Course Information

Course Content
Physics 231N/226N/261N 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 study of motion, or mechanics, and the propagation of waves in different media. The key objectives of the course include developing problem-solving skills, as well as preparing university students for professional careers in science and engineering.

Course Description
Through in-class activities, mini-lectures, laboratories, reading and homework assignments you will learn how to use critical thinking combined with mathematics to describe simple physical processes and develop basic problem solving skills. In addition to covering both theory and experiment, we will also use computer simulations to visualize simple physical systems in order to gain insight into the underlying physics. There will be both individual and group activities. Group activities will stress teamwork and communication skills. Unlike the traditional lecture format, in this class we will rely on interactive instruction and cooperative learning.

Pre/Co Requisites
Prerequisite: Math 211 (Calculus I) or equivalent with a grade of C or better. Pre- or co-requisite: Math 212 (Calculus II) or permission of instructor. Math proficiency is essential in the following areas: algebra, trigonometry, vectors, and introductory calculus.

Required Material
- “University Physics” by Young and Freedman, 14th ed.
- MasteringPhysics Student Access (bundled with text).
  If you have a used copy of the textbook you can purchase access to MasteringPhysics online (www.masteringphysics.com).
  **Please note:** You may need much less $$ if you purchase the digital version of the book from the ODU Bookstore. You will receive an access code to Mastering Physics and a digital copy of the book.
- *Bound notebook* for your Homework Journal (recommended).

Lectures
Monday and Wednesday, 9:00 am - 10:50 am in OCNPS Room 142-144.
You must also enroll in a one hour lab session. Each class period will consist of lectures, interactive discussion, and problem solving. If you have to miss a class, it is your responsibility to find out what you missed.

Attendance
Highly advisable for students with grades A- and above.
Required for students with grades B+ and below.
Your attendance will be verified with your signature at the lecture time.

Course Website
We will be using Blackboard for our course website.
Instructor
Professor L. Vuskovic
Office: 2100-I, PSB
Office Telephone: (757) 683-4611 (feel free to contact the instructor for any urgent questions).
Email: Vuskovic@odu.edu (with “physics 231” in the subject line).
Office Hours: Monday and Wednesday, 11:00 am - 12:30 pm in PSB 2100-I.

Homework
*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 and you will submit your solutions online using MasteringPhysics. To register, select “University Physics with Modern Physics” by Young and Freedman, edition 14 and use the course ID code: **LV231FALL2017**

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.

Homework Journal
You should also keep a "homework journal" which shows how you solved the problems from the homework assignments. Written work should show labeled diagrams, defined variables, the appropriate physics equation(s), the mathematical solution and units.

Group Work
Collaboration is strongly encouraged. Because the course is graded on an absolute scale, by helping others you will help yourself since you will reinforce your own knowledge and improve your performance. Collaboration is **not** permitted for examinations and submission of homework assignments.

Laboratory
Attendance and participation is required in the laboratory portion of this course. Your Laboratory Instructor will provide you with complete details and expectations regarding labs and lab reports. You are allowed only one unexcused lab absence. If you have more than one unexcused lab absence, **you will fail the course.**

Examinations
This course will contain three in-class examinations and a comprehensive final exam. **No make-up examination** will be given. If you have a **legitimate reason** for missing an exam, contact me as soon as possible (preferably in advance) and I will average your other exam scores. Otherwise, you will receive a zero for the missed exam. All examinations are closed book. You will be permitted to use a calculator and a formula sheet that will be provided with the exam. To earn full credit on a problem, you must show your work and explain your reasoning. Request for correction of grading mistakes on exams must be made within two days after getting your grade. Full explanation why you believe there is a mistake in grading must be submitted in a written form. However, clerical errors such as addition errors, will be corrected immediately.
Tentative Exam Dates
Exam 1: Monday, September 18, 2017
Exam 2: Monday, October 16, 2017
Exam 3: Monday, November 6, 2017
Final Exam: Monday, December 11, 2017, 8:30 am – 11:30 a.m.

Final Course Grade
A letter grade will be assigned at the end of the course on the basis of numerical scores obtained from the final exam, the three in-class exams, homework assignments, lab reports:
30 points – Final Exam
45 points – Three Midterm Exams (20+20+5) (5 point for the lowest exam)
10 points – Homework assignments (Mastering Physics + Homework journal)
15 points – Lab reports (You must receive a passing grade to pass the course)
There will be no curve. Everyone can get an A.
Class participation including attendance, class activities, attitude, … will be used in the case of borderline grades.

Expected grade requirements:
A: 100-88  B: 88-72  C: 72-55  D: 55-50
Plusses and minuses will be awarded.

The Physics Learning Center
Help with any aspect of physics is available in the Physics Learning Center (2nd floor PSB), Monday-Friday 9am - 5pm.

The Physics Learning Center is a place where students can get together to work on their homework and get assistance, if needed, from physics faculty and grad students. No appointment is necessary. Students in all introductory classes are encouraged to drop by the Learning Center for help on homework, lab, lecture, other course material, or just for a place to work while in the physics building. Note: staffing of the Physics Learning Center starts the second week of classes. More info, including a detailed staffing schedule, can be found at the following link:
http://www.odu.edu/physics/resources/learning-center

University Honor Code
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. Using Google, Chegg, and similar resources for getting solutions to homework problems is considered as cheating. If you are ever unsure of what is allowed, please consult with me for clarification.

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.
Course Outline

Subject: Chapter and Section numbers are from “University Physics with Modern Physics” by Young and Freedman, 14th edition. (Students can use 12th and 13th edition of the same book.)

1. Units and Dimensional Analysis. Math & Vectors  (sections 1.1-1.9)
2. Motion Along a Straight Line (sections 2.1-2.6)
3. Motion in Two Dimensions (sections 3.1-3.5)
4. Newton’s Laws of Motion (sections 4.1-4.6)
5. Applying Newton’s Laws (sections 5.1-5.5)
7. Conservation of Energy (sections 7.1-7.5)
8. System of Particles (Momentum & Collisions) (sections 8.1-8.5, 8.6*)
9. Rotational Motion (sections 9.1-9.4, 9.5*, 9.6*)
10. Dynamic of Rotational Motion (sections 10.1-1.7)
11. Static Equilibrium (sections 11.1-11.3)
12. Fluids (sections 12.1-12.3, 12.4*, 12.5*)
14. Periodic Motion (sections 14.1-14.6, 14.7*, 14.8)
15. Mechanical Waves (sections 15.1-15.3, 15.4*-14.8*)
16. Sound (sections 16.1*-16.9*)
17. Thermodynamics* (chapters 17*, 18*, 19*)

*If we get that far