

Angelina College
Science and Mathematics Division
PHYS 1305 Elementary Physics
Instructional Syllabus

I. BASIC COURSE INFORMATION**A. Course Description**

Elementary Physics PHYS 1305. Three hours credit. A survey course in physics designed primarily for technical, liberal arts, and other non-science oriented students. An elementary treatment of mechanics, heat, wave phenomena, electromagnetism, and modern physics. Three lecture hours each week.

B. Intended Audience This course is appropriate for non-science majors who want a survey of topics in physics that explains natural principles. No particular background in math or science is assumed.

C. Instructor -

Name: Dr. John Harper
 Office Location: S202-A
 Office Hours: MW 9:30-11:00 am, TR 8:30-9:30, 1:00-2:00 (others by appointment)
 Phone: (936) 633-5261
 E-mail Address: jharper@angelina.edu

II. INTENDED STUDENT OUTCOMES:**A. Core Objectives Required for this Course**

1. **Critical Thinking:** to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information
2. **Communication:** to include effective development, interpretation and expression of ideas through written, oral and visual communication
3. **Empirical and Quantitative Skills:** to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions
4. **Teamwork:** to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal

B. Course Learning Outcomes for All Sections

Upon successful completion of this course, students will:

- Distinguish between velocity and acceleration
- Apply Newton's laws to physical problems including gravity.
- Solve problems using principles of energy and momentum.
- Describe the properties of waves and relate those components to mechanical vibrations and sound.
- Recognize the basic properties of light and associated applications
- Identify the basic elements of electric circuits

III. ASSESSMENT MEASURES**A. Assessments for the Core Objectives:**

1. **Critical Thinking:**
Student responses to problem assignments and embedded test questions are analyzed.
2. **Communication:**
A paper on an announced topic will indicate the ability to communicate effectively.
3. **Empirical and Quantitative Skills:**
Responses to both conceptual and quantitative assignments are assessed with an AC rubric.
4. **Teamwork:**
Cooperative efforts on a research project are summarized with an appropriate AC rubric.

B. Assessments for Course Learning Outcomes

Each of the learning outcomes is assessed through analysis of specific assignment problems and imbedded test questions throughout the course.

IV. **INSTRUCTIONAL PROCEDURES:**

A. Methodologies common to all sections

This course is taught principally by lecture, supplemented as appropriate with demonstrations, class discussions, and critique of written work.

B. Methodologies determined by the instructor

Course information, including assignments, copies of handouts, review material, and printable views of the overheads used in class are available to all enrolled students via Blackboard on the internet.

V. **COURSE REQUIREMENTS AND POLICIES:**

A. Required Textbooks, Materials, and Equipment –

1. Physics: A Conceptual World View by Larry Kirkpatrick and Gregory Francis (Thompson Brooks/Cole), 7th Edition.
2. A basic calculator will be helpful occasionally, but is not required.

B. Course Policies – (This course conforms to the policies of Angelina College as stated in the Angelina College Handbook.)

Academic Assistance - Educational Accommodations – If you have a disability (as cited in Section 504 of the Rehabilitation Act of 1973 or Title II of the Americans with Disabilities Act of 1990) that may affect your participation in this class, you may fill out the Educational Accommodations application within your AC Portal, under the “Student Services” tab. A Student Success team member will contact you once the application is received. At a post-secondary institution, you must self-identify as a person with a disability in order to receive services; for questions regarding the application process you can visit the Office of Student Success and Inclusion in the Student Center (Room 200) or email access@angelina.edu. To report any complaints related to accommodations, you should contact Annie Allen, Director of Student Success & Inclusion, in Room 200 of the Student Center. You may also contact Ms. Allen by calling (936) 633-4509 or by emailing aallen@anglina.edu. To report discrimination of any type, contact Steve Hudman, Dean of Student Affairs, at (936) 633-5292 or shudman@angelina.edu.

Attendance –

Attendance is required as per Angelina College Policy and will be recorded every day. Any student with three (3) consecutive absences or four (4) cumulative absences may be dropped from the class. Records will be turned in to the academic dean at the end of the semester. Do not assume that non-attendance in class will always result in an instructor drop.

Additional Policies Established by the Individual Instructor –

No eating, drinking, or smoking is allowed in any classroom, including the lab room.

Any child care problems must be handled outside the classroom.

