

# SYLLABUS for PH 141

**Class:** PH 141, Physics for Scientists and Engineers I

**Course Description:** Forces, energy, momentum, angular momentum, oscillations, waves, heat, thermodynamics (calculus based).

**Prerequisites:** ((MATH 126, may be taken concurrently) AND (MATH 155, may be taken concurrently)) OR (MATH 160, may be taken concurrently) OR (MATH 159, may be taken concurrently).

## Course Policies

Instructor contact information, office hours, textbook, grading scheme, due dates and schedules, and other semester-dependent information will be provided in a Course Information document which will be handed out in class (along with this document) and/or made available on the course web page.

## Make-up/Missing Class Sessions

You should attend the laboratory section you are enrolled in, but if that is impractical some week it may be possible to attend another section during that week; see the Course Information document for details. It is usually not possible to make up a missed lab during a different week.

Laboratory absences will be excused on the grounds of delays in course registration (it is possible to add the course after the first lab has been held), conflicts with University-approved activities, or events beyond your control that cannot be rescheduled (e.g., hospitalization). In every case it is the student's responsibility to inform the instructor of the situation in due course (well ahead of time, for University-approved activities, and as soon as practical in the case of medical emergencies) and to provide appropriate written documentation. We encourage students who are affected by serious injuries and other types of crisis that interfere with their academic performance to contact the Student Case

Management and Referral Coordination office; their phone number is 970-491-8051.

Similar guidelines hold in the case of missing quizzes in recitation sections, homework assignments, graded in-lecture activities or any other graded component of the course; please consult the Course Information document for details.

## Disabilities

Colorado State University is committed to providing reasonable accommodations for all persons with disabilities. Students must contact the Student Disability Center (SDC) prior to requesting accommodations for this class. Requests for alternative exam arrangements must be made at least one week in advance. SDC is located in Room 121, TILT Building; their phone is 970-491-6385 (V/TDD) and their website is <http://disabilitycenter.colostate.edu>

## Religious Accommodation

Students seeking exemptions from attending class or completing assigned course work on account of a religious holiday will find information at <http://oeo.colostate.edu/religious-accommodation>

## Academic Integrity

This course will adhere to the CSU Academic Integrity Policy as found on the Student Responsibilities page of the CSU General Catalog and in the Student Conduct Code.

See the Course Information document for specific policies associated with this class.

## Incompletes

Temporary grades of Incomplete may be given at the discretion of the instructor, consistent with University policy as described in <http://registrar.colostate.edu/faculty-staff/incomplete-grades/>

## Learning Objectives and the GT Pathways Program

The Colorado Commission on Higher Education has approved PH 141 for inclusion in the Guaranteed Transfer (GT) Pathways program in the GT-SC1 category. For transferring students, successful completion with a minimum C- grade guarantees transfer and application of credit in this GT Pathways category. For more information on the GT Pathways program, see <http://higherred.colorado.gov/academics/transfers/gtpathways/curriculum.html>

The content criteria and student learning outcomes (SLOs) listed below are required for GT-Pathways courses in the Natural and Physics Sciences content area, in the GT-SC1 (Lecture course with required laboratory) category. The peculiar numbering of the SLOs is due to the fact that they are excerpted from a comprehensive list of SLOs across all GT-Pathways courses. The SLOs are listed within categories that the GT-Pathways program calls "competencies" and are displayed in italics below.

### Content Criteria

1. The lecture content of a GT Pathways Science course:
  - a. Develop foundational knowledge in the specific fields(s) of science.
  - b. Develop an understanding of the nature and process of science.
  - c. Demonstrate the ability to use scientific methodologies.
  - d. Examine quantitative approaches to study natural phenomena.
2. The laboratory (either a combined lecture and laboratory, or a separate laboratory tied to a science lecture course) content of a GT Pathways science course:
  - a. Perform hands-on activities with demonstration and simulation components playing a secondary role.
  - b. Engage in inquiry-based activities

- c. Demonstrate the ability to use the scientific method.
- d. Obtain and interpret data, and communicate the results of inquiry.
- e. Demonstrate proper technique and safe practices.

### Competencies and Student Learning Outcomes

#### *Inquiry & Analysis:*

4. Select or Develop a Design Process
  - a. Select or develop elements of the methodology or theoretical framework to solve problems in a given discipline.
5. Analyze and Interpret Evidence
  - a. Examine evidence to identify patterns, differences, similarities, limitations, and/or implications related to the focus.
  - b. Utilize multiple representations to interpret the data
6. Draw Conclusions
  - a. State a conclusion based on findings

#### *Quantitative Literacy*

1. Interpret Information
  - a. Explain information presented in mathematical forms (e.g., equations, graphs, diagrams, tables, words).
2. Represent Information
  - a. Convert information into and between various mathematical forms (e.g., equations, graphs, diagrams, tables, words).