

Instructor: William Doney
Assoc. Prof. of Engineering & Physics

Email: bdoney@northampton.edu
Web: www.WilliamDoney.com/physics

Office: Kapp 202 (Monroe physics lab)

Office Hours (available in Kapp 202):
After class/lab. Also by appointment.

Phone: 610/861-5556 office
(email is preferred)

Prerequisites: Math 181 (Calculus II, co-requisite)
Although this is a Calculus-based course, students are expected to be competent in Algebra, Geometry (right triangles and angles) and basic Trigonometry (sine, cosine, tangent). Familiarity with a scientific calculator is also expected, as well as competency in Microsoft Word & graphing with Excel.

Required Text: *Physics For Scientists & Engineers with Modern Physics*, 4th Ed. by Giancoli. Used is ok.
An online access key is NOT required.
Blackboard will only be used to host textbook solutions and a few other resources.

Required Lab Manual: *PHYS 215 Lab Manual* – available from the Campus bookstore, BLUE cover.

Suggested Supplies: Scientific calculator, USB drive (for labs), and your brain.

Course Description

Physics 215 covers basic mechanics (motion, momentum, energy, rotation, torque, gravity, equilibrium), fluids, and heat (temperature, heat transfer, change of phase, and basics of thermodynamics).

The goal of the course is for you to gain a practical understanding—both conceptually and mathematically— of physical principles that are applied in everyday life. You'll learn through laboratory work, problem solving, conceptualization, "why does that happen" discussions, and imagination. The laboratory work emphasizes hands-on experience in which physical principles are applied and results observed, measured, and analyzed. Most of the laboratory experiments are computer-based.

Course Objectives

You have the opportunity to gain:

- a working understanding of basic physical quantities, including position, velocity, acceleration, force, mass, energy, torque, inertia, pressure, density, and temperature
- a practical understanding of physics (Newton's laws of motion, projectile motion, momentum, energy, torque, and rotational dynamics, fluids, heat), so as to be able to apply those principles to your observation of the physical world
- an understanding of physics so as to be able to solve simple physics problems.
- computer experience using a PC, interface, and sensors to measure physical quantities, collect data samples, and analyze collected data.
- an increased ability and confidence to conceptualize the application of physical principles and to integrate conceptual information with actual practical experience
- a greater ability to apply basic mathematics to scientific and technical fields.
- experience working in teams, and acting responsibly toward yourself and toward your colleagues

Reading Assignments

Other than for the first class session, reading assignments should be completed *before* each class session which deals with the subject matter. Reading the material beforehand will greatly enhance your comprehension during lecture.

Class Schedule & Topics (week-by-week): **** subject to change ****

Week	Beginning Monday	Topics/Chapters Covered	Exam
1	1/15 (no class MON)	Welcome & Ch 1 Introduction Ch 2 Kinematics in 1 Dimension	1
2	1/22	Ch 2 (cont.) Ch 3 Kinematics in 2 & 3 Dimensions	
3	1/29	Ch 3 (cont.)	
4	2/05	Ch 4 Dynamics: Newton's Laws	2
5	2/12	Ch 5 Friction, Circular Motion, Drag Forces	
6	2/19	Ch 6 Gravitation & Newton's Synthesis Ch 7 Work & Energy	
7	2/26	Ch 8 Conservation of Energy	
8	3/05	Ch 9 Linear Momentum	3
9	3/12 (spring break)	Ch 10 Rotational Motion	
10	3/19	Ch 11 Angular Momentum	
11	3/26	Ch 12 Static Equilibrium	
12	4/02	Ch 13 Fluids	4
13	4/09	Ch 17 Temperature, Thermal Expansion	
14	4/16	Ch 18 Kinetic Theory of Gases	
15	4/23	Ch 19 Heat & First Law of Thermodynamics	
16	4/30 & 5/07 (last day)	Ch 20 Second Law of Thermodynamics	
	TBD	FINAL EXAM	
Schedule subject to change.			
The Final Exam is just a 4th exam on the last section of material			

Class Agenda

Current educational research indicates that students don't learn a great deal of physics by listening to a professor talk about physics. Therefore, only part of our class time will be spent lecturing. We'll spend time in class working on example problems, discussing real-world applications, etc. My approach here is to give you more opportunity to get involved in the class. I encourage you to ask questions.