Turn off cell phones and put away similar devices during class. Only calculators should be out.

Students are expected to exhibit civility and academic honesty (do your own work) during the course.

If you need to leave class early, inform the instructor - otherwise it will be counted as an absence.

Students are encouraged to participate in the instruction through courteous, relevant comments and questions during class.

Do not engage in activities that can disrupt other students.

Conferences outside of class are available during posted office hours or by appointment.

VI. **COURSE CONTENT:**

Required Content/Topics Common to All Sections

General kinematics, dynamics, and gravitation

Energy and momentum

Rotational motion

Relativity

Properties of fluids

Heat and temperature

Periodic motion and waves

Light and optics

Electricity and magnetism
Bohr's theory and quantum behavior
Radioactivity and nuclear physics

VII. EVALUATION AND GRADING:

A. **Grading Criteria**

Grades are determined by numerical scores on the following written components:

Assignments (15%) Homework assignments include sentence-type answers or explanations (more than yes or no) based on the reading assignments. Some simple computations occur, and not all material may have been covered during class. Each assignment should be turned in at the beginning of class within one week. Thereafter, points are deducted for each class period it is late, but will not be accepted after a test covering that material.

Quizzes (20%) Weekly short quizzes cover recent topics. There are **no make-up quizzes**, but *two* of your lowest scores will be eliminated to obtain the final quiz average.

Tests (45%) The material covered appears on the schedule. Each test counts 15%; the lowest grade, which may be *one* missed test, will be replaced by your next-lower grade.

Final Exam (20%) This is a comprehensive test, but emphasizes the most recent material.

B. **Determination of Grade**

Letter grades are determined from your course average based on the following guidelines:

Course Average	Grade
90 - 100	A
80 - 89	B
70 - 79	C
60 - 69	D
Below 60	F

The instructor reserves the right to adjust these standards in the student's favor.

Your current average will be given after each test, and pass/fail status at mid-semester.

VIII. SYLLABUS MODIFICATION:

The instructor may modify the provisions of the syllabus to meet individual class needs by informing the class in advance as to the changes being made.

**Class Schedule and Assignments
Spring 2019**

<u>Day</u>	<u>Date</u>	<u>Topic, Reading Assignment</u>	
1	Jan 14	Introduction, units of measurement (Ch. 1)	
2	16	Speed, velocity, acceleration, inertia (Ch. 2-3)	
3	23	Force, Newton's laws, weight, friction. (Ch. 3)	
4	28	Gravitational acceleration, projectiles (Ch. 4)	
5	30	Gravitation, orbits. (Ch. 5)	
6	Feb 4	Momentum, impulse. (Ch. 6)	
7	6	Work and mechanical energy. (Ch. 7)	
8	11	Energy types, conservation, power. Review (Ch. 7)	
9	13	Test 1 (Chapters 1 - 7)	
10	18	Rotational Motion, torque, stability. (Ch. 8)	
11	20	Relativity, space-time (Ch. 9)	
12	25	Time and length, energy, general relativity. (Ch. 9-10)	
13	27	Density, pressure, Archimedes' principle.(Ch. 11-12)	
14	Mar 4	Temperature and heat, calories. (Ch. 13)	
15	6	Heat transfer and change of state. (Ch. 13)	
	11-15	Spring Break	
16	18	Waves and sound. (Ch. 15-6)	
17	20	Test 2 (Chapters 8 - 13)	
18	25	Wave effects, Reflection. (Ch. 16)	
19	27	Reflection, Refraction, total internal reflection, (Ch. 17-18)	
20	Apr 1	Interference, diffraction, polarization, scattering. (Ch. 19)	Apr 1 last day to drop
21	3	Charge, Coulomb's law, electric potential. (Ch. 20)	
22	8	Current, resistance, circuits, power. (Ch. 21)	
23	10	Magnets, electromagnetism. (Ch. 22)	
24	15	Test 3 (Chapters 15 - 21)	
25	17	Electromagnetic devices (Ch. 22)	
26	22	Spectra, quantum nature of light. (Ch. 23)	
27	24	Bohr's atom, wave-particle duality. (Ch. 23-24)	
28	29	Nucleus, radioactivity. (Ch. 25)	
29	May 1	Nuclear Energy. (Ch. 26)	
30	6	Comprehensive Final Examination (11:00 a.m. - 1:00 p.m.)	