

Syllabus for Physical Sciences, PHYS 115X

(FE1: CRN 34462)

(FE2: CRN 34463)

(FE3: CRN 38616)

Spring 2017

TR 17:20-18:50, REIC 202 (Lecture)

FE1 T 19:00-22:00, REIC 253 (Laboratory)

FE2/3 R 19:00-22:00, REIC. 253 (Laboratory)

- Instructor:** Hongbo Joshua Yang
- Office:** REIC 110
- Office Hours:** TR 16:00-17:00
- Contact:** Phone (907) 474-6793
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- Prerequisites:** Placement in ENGL 111X or higher; placement in DEVM F105 or higher; or permission of the instructor. Recommended: DEVM F105.
- Texts:** The Physics of Everyday Phenomena, Griffith and Brossing, Eighth Edition, McGraw Hill. Printed copies of laboratory manual will be distributed during the first meeting of the laboratory session.
- Course Objectives:** To acquire a basic understanding of (1) the fundamentals of motion of objects, (2) propagation of waves, (3) statics and dynamics of fluidic motion, and (4) electricity and magnetism.
- Course Outline:** Basic concepts and general overview of phenomena in physics. Reflections on interrelatedness and interdependence within different scientific disciplines.
- Credits** 4 credits: 3 hr. of lecture, and 3hr. of lab per week.

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Course Requirements/Policies:

Class Attendance:

For a better understanding of the course material attendance and participation in classroom activities are very important. This particular course is generally regarded as one of the basic courses that deal with the fundamentals of classical physics, and it is highly expected that the students will commit themselves to attend the class regularly. The students will be expected to take part in meaningful discussion and ask questions to better comprehend the subject material.

Homework:

On the average, 9-12 special problems/exercises/questions will be assigned each week on Thursdays. The homework will be due back at the beginning of class the following Thursday. Students may turn in their homework in the designated box inside the physics office (REIC 102) anytime before it is due, or submit it online using Google Classroom. NO LATE HOMEWORK WILL BE ACCEPTED. NO EXCEPTIONS (barring emergencies and extreme situations). Any homework you submit should reflect you own best effort. Copying of homework is absolutely not acceptable and will result in a grade of zero for the assignment.

Quizzes:

There will be, except for the first week and week of the midterm, one quiz every week of the semester on Thursday, and these quizzes will be administered during the last 10-15 minutes of the class and are designed to test students understanding of the subject material covered during the preceding week. The quiz will be open-text, and will parallel the homework and will include problems similar to the homework and 'intuitive' question pertaining to the subject materials.

Examinations:

There will be a midterm (March 7, Tuesday) and a final examination (May 4, Thursday, 5:45-7:45 PM) for this course. The examinations will consist of, in most part, problems/questions similar to those in the homework, quizzes, and those worked out in class. The exams will be close-book, close-note, but the relevant equations will be provided along with the tests.

Laboratory:

The laboratory is an integral part of this course, and each student must register for and attend the lab section and perform all labs that are listed in this handout. All labs and reports must be completed. Every effort must be made to make up a lab during the same week if possible. Last week of the semester would be set aside for makeup lab. Lab reports must be turned in on time, any lab turned in late will get deducted 20% for each week after the date it is due. A PASSING GRADE IN THE LAB IS REQUIRED TO PASS THE COURSE.

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Grading Policy:

Homework	15%
Lab	20%
Quiz	25%
Midterm	15%
<u>Final</u>	<u>25%</u>
Total	100%

The final grading for this course will be based on a curve, the average of which is usually taken to be the break-point of letter grade B and C, and the standard deviation of the grade point distribution will separate subsequent letter grades. Allowed grades will be limited to A,B,C,D,IN,NB,F, and no plus-minus grades will be given for this course.

Student Code of Conduct

You are expected to submit work that is your own and properly acknowledge the work of others. You are responsible for understanding and adhering to the [Student Code of Conduct](#) that is printed in the UAF Course Catalog. Abide By It. Violations of the Code will be reported to the Dean of Students.

Disabilities Services

If applicable, it is your responsibility to arrange for these services. The UAF Center for Health and Counseling provides services for UAF students with disabilities to ensure equal access to educational opportunities. The Center's Disability Services Program ensures compliance with §504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act (ADA) of 1990. If you believe you are eligible for 504 and/or ADA accommodations, please contact them at 474-7043 (WHIT 203).

Tentative Schedule

Lecture, Reading, Quiz and Exam

Dates	Topics	Reading Assignment	
Jan.	17	Syllabus, Scope of physics	Ch 1: sections 1-5
	19	Speed, Velocity, and Acceleration	Ch 2: sections 1-3
	24	Uniform Acceleration	Ch 2: sections 4-5
	26	(Quiz#1). Falling Objects	Ch 3: sections 1-3
Feb.	31	Projectile Motion	Ch 3: sections 4-5
	2	(Quiz#2). Newton's Laws	Ch 4: sections 1-3
	7	Application of Newton's Laws	Ch 4: sections 4-5
	9	(Quiz#3). Circular Motion, the Planets	Ch 5: sections 1-3
	14	Gravity	Ch 5: sections 4-5
	16	(Quiz#4). Work, Power and Energy	Ch 6: sections 1-3

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	21	Conservation of Energy	Ch 6: sections 4-5
	23	(Quiz#5). Momentum and Impulse	Ch 7: sections 1-2
	28	Collisions	Ch 7: sections 3-5
Mar.	2	(Quiz#6). Rotational Motion	Ch 8: sections 1-5
	7	Midterm	
	9	Pressure	Ch 9: sections 1-3
	14	Spring Break (No Classes)	
	16	Spring Break (No Classes)	
	21	Fluids in Motion	Ch 9: sections 4-5
	23	(Quiz#7). Temperature & Heat	Ch 10: sections 1-5
	28	Heat Engine and the Second Law	Ch 11: sections 1-3
	30	(Quiz#8). Heat Pump & Entropy	Ch 11: sections 4-5
Apr.	4	Electric Charge & Coulomb's Law	Ch 12: sections 1-3
	6	(Quiz#9). Electric field & Potential	Ch 12: sections 4-5
	11	Electric Circuit & Ohm's Law	Ch 13: sections 1-3
	13	(Quiz#10). Electrical Energy & Power	Ch 13: sections 4-5
	18	Magnetic Force	Ch 14: sections 1-3
	20	(Quiz#11). Faraday's Law	Ch 14: sections 4-5
	25	Wave, Sound & Light	Ch 15 - 17 ¹
	27	(Quiz#12) Review of Modern Physics	Ch 18 - 21
May	4	Final Examination, Thursday, 17:45-19:45	

¹ Reading assignment for this week is optional.