Students and instructor are all considered mutual learners. The life experiences of the students are to be respected. The sharing of those experiences as they relate to the subject of the course is not only welcomed, it is encouraged. Questions are also welcome; what we can't answer we will seek to answer together. We will take class 'breaks' as needed.

Lab time may be used to cover lecture material, or for exams. Labs may also be done during the scheduled lecture time.

Attendance Policy

- Attendance is expected of all students for lecture.
- Attendance is mandatory for lab sessions. If you miss a lab, you will receive a zero for the lab.
- ALWAYS check email before coming to class, in case there is a change due to weather or other
- If you are sleeping, txt-ing or doing something other than physics, you will be asked to leave.
- Please arrive on-time. Your participation is important. Should you arrive late, you might not be given credit for attendance, miss an unscheduled quiz, or not receive credit for an assignment that is due
- Often the lab door is closed once class starts. If you arrive and the door is closed & locked, you will need to wait until the class break to come in. Once the door is closed, any assignments due that day are considered late and will not be accepted.
- If you miss more than two weeks of class meetings without contacting the instructor with a valid excuse (see section *Missed Lecture*, ...), NCC may withdraw you from the class in accordance with policy, but until you officially withdraw, you will receive a final grade for the course.
- **You are responsible** for any assignments missed during your absence (excused or unexcused). You should contact a fellow classmate to obtain any class notes that you missed.

Missed Class, Exams, Labs...

- Give **advance notice** if you know you're going to miss an exam or lab (travel, work, doctor, etc.). You must contact the instructor directly (via email) **prior to the start of the exam**. Contacting the instructor **AFTER** missing a class/lab/exam will disqualify you from any makeup opportunity.
- If it is a medical excuse (sick, doctor's appt, etc), you must bring a written excuse from the doctor showing you were "*under their care*" for the date of the exam or assignment missed, to the next class to be eligible for makeup consideration. If your excuse is 'car trouble', a copy of the service repair bill must be presented at the next class. If your excuse is weather related, you must **STILL** contact me prior to class start. The instructor has the final decision on whether an excuse is acceptable or not.
- No assignments will be accepted late without prior permission from the instructor. Emailing the instructor ahead of time with an excuse (whether it is approved or not) does **NOT** constitute permission to hand the assignment in late. **EVEN IF YOU ARE EXCUSED FROM CLASS, THE ASSIGNMENT IS STILL DUE THAT DAY**, so make preparations to get it to me in time.
- If the college is open, any assignment that is due that day must be submitted on-time. If you do not attend class, you must email the assignment to me **BEFORE** the start of class to be accepted.
- If approved, **MAKE-UP TESTING** will be before or during the **next class period (lecture or lab) following** the regular exam in the Library. Makeup exams will **NOT** contain the same problems as the missed exam. Only the equation sheet (provided by the instructor) can be used for the exam. You will need to present your picture-id (e.g., driver's license) to library staff to take your exam.
- No makeup exams will be given after the exam has been corrected and returned to the class.
- No makeup quizzes. No makeup labs. The first missed lab will be the one that is 'dropped'.
- Once you begin an exam, you cannot leave and finish at another time or day.

Course Grading

I do not calculate grades until after the final exam. If you need to know 'where you stand' then use the free Excel File on my "student" website page to ballpark your grade current grade.

LECTURE GRADE (75%)

- 4 Exams - cover both in-class and lab work, scheduled approx. every 3-4 Chapters
- The final exam will be the 4th Exam, covering the material listed in the schedule.
- Quizzes – may be unannounced

LAB GRADE (25%)

- 12 (minimum) lab reports counted. If more than 12 are completed, lowest grade(s) dropped.

FINAL GRADES: *Grading scale may be lowered, but not raised.*

A	94 -100	B+	87 - 89	C+	77 - 79	D	65 - 69
A-	90 - 93	B	83 - 86	C	70 - 76	F	< 65
		B-	80 - 82				

- Notes:**
- if your exam avg = "F", you will receive an "F" no matter what your final course average is
 - if you fail 3 or more exams, the highest possible final grade will be a "D"
 - if you fail two exams, the highest possible final grade will be a "C"
 - there are **NO** retakes of exams, no exceptions. Once you start, you must finish.

Availability of Additional Information & Help

Links to YouTube videos, course handouts, lecture notes, and other resources are available online via my faculty web page at www.WilliamDoney.com/Physics

The NCC Learning Center provides tutoring for physics and math. If you are struggling, get help immediately!

