Northern Virginia Community College
Alexandria Campus
PHY 201 General College Physics I

Instructor: Dr. David D. Blackwell
Lecture: Monday 6:00 p.m.-8:50 p.m.
Lab: Wednesday 6:00 p.m.-8:50 p.m.

Office hours MW 5:30-6:00 p.m.
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Textbook: Principles With Applications, Giancoli, 6th or 7th edition (best), College Physics, OPENSTAX COLLEGE, free download at http://openstaxcollege.org (good)

Course Description: Physics 201 is the first semester of the Physics 201-202 series. The course is a non-calculus treatment of physics and it is intended for students in some of the two-year technical programs offered at NVCC and also for pre-med, pre-vet, pre-dental, Liberal Arts and pre-teaching non-science majors, thus satisfying the requirement for a laboratory science at many four-year institutions. Covered are principles of mechanics such as kinematics, forces, conservation of energy, momentum, collisions, oscillatory and rotational motion, and fluids. As time allows we will also cover temperature and the universal gas law, heat transfer with phase transitions, and introductory thermodynamics.

Prerequisites: The physics 200 series requires a reasonable degree of competency in algebra and trigonometry. If these subject areas are difficult for you then this course will also be difficult. If you need a mathematics review, consider the drop in math lab in AA-229 which has review problems on computers as well as student tutors. If you have math deficiencies you will need to correct them within the first few weeks of the course.

Requirements: A scientific calculator is required for this course. It should have trigonometric and inverse trigonometric functions, power functions such as square roots and y^x, and scientific notation. It should also be easy enough to use so you don't have to waste time figuring out how to work something while doing a problem. Casio and Texas Instruments each make several models that cost less than $20. Some laboratory experiments require safety goggles (chemical and impact resistant) which you will have to provide. All labs also require closed toed shoes (no sandals or flip flops). You are responsible for withdrawing yourself from the course. The last day to withdraw without academic penalty is Tuesday 10/31/18. The last day to drop with tuition refund or change to audit is Thursday 9/10/18. Those seeking accommodations based on disabilities should provide a Disability Data Sheet obtained through the Counselor for Special Needs, located in the Bisdorf Building, Room 148 (tel. 703-845-6301)

Exams: There are three exams covering the course material as outlined in the schedule. There is also a comprehensive final exam; the final exam counts as two regular exams. The total exam grade is the average

of the final (weighted twice) and the two highest regular exams.

Makeup exams- If missing an exam is unavoidable, you are required to make arrangements with the instructor before the exam. Makeup exams are given in the testing center at an agreed upon time as soon as possible after the in class exam. You are only allowed one makeup exam throughout the semester.

Homework: Every chapter covered requires answers to problems made available in the assignments section on the Blackboard. Each assignment consists of a number of word problems modeled after the problems found in the 7th edition of Giancoli. Once answers are filled in and submitted, the problems are graded and a score is assigned. The assignment can be repeated for a higher score with no penalty as many times as desired, but the specifics of the problems will slightly change. The parameters of each problem are computer generated, so each student will have a unique problem set; the answers cannot be copied from any answer key anywhere or from each other nor will they be provided by the instructor; you must work through the problems yourself. However, you can collaborate in any way as well as ask the instructor *how* to do a particular problem. The assignments have a recommended due date but there is no penalty for sending them in after this date; however, from past experience I can tell you that if you let too many assignments pile up at the end of the semester it will be difficult to receive a passing grade.

Academic Misconduct: Any proof of cheating on an exam will result in an F for that exam for the first instance, and an F in the course for second offense. It is not considered cheating to form study groups to work out homework problems.

