I can update my records. Silence your phone during lectures and step outside for emergency calls. Disruptive behavior may lead to expulsion. **The syllabus may be adjusted based on student feedback.**

Course Material: Required and recommended

- **Calculator (required):** A scientific calculator.
- **Textbook (optional):** Jackson, Laws, and Franklin; Explorations in Physics, Wiley & Sons, Inc.; 2003
- **Other required materials:** A bound lab notebook.

Course Restrictions: If you have received credit for other higher-level physics courses at Roanoke College, you cannot receive credit for this course.

Learning Outcomes: All sections of INQ 250 share a common set of learning outcomes related to the skills students will develop in this course. These outcomes are:

- Students will be able to describe and apply scientific methodologies appropriate for the course's discipline and topic, including the ability to design and conduct simple experiments and to draw conclusions based upon data.
- Students will be able to write about course topics clearly and effectively.
- Students will be able to interpret quantitative information related to the course topic.

Upon the completion of this particular section of INQ250, students will be able to:

- operate computer-interface sensors and lab equipment
- make measurements and collect data
- analyze and interpret graphical data
- communicate their scientific findings through reports, class discussions, and oral presentations
- understand how a scientific theory relating forces and motion can be developed from experimental observations
- use the scientific method to devise their own experiments to test the validity of hypotheses

Attendance: Attendance is taken at the start of each class and it will impact your final grade. You are expected to attend every class and are responsible for all covered material and any announcements. If you have a fever of 100.4^o F or higher or COVID symptoms, stay home and contact Health Services immediately. To excuse your absence, Health Services must notify me. If you're advised to isolate, let me know so we can plan your coursework. Absences due to COVID-related issues will be excused, but you must complete all work and assignments.

Lecture Periods: Class time will typically start with a brief lecture and primarily spent on performing experiments, computer-based activities, discussions, exploratory worksheets, and cooperative learning group activities.

Participation: You are expected to come to class prepared and fully participate by bringing the required materials to class, abstaining from using electronic devices for any personal issues and talking to other students about matters not concerning the lab at hand. The following table summarizes the guidelines for grading "participation" for each class.

Credit	Reason
10 points	If the student brings ALL required materials, is fully involved with class, completes the daily work
-2 points -2 points -2 points -4 points	For every 5 min late Using the phone multiple times Coming to class unprepared Not fully involved with the group/ Not participating
0 points	If the student does NOT bring ANY of the required materials, is not focused on completing the lab, and uses electronic devices for personal reasons

Lab Notebook: You must bring a bound notebook to each lab session. Your lab notebook should be well-organized and include full reports of your work. **Start each new lab on the right-hand page with the** *lab title, your lab partners' names, and the experiment date.* You should:

- answer each question with complete sentences (A simple "No" or "Yes" is not enough, I want to know why the answer is Yes or No)
- report all your data neatly presented in table format
- write down your results in table format with a sample calculation for each result category
- provide error analysis of your results

Graphs obtained during class should be printed in lab and pasted of one page of the notebook. Pay special attention to units: appropriate units must be included in all table columns and graphs. Each notebook will be checked or turned in before students leave for the day, and it will be graded as follows:

Credit	Reason
10 points	If all the requirements mentioned here are followed, notebook entries are organized and thorough
5 points	If the requirements mentioned here are not fully followed- such as not presenting all required entries, missing units, data and/or results are not organized
0 points	If the student did not bring lab notebook, did not record data/results into notebook, fails to submit notebook before leaving lab

When absent from class, you can still get full credit for your lab notebook by copying over the results from a classmate who was present for lab. Be sure to contact me if you are absent so that your notebook can still be checked.

Tutorial: If you don't finish your tutorial in class, complete it as homework and submit it at the start of the next class. Incomplete submissions will receive 5 points.

Exams: There will be two unit exams and a fully comprehensive final exam, with their dates specified in the course schedule. Unit exam make-ups for excused reasons (family or medical emergencies, and university-recognized commitments) must be discussed and arranged with me at least two weeks in advance, unless it is an emergency. If your missed exam is unexcused, you will receive a zero on that exam.

Project: You will participate in two group projects this semester to highlight each of the units. Each student is expected to fully participate and share the work equally with their group members. More information about these projects will be provided closer to the start date of each project.