Academic Integrity Policy (dishonesty, plagiarism, ...)

Academic dishonesty or plagiarism will not be tolerated! Anyone caught as a 'doer' or as a 'willing accomplice' will automatically receive a 0 (zero) grade for the exam or assignment. If the incident happens again, you will receive an F for the course and will be subject to the college's disciplinary action for such offenses. Please note NCC's policy on academic dishonesty. *Also, WHEN TAKING EXAMS: turn off and put away all electronic devices before an exam and do not use them until you have submitted the completed exam. Their very presence will be considered prima facie evidence of cheating and will result in a zero.*

Lecture, Laboratory & Miscellaneous Guidelines and Policies

- Lab attendance is required in order to receive a grade for the current lab project.
- If you do not have your lab manual, then you must handwrite all your data and transfer before submitting
- Lab groups will consist of a **MAXIMUM** of **THREE** students, unless otherwise directed by instructor.
- Labs may be scheduled on either day of class, at the instructor's discretion.
- Your lowest lab grade is dropped. This is your 'get out of jail free' card. Otherwise, "miss a lab = zero". Assuming you contact the instructor BEFOREHAND and provide the required documentation, it is at the instructor's discretion when it will be done. The first missed lab is your 'dropped' lab.
- If you miss class due to weather and the college is 'open', then any assignment due that day must still be submitted via email before the start of class for credit. Prepare ahead with a way to do this.
- Lab assignments are due one week following the experiment, at the **beginning** of the class. **Late submissions will not be accepted and will receive a zero, even if they are only a few minutes late.** "I left it in my car or forgot it at home" is not a valid excuse.
- All assignments must be submitted by the due date/time. If class is cancelled or the school is closed that day, the assignment is due the next day we have class or lab. No exceptions.
- If school is closed or class/lab is cancelled, please check your NCC email for any last minute instructions, as sometimes I will email a take-home lab or assignment.
- When working in lab groups the material you hand-in must be your own. Your wording should not be the same. You may be asked to work with a different lab partner(s) each week.
- The Physics Lab computer policy is similar to that of the College's computer labs - *If you're found abusing the equipment, or accessing inappropriate material on the web, you will lose your lab privileges and may face college disciplinary procedures.*
- All written assignments assigned must be typed in Microsoft Word. **Hand-written submissions will not be accepted.** No exceptions.
- **All plots or graphs must be done with Microsoft Excel or similar graphing software.**
- **Do not come to lab expecting to printout your lab or graph that is due that day.**
- NCC's computer policy applies to this lab – which includes: No food or drink in the lab
- The instructor is not responsible for missed assignments due to you not having the book or lab manual.
- A one-time award of 5 bonus points will be added to one of your exams if you schedule via email a 10-minute, informal, "how's the semester going?" meeting after the 2nd week and before mid-semester break.
- Please do not wait until the day before an exam to try and learn this stuff – it won't work. Get help as soon as possible - from another student, the learning center, or catch me after class. I'm more than happy to work on problems with you. You HAVE watched my YouTube videos, right?
- All communication outside of class will be done through email to your email address in NCC's system. It is the student's responsibility to check email. Even if you leave a message, I reserve the right to email you a response. Note that I only return calls during my regular office hours.
- **EMAIL Etiquette:** Students are expected to follow proper email etiquette when communicating with me. Emails must include a subject, a salutation (Dear Prof. Doney, Mr. Doney, Professor Doney, etc... not "Hey..."), a useful email body – asking a clear question or providing information, and ending with your name. Any email received that does not include, at a minimum the above, or is highly informal, may not be answered or may be returned asking for corrections per the above. Using your phone to send emails is not an excuse to be lazy and not follow these instructions.
- I do not accept any 'friend requests' via social media while you are my student
- Unclaimed assignments, labs, etc. in the 101 wall folder will be recycled **after each exam.**
- I am not required to provide 'extra credit' if you have a less than desirable grade. No extra-credit will be given on an individual basis – would you want your surgeon to have passed medical school because they got "extra credit" in one of their classes??!!!
- **If you are doing something other than PHYSICS during my class (eg. On your phone, txting, reading paper, etc), you will be asked to leave. If you do not, I will call Security to escort you out.**
- **All disciplinary or inappropriate behavior will be handled by Security and the Dean of Students**
- If an issue arises, this syllabus will be used as the final word in resolving the issue.
- Students have one week to discuss the expectations in this syllabus, after that it will be considered "law".