Grading: Exams total: 60%: Online Assignments: 30%; Laboratory: 10%

Composite grade	Letter grade
90-100	A
80-89	B
70-79	C
60-69	D
<60	F

Schedule

date	topics	study examples	assignment	due date
Wed, Aug 22	1.5-1.6: Units and Measurement; 2.1-2.7: Motion in one dimension	1-2::1-5,1-9; 2-1::2-17, section 2-6	online assignments 1&2	Sep 3
Mon, Aug 27	3.1-3.4: Vectors; 3.5-3.6 Motion in two dimensions;			
Wed, Aug 29	*Lab: velocity and acceleration*	3-2::3-9, section 3-6	online assignment 3	Sep 12
Mon, Sep 3	**no class**			
Wed, Sep 5	*Lab: Newton's 2nd Law*			
Mon, Sep 10	4.1-4.6 Newton's Laws; 4.7-4.8 Force problems;	4-2,4-3,4-6::4-9,4-11:4-13,4-15,4-16,4-18,4-20,4-21	online assignment 4	Sep 19
Wed, Sep 12	*Lab: Force Table*			
Mon, Sep 17	**review for exam**			
Wed, Sep 19	**Exam 1**			
Mon, Sep 24	5.1-5.2 Centripetal Force; 5.3, 5.6-5.8: Circular Motion and Gravitation	5-1::5-4, 5-6::5-14	online assignment 5	Oct 8
Wed, Sep 26	*Lab: Circular Motion*			
Mon, Oct 1	6.1-6.10: work and energy	6-1,6-2,6-4,6-6::6-8, 6-10:6-14	online assignment 6	Oct 17
Wed, Oct 3	*Lab:Work and Energy*			
Mon, Oct 8	**no class**			
Wed, Oct 10	*Lab: Linear Momentum*			
Mon, Oct 15	7.1-7.8:Linear Momentum;	7-1::7-3,7-5::7-10,7:12;	online assignment 7	Oct 24
Wed, Oct 17	8.1-8.8: Rotational Motion	8-1,8-2,8-4:8-12, 8-14,8-15	online assignment 8	Oct 24
Mon, Oct 22	9.1-9.2: Static Equilibrium; exam review		online assignment 9	Oct 29
Wed, Oct 24	**review for exam**			
Mon, Oct 29	**Exam 2**			
Wed, Oct 31	*10.1-10.9: Fluids; Lab : Specific Gravity*	10:1::10-3, 10-7::10-10, 10-12:10-14	online assignment 10	Nov 14
Mon, Nov 5	11.1-11.9,11.11-11.13: Oscillatory Motion and Waves; 12.1-12.7: Sound	11-1,11-4::11-9,11-11::11-13; 12-2:12-4,12-6::12-10,12-15,12-16	online assignment 11&12	
Wed, Nov 7	*Lab: Simple Harmonic Oscillator*			Nov 21
Mon, Nov 12	13.1-13.10:Gas Laws;	13-1::13-3,13-5,13-7,13-9,13-10,13-11::13-16	online assignment 13	Nov 28
Wed, Nov 14	*Lab: Gas Laws*			
Mon, Nov 19	14.1-14.5: Heat and Temperature	14-1,14-2,14-4::14-7	online assignment 14	Nov 28
Wed, Nov 21	*Lab: Specific Heat*			
Mon, Nov 26	**review for exam**			
Wed, Nov 28	**Exam 3**			
Mon, Dec 3	review			
Wed, Dec 5	review			
Mon, Dec 10	**Final exam**			

Tips for doing well in this class

- Be active and learn by doing rather than reading. Work through the derivations of formulas, write out and work through textbook examples including algebraic steps. If all you can do is read then read out loud, repeatedly if you have to. Put what you just read into your own words. Anything that is important enough to remember should be written down; not highlighted, written down. Making your own outline on the chapter is better still.
- Ask questions when you don't understand, or didn't hear, anything said during class. If you get stuck on a homework assignment, ask a classmate, or better yet, the professor. If you are struggling with some part of the material, tell the professor. Stay after class and ask about it.
- Work out tough problems. Look for a couple of problems in the book chapter that look intimidating or complicated and try to do them. If you get a tough problem that you can't do, try a simpler version of the problem first, then work your way towards the more difficult one by adding components (this also works at the professional level in science). When you are finished, or get stuck, ask the professor for help. You improve skills not just through repetition, but by increasing the difficulty level of the tasks.

Steps for solving physics problems

1. Read the problem carefully and identify what is given and what is being asked for.
2. Draw a picture if you need help picturing whats going on, or, describe in your own words (meaning write down) what is going on.
3. Formulate a plan. What physical laws apply here? Usually Newton's Laws and Conservation of Energy apply to most problems. What other conservation laws apply? What formulas need to be used to carry out the plan?
4. Write out algebraic expressions for the solution or solutions. Start simple and increase in complexity as needed.
5. Check the units of your expressions. If the units are right, you're probably doing the problem right, but if the units are wrong, you're definitely doing the problem wrong. In the latter case you need to go back and look for a mistake.
6. Plug in numbers to the expressions and calculate the answer.
7. Does the answer pass the "common sense test"? Super luminal speeds, ridiculously large or small masses, temperatures below absolute zero, are all examples of red flags that should tell you something is wrong.