

## INQ 250 PH: Take a Dive – How Things Work

Fall 2021 9:40 – 11:40 pm

Instructor: Mrs. Bonnie W. Price  
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Course Meeting: Trexler 274

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Office Hours: MTWThF: 12:00 – 1:00 pm  
Other times by appointment

### **Required Materials:**

**Text:** Coursepack for INQ 250 PH-A Take A Dive How Things Work taken from *Explorations in Physics*; Jackson, Laws & Franklin

**Supplies:** A bound lab notebook with sewn graph paper pages for use in lab is required, a basic calculator that is not on a phone or computer is required for quizzes and exams, and *Easy Writer* by Andrea Lunsford is a reference for writing papers.

### **Course Content Description and Teaching Methods:**

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. **Very little formal lecturing will take place; instead, the class will have a hands-on approach.** To that extent, classes will consist primarily of experiments, computer-based activities, interactive discussions, exploratory worksheets, and other cooperative learning group activities. The emphasis is on understanding and not memorization.

### **Intended 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.

In this particular section of INQ 250, the common set of learning objectives will be developed into specific activities and assignments, so that at the completion of this course, successful students will be able to

- understand how a scientific theory relating forces and motion can be developed from experimental observations
- observe, classify, and describe physical phenomena using words, pictures, graphs, and equations
- use the scientific method to devise their own experiments to test the validity of hypotheses
- become familiar with computer-interfaced sensors and equipment
- communicate their scientific findings through reports, class discussions, and oral presentations
- demonstrate their ability to create, correctly analyze and interpret graphical data
- describe the challenges in experimental methodologies to collect unbiased data

### **Expectation:**

This course expects you to spend at least 12 hours of work each week inside and outside of class.

### **Attendance:**

**Students are expected to attend every class and attendance is checked at each meeting.**

Since this course uses a hands-on approach to learning, it is very important for each student to be present for every class. If a student accumulates **four absences** during the semester, a warning letter will be sent. An absence is not designated as excused or unexcused, it is just an absence and if the fifth absence occurs, for any reason, the student may be dropped from the course. The student will be notified via email, along with their advisor and the registrar, when the fifth absence had occurred. If the student is failing at the time of withdrawal, the grade will be DF, which counts as an F in the student's GPA. If the student is not dropped after having five absences, their final course grade will be lowered by one point for each additional absence after five. A student will be marked as tardy if they come to class after 9:40 am, and if the student is tardy two times, then it will count as an absence.

Everyone is required to wear a face covering/mask over the mouth and nose while in all academic buildings, until that policy is changed by the college administration. Four students will be at each lab table, with the tables spaced apart as much as possible for social distancing.

**If you have a temperature of 100.4 or higher or other coronavirus symptoms, don't come to class. Call Health Services IMMEDIATELY.** Do not come to class or go to any public area on campus. In order for your absence to be excused, you must give Health Services permission to notify me that you have consulted them about coronavirus symptoms. If Health Services informs you that you should isolate and not attend class for multiple days or weeks, inform me so that we can adjust plans as needed. All absences caused by consultation with Health Services about coronavirus symptoms or isolation ordered by Health Services will not be counted in the allowed four absences, but the work must still be completed.

### **Participation:**

Being marked present assumes that the student has come to fully participate in class.

**Participation is worth 10 points daily**, with a reduction of -5 points for the following: not bringing the coursepack to class, not bringing their lab notebook to class, using their phone/computers for activities unrelated to this class, or wasting class time by talking with other students concerning matters not related to this course so that the assigned activities for that day are not completed.

### **Lab Notebook:**

**Each student is to purchase and bring a bound notebook with graph paper pages to lab each class.** The lab notebook will be formatted according to the instructor's directions and students will have their notebook checked on days when lab work has been entered. **Each lab notebook check is worth 10 points, and points will be deducted for incorrect answers and/or incorrect format.**

Due to the time limitations during lab, the notebook check will be brief. When absent from class, the student is still responsible for the work and should copy the data/and or graphs from lab partners, and complete any other work in their lab notebook **within one class day of their return to class**. It is the student's responsibility to complete the work and **to ask** to have their lab notebook checked after being absent; failure to do so will result in a zero being recorded for the notebook check.

### Daily Assignments:

**Daily assignments incorporate several areas: class work, homework, and quizzes. Each assignment is worth 20 points, and all types of daily assignments are weighted equally.**

Class work may be graded individually or as a group. Included in class work are daily questions concerning lab activities, class worksheets, and graphing activities. **If absent when a class assignment is graded, a zero is recorded.** It is important to be in class!

Homework is assigned weekly and is graded. **Each assignment is due at the beginning of class on the stated Wednesday, and is to be submitted individually.** You may seek and receive additional assistance for each homework assignment without violating any academic integrity policies. If you are absent when an assignment is due, the assignment is still due at the beginning of class and it can be submitted electronically through email to [price@roanoke.edu](mailto:price@roanoke.edu) or sent via another student.

**Quizzes will be on Fridays when announced and no makeup quizzes will be given.** It is possible to schedule to take a quiz early, if you are going to be absent for a college function, but arrangements for taking the quiz must be made two class periods before the absence will occur. Each quiz will be taken individually and the work is subject to the college's academic integrity policies. **When calculating the daily assignment average for the semester, the four lowest grades will be dropped.**

### Exams:

**There will be two unit exams and one final exam.** The final exam is cumulative. Please refer to the course schedule for the exam dates. **Make-up exams will be given only at the discretion of the instructor, and will be considered only in the event of prior notification of the absence.** Otherwise, a missed unit exam results in the final exam counting an additional 10%.

