

1. In your opinion, what is the primary reason your department requires students to take this physics course?
  
2. In what year should your students take physics?      Freshman      Sophomore      Junior      Senior
  
3. How many semesters of physics do you think should be required for your students?    0   1   2   3   4   5   6
  
4. Many different goals could be addressed through this course. Would you please rate each of the following possible goals in relation to its importance for your students on a scale of 1 to 5?
 

<b>1=unimportant</b>	<b>2=slightly important</b>	<b>3=somewhat important</b>	<b>4=important</b>	<b>5=very important</b>	
Know the basic principles behind all physics (e.g. forces, conservation of energy, ...)	1	2	3	4	5
Know the range of applicability of the principles of physics (e.g. conservation of energy applied to fluid flow, heat transfer, ...)	1	2	3	4	5
Be familiar with a wide range of physics topics (e.g. specific heat, AC circuits, rotational motion, geometrical optics, fluids, relativity, ...)	1	2	3	4	5
Solve problems using general quantitative problem solving skills within the context of physics	1	2	3	4	5
Solve problems using general qualitative logical reasoning within the context of physics	1	2	3	4	5
Formulate and carry out experiments	1	2	3	4	5
Analyze data from physical measurements	1	2	3	4	5
Use modern measurement tools for physical measurements (e.g. spectrophotometers, computer data acquisition, timing techniques,...)	1	2	3	4	5
Use computers to solve problems within the context of physics.	1	2	3	4	5
Overcome misconceptions about the behavior of the physical world	1	2	3	4	5
Understand and appreciate 'modern physics' (e.g. nuclear decay, quantum optics, cosmology, quantum mechanics, elementary particles,...)	1	2	3	4	5
Provide biological examples of physical principles within the context of physics.	1	2	3	4	5
Understand and appreciate the historical development and intellectual organization of physics.	1	2	3	4	5
Express, verbally and in writing, logical, qualitative thought in the context of physics.	1	2	3	4	5
Provide real world applications of mathematical concepts and techniques within the context of physics.	1	2	3	4	5
Use with confidence the physics topics covered.	1	2	3	4	5
Apply the physics topics covered to new situations not explicitly taught by the course.	1	2	3	4	5
Prepare students for the MCAT	1	2	3	4	5
Other goal. Please specify here	1	2	3	4	5



**Please place a star (\*) next to the TWO goals listed above that you consider to be the MOST IMPORTANT for your students.**

## Introductory Physics Questionnaire

5. In two semesters it is impossible to cover every topic in physics. The purpose of this question is to determine your priorities of the topics in the course. Below are the chapter headings from a typical textbook at this level. Please place the **integer** number of weeks for each chapter that, **in your judgment**, allows students to understand the material at the level you desire. Each week consists of 3 lectures, 1 discussion section, and a 2-hour laboratory. The total number of weeks should equal 26 to account for a course introduction at the beginning of the semester and a review at the end. **Please do not use fractions of a week.**

- \_\_\_\_\_ Units, dimensions and vectors
- \_\_\_\_\_ Linear motion
- \_\_\_\_\_ Two dimensional motion
- \_\_\_\_\_ Forces and Newton's Laws
- \_\_\_\_\_ Applications of Newton's laws
- \_\_\_\_\_ Kinetic energy and work
- \_\_\_\_\_ Potential energy and conservation of energy
- \_\_\_\_\_ Momentum and collisions
- \_\_\_\_\_ Rotations and torque
- \_\_\_\_\_ Angular momentum
- \_\_\_\_\_ Statics
- \_\_\_\_\_ Gravitation
- \_\_\_\_\_ Oscillatory motion
- \_\_\_\_\_ Mechanical waves
- \_\_\_\_\_ Superposition and interference of waves
- \_\_\_\_\_ Fluid mechanics
- \_\_\_\_\_ Temperature and ideal gas
- \_\_\_\_\_ Heat flow and the first law of thermodynamics
- \_\_\_\_\_ Molecules and gases (e.g. probability distributions of velocity, equipartition theory)
- \_\_\_\_\_ Entropy and the second law of thermodynamics
- \_\_\_\_\_ Properties of solids (e.g. stress, strain, thermal expansion)
- \_\_\_\_\_ Electric charge and force
- \_\_\_\_\_ Electric field
- \_\_\_\_\_ Gauss' law
- \_\_\_\_\_ Electric potential
- \_\_\_\_\_ Capacitors and dielectrics
- \_\_\_\_\_ Currents in materials (e.g. resistance, insulator, semiconductors)
- \_\_\_\_\_ Currents and DC circuits
- \_\_\_\_\_ Magnetic forces and fields
- \_\_\_\_\_ Currents and magnetic fields (e.g. Ampere's law, Biot-Savart law)
- \_\_\_\_\_ Faraday's law
- \_\_\_\_\_ Magnetism and matter (e.g. ferromagnetism, diamagnetism)
- \_\_\_\_\_ Magnetic Inductance
- \_\_\_\_\_ AC circuits
- \_\_\_\_\_ Maxwell's equations and electromagnetic waves
- \_\_\_\_\_ Geometrical optics (e.g. reflection and refraction)
- \_\_\_\_\_ Mirrors and lenses
- \_\_\_\_\_ Interference
- \_\_\_\_\_ Diffraction
- \_\_\_\_\_ Quantum physics
- \_\_\_\_\_ Atomic physics
- \_\_\_\_\_ Nuclear physics and radioactive decay
- \_\_\_\_\_ Particle physics
- \_\_\_\_\_ Relativity
- \_\_\_\_\_ Other. Please specify.
- 26   **Total number of weeks**



**Please place a star (\*) next to the FOUR chapters listed above that you consider to be the MOST IMPORTANT for your students.**

6. The **laboratory** associated with this course is typically taught by graduate teaching assistants and could be structured in several ways. Please place an 'X' by that structure most appropriate for your students.
- A lab with well defined directions explaining how to use a simple apparatus to verify a physical principle.
  - A lab with a well defined question or problem illustrating a physical principle and minimal guidance about how to use the simple apparatus.
  - A lab where the students are given a general concept from which they must formulate an experimental question, then design and conduct an experiment from a choice of apparatus.
  - Other. Please describe.
7. The **discussion** sections associated with this course are typically taught by graduate teaching assistants and could be structured in several ways. Please place an 'X' by that structure most appropriate for your students.
- Students ask the instructor to solve specific homework problems on the board.
  - Instructor asks students to solve specific homework problems on the board.
  - Instructor asks students to solve unfamiliar textbook problems, then gives the solution on the board.
  - Instructor asks students to solve "real world" problems individually and write their solution on the board.
  - Students work in small groups to solve "real world" problems with coaching from the instructor.
  - Students work in small groups to solve conceptual questions with coaching from the instructor.
  - Other. Please describe.
8. Please give examples of topics or subjects covered in **your courses** that assume knowledge, skills or understanding that should be imparted by this physics course? Specific course numbers would be helpful.

Thank you for completing this questionnaire. If you have any material that illustrates the topics or subjects covered in your courses that assume knowledge, skill, or understanding that should be imparted in an introductory physics, we would appreciate receiving a copy.

In order for us to follow up, we ask that you complete the following information. Thank you.

Name: \_\_\_\_\_

Department / program: \_\_\_\_\_

Campus address: \_\_\_\_\_

Campus phone: \_\_\_\_\_

email: \_\_\_\_\_