Angelina College
Science and Mathematics Division
PHYS 1401 College Physics I
Instructional Syllabus

I. BASIC COURSE INFORMATION

A. Course Description

PHYS 1401. College Physics I. Four hours credit. Principles of the mechanics of solids and fluids, and fundamentals of heat. Three lecture hours and two laboratory hours each week.
Prerequisite or co-requisite: MATH 2412 (Precalculus). Lab fee.

B. Intended Audience

This course is appropriate for liberal arts, life sciences, and pre-professional students, or others who desire a two-semester laboratory-based survey of college physics. A good background in algebra is necessary, and trigonometry is used throughout the course.

C. Instructor

Name: Kathleen Hughes
Office Location: Rm 214
Office Hours: W & Th 1:40-2:30
Phone: (936) 875-9320
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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:

Determine the components of linear motion (displacement, velocity, and acceleration), and especially motion under conditions of constant acceleration.
Apply Newton's laws to physical problems including gravity.
Solve problems using principles of energy.
Use principles of impulse and linear momentum to solve problems.
Solve problems involving rotational and linear motion.
Describe the properties of waves and relate those components to mechanical vibrations and sound.
Demonstrate an understanding of equilibrium.
Discuss simple harmonic motion and its application to quantitative problems or qualitative questions.
Solve problems using the principles of heat and thermodynamics.

III. ASSESSMENT MEASURES

A. Assessments for the Core Objectives:

1. **Critical Thinking**:
   Student responses to problem assignments and embedded test questions will be analyzed.
2. **Communication**:
   Free responses on lab reports will indicate students' 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 in lab 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 embedded 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 daily 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. College Physics, Volume 1, 8th Edition by Young and Geller, Pearson/Addison Wesley

2. A scientific calculator (preferably graphing) is necessary to complete assignments.

There is no laboratory manual that must be purchased. Individual lab information is distributed weekly at the beginning of labs.

Materials Required by the Instructor -

Problem assignments are available and submitted through Sapling Learning, an online homework resource. Students must register through the bookstore material or online at *Saplinglearning.com*.

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

1. Academic Assistance –

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 should see Karen Bowser, Room 208F of the Student Center. At a post-secondary institution, you must self-identify as a person with a disability; Ms. Bowser will assist you with the necessary information to do so. To report any complaints of discrimination related to disability, you should contact Dr. Patricia McKenzie, Administration Building, Room 105 or 936-633-5201.

2. Attendance –

Attendance is required as per Angelina College Policy and will be recorded every day. Any student with three (3) consecutive absences of 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. **You must officially drop a class or risk receiving an F**.

Students are expected to attend and participate in weekly laboratory sessions.

VI. COURSE CONTENT:

The main topics discussed in this course are:

Vector kinematics (Chapt. 1-3) and dynamics (Chapt 4,5)
Gravitation (Chapt 6)
Energy, momentum, and conservation laws (Chapt 7,8)
Rotational kinematics and basic dynamics (Chapt 9,10)
Periodic motion and waves (Chapt 11,12)
Properties of fluids (Chapt 13)
Heat, temperature, and basic thermodynamics (Chapt 14,15)

Specific dates of topics and exams are listed on the last page.

VII. EVALUATION AND GRADING:

A. Grading Criteria

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

Assignments (20%) Homework assignments are problem solutions from the text book. Each assignment should be completed within one week. Assignments may be turned in up to one week late for half-credit.

Laboratory (20%) Each lab has a written report to be turned in within one week. Labs may be turned in up to one week late for half-credit. Your two lowest (or missing) grades will be eliminated from consideration. Your grade will be best on the best ten labs.

Tests (14% each) The material covered is given on the schedule. The lowest grade (which may be a missed test) is replaced by your next-lower test grade.

Final Exam (18%) 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 (which may be revised when appropriate in the student's favor) :

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

A copy of your grades and current average will be distributed near mid-semester, after Test 2, and near the end, after Test 3, to inform you of your progress and status, and to allow verification that your grades have been accurately recorded. Individual test grades will not be curved, but the final course average may be subject to a curve at the instructor's discretion.

VIII. SYLLABUS MODIFICATION:

The instructor may modify the provisions of the syllabus to meet individual class needs.

Class Schedule

(Tentative schedule, subject to revision as necessary)

Fall 2016

Date	Topic and Reading Assignment
Aug 22	Course Introduction (1.1-1.2)
23	Units of measurement (1.3-1.5)
25	Vectors (1.7)
26	Vectors (1.8)
29	Displacement & Average Velocity (2.1-2
30	Acceleration (2.3)
Sept 1	Lab 1 Measurement
2	Constant Acceleration (2.4)
5	Labor Day
6	Free Fall (2.5)
8	Lab 2 Constant Acceleration
9	Velocity in a Plane (3.1)
12	Acceleration in a Plane (3.2)
13	Projectile Motion (3.3)
15	Lab 3 Projectile Motion
16	Projectile Motion (3.3)
19	Circular Motion (3.4)
20	Review Ch. 1-3
22	**Test 1 (Chapters 1-3)**
23	Newton's 1st Law (4.1-4.2)
26	Newton's 2nd Law (4.3-4.4)
27	Newton's 3rd Law (4.5-4.6)
29	Lab 4
30	Applications of Newton's Laws (5.1-5.2)
Oct 3	Friction (5.3-5.5)
4	Force in Circular Motion (6.1)
6	Lab 5
7	Newton's Law of Gravitation (6.3)
10	Weight & Satellite Motion (6.4-6.5)
11	Work & Energy (7.1-7.3)
13	Lab 6
14	Early Release Day
17	Teacher Inservice, No class
18	Potential Energy (7.4-7.5)
20	Lab 7
21	Conservation of Energy (7.6-7.8)
24	Catch up
25	Review Ch. 4-7
27	**Test 2 (Chapters 4-7)**
28	Momentum (8.1-8.2)
31	Momentum (8.3-8.4)
Nov 1	Impulse (8.5-8.7)
3	Lab 8
4	Rotational Motion (9.1-9.2)
7	Rotational Motion (9.3-9.5)
8	Torque (10.1-10.3)
10	Lab 9
11	Angular Momentum (10.4-10.5)
14	Periodic Motion (11.2-11.3)
15	The Pendulum (11.4-11.6)
17	**Test 3 (Ch. 8-11)**
18	Early Dismissal
28	Mechanical Waves (12.1-12.3)
29	Wave Properties (12.5-12.8)
Dec 1	Lab 10
2	Heat (14.1-14.2)
5	Heat (14.4-14.5)
6	Calorimetry (14.6-14.7)
8	Lab 11 Calorimetry Lab
9	Kinetic Theory, Laws of Thermodynamics
12	Review
13	Review
15	**Comprehensive Final Exam**