

Class hours: Tues & Thur 11.00 - 12.15. *Note: this class will not meet on Tuesday, Oct. 13.*

Instructor: C. Martin Vincent

Office: 226 Old Engineering Hall (OEH) **Hours:** Tues & Thur 12:20-1:30, or by appointment

Phone: 624-9089 **email:** vincentm@pitt.edu

Textbook: Hobson, Art, "Physics: Concepts & Connections" 4th ed., Pearson Prentice Hall 2007

LON-CAPA: Homework will be assigned online. To access the homework, you need to log in at the LON-CAPA web site, which is:

<http://nplq1.phyast.pitt.edu>

For LON-CAPA your username is your Pitt logname and your initial password is your 7-digit student number. Change it promptly and keep it secret.

A page describing how to use the site is available at

<http://tinyurl.com/6h4xjx>

or, in full glory but less conveniently,

http://fafnir.phyast.pitt.edu/LON/loncapa.msu.edu/student/getting_started.html

Don't hesitate to get help from me if you are not sure how to use the computer.

If a problem develops that prevents many students from logging on to LON-CAPA, information on how to cope will be placed at the link [Phys81crisis](#) on the Web page

<http://www.pitt.edu/~vincentm/> (character ~ is near top left of keyboard)

Exams: Two in-class exams will be given during the term.

- Thursday, 8th October
- Thursday, 19th November

If you must miss an exam for reasons of health or other serious emergency, let me know as soon as possible. An unexcused absence will result in failure for the exam.

A student whose test is not picked up promptly after a batch of tests are returned to the class will lose up to 50% of the points for the test.

A cumulative final exam will be given at the end of the term:

- Wednesday, 16th December, 12.00 - 1.50 pm.

You must plan to be there, otherwise you are not eligible to register for this course.

This course does not offer extra-credit projects.

Grading: The course grade will be assigned based on

homework + class participation (45 points)

two in-class exams (45 points each)

final (65 points).

You will need to score at least 60% of this total (200) to obtain a grade sufficient for GenEd credit for this course.

Description of Course:

This course introduces you to the physics of the very small (atomic and particle physics) and the very large (astrophysics) as well as some objects of everyday (human) size. We will try to emphasize the connections between the different scales. In all this your primary goal should be

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Don't memorize, *understand*.

We'll try to develop understanding of the scientific process. Accordingly, questions and classroom discussion between instructor and students are continually encouraged. There will frequently be experimental demonstrations in class to illustrate certain points, because physics is an experimental science - "One good experiment is worth a century of bad philosophy."

Warning: Though the course emphasizes *conceptual* understanding, we will have to use some basic mathematics. If you are not proficient in arithmetic, you may for convenience buy and use a simple calculator, preferably one with a square-root key. But a calculator is not required. We often deal with very large and very small numbers, using power-of-10 notation. Sometimes we use a little algebra, and sometimes we draw pictures to express the concepts needed. Both hemispheres of the human brain will be exercised. Some advanced mathematical ideas are slipped in, but no difficult calculations are expected of the student.

Course Objectives: Students successfully completing this course will be able to

- describe what physics is, and the range of natural phenomena explained by physics.
- explain where scientific knowledge comes from.
- identify the basic physical laws of nature.
- apply fundamental laws and principles of physics to simple problems, at least qualitatively.
- describe Newton's laws of motion and gravity.
- outline the atomic theory of matter.
- describe the nature of energy and the laws of thermodynamics.
- describe the nature of light, electricity, and magnetism.
- outline relativity and quantum theory.
- explain the structure of matter based on fundamental building blocks.
- describe some current topics in Nuclear and Particle Physics, and the experimental devices used to study them.
- outline Einstein's space-time theory of gravity and how it applies to Cosmology.

Fairness Policies:

- Academic Integrity:

Students in this course will be expected to comply with University of Pittsburgh's Policy on Academic Integrity. Any student suspected of violating this obligation for any reason during the semester will be required to participate in the procedural process, initiated at the instructor level, as outlined in the University Guidelines on Academic Integrity. This may include, but is not limited to, the confiscation of the examination of any individual suspected of violating University Policy. Furthermore, no student may bring any unauthorized materials to an exam, including dictionaries and programmable calculators.

During exams, texting and other electronic communication is prohibited. You are not permitted to give any other person access to your LON-CAPA account. During computerized class participation, you must use only the clicker that will be assigned to you for the term.

- Disabilities:

If you have a disability that requires special testing accommodations or other classroom modifications, you need to notify both the instructor and the Disability Resources and Services no later than the 2nd week of the term. You may be asked to provide documentation of your disability to determine the appropriateness of accommodations. To notify Disability Resources and Services, call 648-7890 (Voice or TTD) to schedule an appointment. The Office is located in 216 William Pitt Union.