### Electronic Devices Usage Policy:

Computers in the lab are networked and you are required to log onto them with 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 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. Documents for other classes or for personal use are not to be printed from the computer in the room. **Computers, including laptops, are not to be used to check email or access the Internet for personal reasons during class.** Also, MP3 players, cameras and other personal devices are not to be used during class, except cameras may be helpful during project time. Personal laptops and calculators may be used as directed.

**Out of courtesy to others, all phones should be silenced upon arrival to class and should be out of sight, preferably in a backpack or personal bag.** This means that you are to refrain from texting or accessing your phone while in class, since your phone will not be out of your backpack or personal bag. If the phone becomes visible during class time, you will be asked to put it out of sight. **For each of the three exams, all students are required to place their cell phone on their lab table.**

### MCSP Conversation Series:

The Math/Computer Science/Physics professors will be presenting talks as well as providing outside speakers to Roanoke College students throughout the semester. The schedule is

located online at [https://www.roanoke.edu/inside/a-z\\_index/math\\_cs\\_and\\_physics/conversation\\_series/fall\\_2021](https://www.roanoke.edu/inside/a-z_index/math_cs_and_physics/conversation_series/fall_2021) with all presentations being accessed through Zoom. **If you attend one talk and submit a well-written reflection paper on the talk within one week of the presentation, you will receive one point of extra credit on your final course average.**

### **Projects:**

**During this semester, you will participate in two projects, where the four students at your lab table will work as a team.** It is expected that each individual member of the group will share equally in the work. A document explaining the required elements of the project will be given to all students closer to the start of projects.

**Grading:** At the end of the semester, grades will be determined as follows:

#### **Grade Determination:**

Daily Assignments	25%
Lab Notebook	10%
Participation/Lab Work	10%
2 Unit Exams	15% each
Unit A Project	10%
Unit D Project	5%
Final Exam	10%

#### **Grading Scale:**

A: $\geq 93$	A-: 90-92.9	B+: 87-89.9
B: 83-86.9	B-: 80-82.9	C+: 77-79.9
C: 73-76.9	C-: 70-72.9	D+: 67-69.9
D: 63-66.9	D-: 60-62.9	F: <60

### **Subject Tutoring:**

Tutoring is located on the lower level of Fintel Library (Room 5), and is open 4 pm – 9 pm, Sunday – Thursday. Subject Tutors are friendly, highly-trained Roanoke College students who offer free, one-on-one tutorials in a variety of general education and major courses such as: Business, Economics, Mathematics, INQ 240, Modern Languages, Lab Sciences, INQ 250, and Social Sciences. Tutoring sessions are available in 30 or 60-minute appointments. Schedule an appointment at [www.roanoke.edu/tutoring](http://www.roanoke.edu/tutoring), or call 540-375-2590 or email [subject\\_tutoring@roanoke.edu](mailto:subject_tutoring@roanoke.edu).

### **Students With Special Academic Needs:**

Accessible Education Services (AES) is 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](mailto:aes@roanoke.edu) to schedule an appointment. If you have registered with AES in the past and would like to receive academic accommodations for this semester, please contact Becky Harman at your earliest convenience to schedule an appointment.

Also, please note that arrangements for extended time on exams, testing, and quizzes in a distraction-reduced environment must be made with the Center for Learning & Teaching at least 2 business days (M-F) *before every exam*.

### **Course Restrictions:**

Be aware that if you have received credit for any other higher-level physics courses at Roanoke College, you cannot receive credit for this course.

### **Food, Drink, and Tobacco Use:**

No food or drinks are allowed in the lab, except for screw top water bottles and closed drink containers. **Since you will be wearing a mask, it will not be possible to drink or eat in the lab.** If you need to take a break during lab, you may step into an isolated space to remove your mask and take a drink. Food should be consumed before coming to lab.

### **Inquire:**

Log-in to Inquire program via MyRC web portal on the College website. This will give you access to the syllabus, homework assignments, supplemental readings, lecture notes, and any class announcements. Make sure to check the Inquire website regularly!!! **No excuses can be made and no extensions can be granted if you miss a deadline that was posted on Inquire.**

### **Academic Integrity:**

**Students are expected to follow the integrity policies stated in the handbook, Academic Integrity at Roanoke College.** All quizzes, exams, and written reports are to be your individual work, without assistance from any other source, including websites, textbooks, and other students or faculty, unless the instructor has given explicit permission for outside assistance. Projects and class activities are to be a collaborative work between individuals with everyone contributing equally. Outside assistance may be sought on homework, but the work submitted for a grade must reflect **your understanding of the material and not exact answers copied from another's work.**

### **Additional Policies:**

Students will work in groups of four unless there are an odd number of students in lab, and may select their lab partners initially. Students may have new partners during the semester, as needed. **Each member of this class is expected to treat everyone with respect, contribute to a welcoming and inclusive environment, and equally contribute to the work during lab sessions. I will gladly honor your request to address you by an alternate name or gender pronoun, if you advise me of this preference early in the semester so that I may make the change to my records.**

**Course Outline:**

<b>Dates</b>	<b>Topic</b>
September 1 - 29	Unit A: Fundamental Concepts Related to Sky Diving
October 1	Unit A Exam
October 4 - 15	Unit A Project
October 18 - 22	<b>Fall Break!</b>
October 25	Unit A Project
October 27	Unit A Project Presentations
October 29 – November 15	Unit D: Fundamental Concepts Related to Deep Sea Diving
November 17	Unit D Exam
November 19-22	Unit D Project
November 24, 26	<b>Thanksgiving Break!</b>
November 29 – December 6	Unit D Project
December 8	Unit D Project Presentations
December 10	Review for Final Exam
<b>December 14</b>	<b>Final Exam: 8:30 am – 11:30 am</b>