Grading: Class grades will be calculated according to the following distribution

- Participation/Lab Work/Tutorial/Quiz: 15%
- Lab Notebook: 10%
- Unit Exams: 15% (×2) each
- Unit A Project: 15%
- Unit D Project: 15%
- Final Exam: 15%

Final Grade: Final course grades will be assigned using the following scale:

A	93% or more	C+	77-79.9%
A-	90-92.9%	C	73-76.9%
B+	87-89.9%	C-	70-72.9%
B	83-86.9%	D	60-69.9%
B-	80-82.9%	F	below 60%

Rounding UP (never down) final course grades may take into consideration the instructor's evaluation of the student's effort, improvement, integrity, and conduct. You should expect to spend at least 12 hours inside and outside of class each week on this course.

Extra Credit/MCSP Conversation Series: Extra credit is available for students who attend ONE talk in the MCSP Conversation Series (schedule available at http://cs.roanoke.edu/MCSPSeries) and submit a well-written reflection on the talk within one week of the presentation. The submission must present a brief summary of the key ideas of the talk and include a description of the parts of the presentation that were interesting, confusing, and relevant to this course. Your work must be grammatically-correct, typed, double-spaced, and between one and two pages in length. **The submitted paper will earn 0, 0.5, or 1 percent to be added to the final grade. Note that a simple summary of the talk is not sufficient to receive credit.**

Inquire: Inquire will give you access to the syllabus, lab instructions and handouts, supplemental readings, and announcements. Check the Inquire website regularly and read the relevant handout before coming to class to be prepared for the daily exercise!

Use of Electronic Devices: Computers in the lab are networked and you are required to log onto them using your username and password. **Do not save any work to the desktop**, because it will be erased when logging off the computer at the end of class. Save all your work to your Z drive. Printing graphs will be necessary throughout the semester for lab notebooks, and the printers in the lab are to be used for that purpose only (not documents for other courses or personal reasons).

You are allowed to use cameras for the group projects and personal laptops/tablets for the purpose of taking notes. Scientific calculators can also be used during class if needed and during exams. Your phones must be on silent mode and out of reach during class and must be turned off during exams. Violations of this policy during exams can constitute a violation of the academic integrity policy.

Subject Tutoring: located on the lower level of Fintel Library (Room 5), is open 4-9 PM, Sunday-Thursday. Subject Tutors are highly trained, current students who offer free, one-on-one (and small group) tutorials in over 80 courses taught at Roanoke College, including: Business, Economics, Mathematics, INQ 240, Modern Languages, Lab Sciences, and Social Sciences. Check out all available subjects and schedule 30- or 60-minute appointments at www.roanoke.edu/tutoring. If you have a question, feel free to stop by, or contact us at subject_tutoring@roanoke.edu or 540-375-2590.

Accessible Education Services (AES): Located in the Goode-Pasfield Center for Learning and Teaching in Fintel Library. AES provides reasonable accommodations to students with documented disabilities. To register for services, students must self-identify to AES, complete the registration process, and provide current documentation of a disability along with recommendations from the qualified specialist. Please contact Becky Harman, Assistant Director of Academic Services for Accessible Education, at 540-375-2247 or by e-mail at aes@roanoke.edu to schedule an appointment.

Academic Integrity: Your learning and integrity are at the core of your RC education. For this reason, you must follow the rules outline in the College AI policies. See https://www.roanoke.edu/inside/a-z_index/academic_affairs/academic_integrity. **If I become aware of a possible violation of these guidelines, I am contractually obligated to report it to the Academic Integrity committee.**

Preliminary Schedule: Topics of discussion:

Dates	**Topic**
Aug. 28 – Sep. 27	Unit A: Fundamental Concepts Related to Sky Diving
Sep. 27	Review for Unit A exam
Sep. 30	**Unit A exam**
Oct. 2 – 11	Unit A Projects
Oct. 12 – 20	Fall Break
Oct. 21 – 23	Report Writing/Presentation Preparation
Oct. 25	Unit A Project Presentations
Oct. 28 – Nov. 15	Unit D: Fundamental Concepts Related to Deep Sea Diving
Nov. 15	Review for Unit D Exam
Nov. 18	**Unit D Exam**
Nov. 20 – Dec.4	Unit D Projects
Nov. 27-29	Thanksgiving Break
Dec. 4	Unit D Project Presentations
Dec. 6	Review for Final Exam
Wed, Dec. 11	**Final Exam: 2:00 PM – 5:00 PM**

I have read and understood this syllabus. Sign, date, and submit this page on **Inquire** for 10 points toward your participation grade on your first day of class.

Student's Name: **Date:**