"The greater danger for most of us lies not in setting our aim too high and falling short; but in setting our aim too low, and achieving our mark.”

Michelangelo

"It is not knowledge, but the act of learning, not possession but the act of getting there, which grants the greatest enjoyment.”

Carl Friedrich Gauss

"All the effects of Nature are only the mathematical consequences of a small number of immutable laws.”

Pierre-Simon Laplace

Course Pages: All course information will be via Blackboard.

Office Hours: 10:00am MW, Rm 213, or by appointment. You may post your questions in the forum provided for this purpose on Bb. I may also be reached by email: dweygand@odu.edu

Please do not come to me expecting answers, but rather other questions that will lead you to the answers.

Main References: This is a restricted list of various interesting and useful books related to this course.

- Assigned text, Young and Freedman *University Physics with Modern Physics 14e*.
- My lecture notes, posted on Bb.
- Young, Hugh D., *Mechanics and Heat*. Hugh Young was a great physics lecturer.

Course Description:

A general introduction to physics in which the principles of classical and modern physics are applied to the solution of physical problems. The reasoning through which solutions are obtained is stressed. Topics include mechanics, fluids, and thermodynamics. This course is designed for majors in the physical sciences, engineering, mathematics, and computational sciences. Students receiving credit for PHYS 231N and PHYS 232N cannot simultaneously or subsequently receive credit for PHYS 101N and PHYS 102N or PHYS 111N and PHYS 112N. (offered fall, spring, summer) Prerequisites: MATH 211 with a grade of C or better. Pre-or corequisites: MATH 212 or permission of instructor.

Objectives:

1. To help students develop analytical, graphical and reasoning skills
2. To help students understand the fundamental concepts of physics
3. To enable students to apply these concepts qualitatively as well as to quantitatively solve problems in their fields of study

**Tentative Course Outline:**

Physics 226N/231N is the first semester of a two semester, calculus-based introductory physics course. In this course, you will be introduced to some core topics in physics. The course will stress fundamental physical principles; the main emphasis of supplementary work (homework, exams, quizzes, laboratory) will be to illuminate these principles. The topics covered in this course are as follows:

- **Mechanics:** Chapters 1-14
  - Measurement, Units, Vectors
  - Motion in One Dimension
  - Motion in Two and Three Dimensions
  - Newton's Laws
  - Applications of Newton's Laws
  - Work and Kinetic Energy
  - Potential Energy and the Conservation of Energy
  - Momentum, Impulse, Collisions
  - Rotational of Rigid Bodies
  - Rotational Dynamics
  - Static Equilibrium and Elasticity
  - Fluid Mechanics
  - Gravity and Orbits
  - Hooke's Law and Periodic Motion

- **Waves:** Chapters 15-16
  - Mechanical Waves
  - The Wave Equation
  - Sound

**Quizzes and Exams:** *(subject to change)*

There may be several announced or unannounced quizzes. A CAS calculator may be used as well as a table of integrals.

There will be 2 in-class exams of approximately 90 minutes. Exact dates will be announced in class. The final exam will be comprehensive. The study of physics is by its nature comprehensive, and each section of study builds on the previous work.

The emphasis in this course is on understanding and applying concepts vs. memorization, therefore, you may bring an 8$x$11 inch index card with formulas on both sides to any exam or quiz: BRING THIS CARD TO EVERY CLASS (any constants you need will be provided). You will also need a scientific calculator. CAS calculators are encouraged, also you may bring a table of integrals and derivatives.

If I suspect the accuracy of any exam, quiz, or homework grade, I reserve the right to validate that grade with an individual oral examination.

The final exam is scheduled for **Monday, December 11 12:30pm-3:30pm**

**Prerequisites/Co-requisites**
• Prerequisites: MATH 211 with a grade of C or better.
• Pre- or Co-requisite: MATH 212 or permission of instructor.