PHYS 215 RECOMMENDED HOMEWORK PROBLEMS from the textbook – 4th Edition

Solutions to ALL problems in the textbook are available online in Blackboard

Additional practice problems (*calculus & algebra-based*) can be found under the **PHYS 215** link www.williamdoney.com/physics

Video Solutions of many problems (*algebra-based*) on YouTube. Search: **NCC Physics Doney** Playlist: **101**

Chapter 01 – 3, 7, 11, 15, 20, 23

Chapter 02 – 1, 4, 7, 11, 14, 19, 20, 24, 27, 33, 37, 40, 44, 51, 54, 59, 64, 76, 81

Chapter 03 – 3, 7, 13, 21, 25, 29, 35, 41, 46, 50, 54, 57

Chapter 04 – 3, 5, 9, 13, 17, 21, 25, 30, 37, 40, 43, 49, 57

Chapter 05 – 3, 7, 13, 17, 23, 27, 29, 34, 39, 45, 49, 53, 59, 79

Chapter 06 – 1, 4, 7, 11, 15, 17, 24, 29, 32, 38

Chapter 07 – 3, 7, 11, 14, 16, 20, 23, 27, 31, 37, 40, 44, 51, 55, 59, 63

Chapter 08 – 4, 6, 8, 13, 16, 20, 22, 27, 31, 35, 39, 46, 62, 70

Chapter 09 – 3, 7, 13, 16, 19, 22, 26, 32, 35, 38, 44, 47, 50, 62, 65, 73

Chapter 10 – 3, 6, 11, 22, 25, 28, 30, 38, 40, 50, 56, 63

Chapter 11 – 2, 4, 8, 13, 24, 27, 36, 48

Chapter 12 – 3, 6, 13, 15, 18, 22, 33, 39

Chapter 13 – 3, 5, 9, 15, 20, 26, 31, 39, 43, 49, 54

Chapter 17 – 1, 4, 7, 15, 28, 31, 38, 41

Chapter 18 – 5, 7, 14, 23, 27, 37

Chapter 19 – 1, 5, 9, 15, 18, 25, 28, 31, 51, 58

Chapter 20 – 1, 5, 8, 12, 17, 22, 27, 32, 38

PHYSICS 215

*** PRINTOUT THIS PAGE, SIGN IT, AND BRING TO THE FIRST DAY OF CLASS***

By signing below, I confirm that I received a copy of the syllabus, and will be held accountable to the guidelines and policies listed. I also will *not* hold the instructor responsible for my having to “take this class” or for any of the laws of physics. I am taking this course as a responsible adult and understand that I may experience extreme intellectual growth and gain boat-loads of knowledge, thereby becoming a much smarter, life-long productive, and more interesting person.

Print Name: _____ Signature: _____

Date: _____ Section: _____

VOLUNTARY INFORMATION - FILL OUT AS MUCH AS YOU ARE COMFORTABLE

What is your major? _____

What is the highest level of math you have completed (e.g. Calc 1, ???) _____

What instructors have you had for Calculus (please list all) _____

Have you ever considered teaching? YES NO if YES, what area? _____ level? _____

If you have a job, what do you do? _____ # of hours per week: _____

Have you ever taken a physics class before? (*circle one*) NO YES in/at _____

Do you know anyone that has taken my class before? (*circle one*) NO YES who? _____

How do you view taking a Physics class? painful ____ boring ____ difficult ____ scary ____ I love it! ____

What did you *like* about your favorite teacher’s teaching style: _____

What did you *dislike* about your least favorite teacher’s teaching style: _____

How do you learn new things? ____ watch/visual ____ listen ____ read ____ hands-on

List any hobbies, sports, activities you enjoy: _____

Something I’ve always wanted to know is: _____

I believe UFO’s / Aliens / Life on other planets exist: (*circle one*) YES NO POSSIBLE

Game platform of choice?: (*circle one*) Xbox Wii Playstation Pinball Other None

Is there is life after death?: (*circle one*) YES NO MAYBE

Something you could not live without is: _____

If I was President of the USA, I would: _____

If you could talk to anyone living or dead, it would be: _____

If you could go anywhere, it would be to: _____

If stuck on a deserted island I would want: _____

If I hit the lottery tonite, I would: _____