Course Policies:
• Attendance in class is required and will be considered in your grade. Please attend class and laboratory sessions regularly, and be on time. Scheduled conflicts with other courses, work, or other commitments are not permitted. If you are absent, you are responsible for any information or material covered during your absence. Physics is a difficult subject, and if you are not here to participate you will not likely do well in the course. The instructor may administratively withdraw students. Any disruptive behavior that interferes with the learning process will not be tolerated.

• Turn off all cell phones prior to class. Laptops are to be used only on course material presently being discussed, not for web-surfing or doing homework. Under no circumstances have headphones or earbuds on during the lecture. Smoking, eating and drinking are not permitted in the classroom or laboratory. If anyone is distracted by such behavior and feels that I am not properly addressing it, please let me know.

• You are encouraged to pay attention and ask questions since that is the best way to learn. You are strongly encouraged to partake in classroom discussions: I do not expect you to know everything or you would be teaching this course, but I do expect you to actively participate.

Home Study/Mastering Physics:
• Physics is best learned by attempting to solve problems. This will allow you to become familiar with the concepts and comfortable with the mathematical methods required. A good portion of in-class time will be spent working on problems. In addition, you will be given one Homework Assignment each week. You will submit your homework solutions online using MasteringPhysics.

• MasteringPhysics: Once logged in to MasteringPhysics, you should put yourself on the class list for the course using the course ID code WEGYPHY231FALL2017. When entering your UIN (here or anywhere), be sure to include any leading zeros as the UIN may be read as a text string instead of a number. In order to receive a productive grade in this course (A,B,C), you must have a passing grade (> 60%) on the homework.

• A good general rule of thumb for planning your study time is to set aside at least two hours for every hour youre in class per week. Try not to get behind! It is very difficult to play catch up once youve gotten behind.

Attendance:
• Attendance is mandatory. If you have to legitimately miss a class, it is your responsibility to find out what you missed. Additionally, if you know that you are going to be absent, please inform your group members so they are prepared to be short-handed that day. You may miss no more than two classes.

Academic Honesty: You are expected to conform to the University Honor Code in all aspects of your conduct in this course. You may work with others on the homework assignments, however, what you submit must represent your own understanding of the problem. Submitting answers online for problems that you
have not worked out is cheating. Misconduct of any form will not be tolerated. If you are ever unsure of what is permissible, please consult with Dr. Weygand for clarification.

**Grading Policy:** Homework (15%), Laboratory (15%), Class Participation (10%) In-class Exams/Quizzes (25%), Final (35%).

**Grading Scale** (subject to change):

- **A** 93-100
- **A-** 90-92.9
- **B+** 87-89.9
- **B** 83-86.9
- **B-** 80-82.9
- **C+** 75-79.9
- **C** 63-74.9
- **C-** 60-62.9
- **D** 50-59.9
- **F** < 50

**Accommodation:**

- Students are encouraged to self-disclose disabilities that have been verified by the Office of Educational Accessibility by providing Accommodation Letters to their instructors early in the semester in order to start receiving accommodations. Accommodations will not be made until the Accommodation Letters are provided to instructors each semester.

- Old Dominion University is committed to ensuring equal access to all qualified students with disabilities in accordance with the Americans with Disabilities Act. The Office of Educational Accessibility (OEA) is the campus office that works with students who have disabilities to provide and/or arrange reasonable accommodations.

- If you experience a disability which will impact your ability to access any aspect of my class, please present me with an accommodation letter from OEA so that we can work together to ensure that appropriate accommodations are available to you. If you feel that you will experience barriers to your ability to learn and/or testing in my class but do not have an accommodation letter, please consider scheduling an appointment with OEA to determine if academic accommodations are necessary. The Office of Educational Accessibility is located at 1021 Student Success Center and their phone number is (757)683-4655. Additional information is available at the OEA website: [http://www.odu.edu/educationalaccessibility](http://www.odu.edu/educationalaccessibility)