

PHSC 3083 – THE SCIENCE OF EVERYDAY LIFE
Fall Semester, 2007

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| Professor | Dr. A. Anil Kumar Mr. Brian M. Cudnik | Office Hours | Mon. 2pm – 4pm Wed. and Fri. 10am-12pm |
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CATALOG DESCRIPTION: *Credit 3 semester hours. Presents a description of daily phenomena, demonstrating how science provides a basis for comprehending them and discusses relationships between various apparently unrelated phenomena.*

PRE-REQUISITE: PHSC 2123 or PHYS 2123

TEXTBOOK/MATERIALS:

1. *How Things Work*, L. Broomfield, John Wiley & Sons.
2. *The Flying Circus of Physics* Jearl Walker, John Wiley & Sons.
3. MIT Physics Website—www.masteringphysics.com

COURSE DESCRIPTION: **Credit 3 semester hours** (2-2). Physics for Teachers. This is a 3 credit hour course which is geared towards education majors. Majors in Architecture and Technology may also take this course to further their understanding of physics, especially if they would like to pursue a teaching career.

GOALS

Broad Knowledge of Physics

- To master key concepts and methods of physics.
- To be aware of historically important experiments, events and phenomena in physics.
- To understand the connection between physics and other subjects, especially biology, medicine, health, engineering and technology and how they relate to everyday life.

Problem Solving Skills

- To learn key concepts and techniques in physics to solve problems in physics.
- To learn to apply these techniques to problems more general than the ones in the book.
- To develop (with guidance) physical relationships based on experimental observations and physical reasoning.
- To learn to apply these techniques to problems in areas other than physics.
- To deduce reasonable numerical estimates for quantities.

Computer Skills

- To use computers for simulations and presentations of results.
- To use computers to write term papers.

Critical Thinking

- To provide an introduction to how science permeates everyday living and how to use this fact in the classroom while teaching science.
- To connect concepts and representations (such as graphs, diagrams, and equations) to phenomena and processes in the real world.
- To construct qualitative and quantitative models of real-world systems and processes.

Scientific Reasoning

- To appreciate the scientific process – search and discovery, false starts, inspired guesses, accidental discoveries, serendipity, controversy, and available technology.
- To appreciate the limits of validity of and extensions of existing concepts as and when new results are discovered.

Communication Skills

- To express the ideas and concepts of physics in writing (such as term papers) and in class participation.

Career Preparation

- To appreciate the relevance of physics to the other courses appropriate to your major including employment and/or graduate or professional training.

OUTCOMES

At the end of the course, the student should be able to:

1. Explain how science is involved in a number of everyday examples, including describing qualitatively how a number of different things work.
2. Describe the interrelationships between several different types of phenomena
3. Explain the basic physics behind these phenomena and relationships

STUDENTS WITH DISABILITIES

If you need accommodations in this class related to a disability, please make an appointment with me as soon as possible. My office is located in Room 330C, New Science Building. The building is accessible to people with disabilities. There is an Office of Disability Services on the campus located in Evans Hall Room 315, Tel: (936) 857-2610.

COURSE POLICIES

This course will use several instructional formats to increase student understanding and retention of subject matter. Selected materials in each chapter will be covered during the lectures. Students should read the entire assigned chapters prior to class as lectures alone are insufficient for material proficiency. Lecture will be used to amplify and explain the materials found in the textbook. Written and reading assignments will be given during the entire semester for each chapter covered and will be turned in on time. Some of these will incorporate an experiment or two. It is expected that you will need to spend at least two hours studying outside the class for each hour spent in class (minimum of 6 total hours per week).

REQUIREMENTS

1. Each week a set of homework questions or a project shall be assigned from the text, which will assist in determining your competency of the information presented. Assignments are due on specified due dates and times; additional time need not be requested. Better Never, than Late!
2. Exams will be periodically given, and a cumulative final exam given at semester's end.
3. Please turn off all cell phones and beepers when entering the classroom.
4. Academic Dishonesty/Cheating: You are responsible to know the elements of academic dishonesty, plagiarism, cheating etc., as set forth in PVAMU Student Handbook. PVAMU allows no form of collaboration in the preparation of papers or in the taking of quizzes or exams. Work on paper, quizzes, and exams must be totally your own. You should neither request nor give help. The penalty for violating the PVAMU Academic Honor Code in this class is a score of zero for the quiz, exam, or paper in which the violation occurs.

HOW TO SUCCEED IN PHYS 3083

1. Attend EVERY class.
2. READ the assigned chapter(s) BEFORE class.
3. Do NOT wait until the day before the exam to study. Review notes DAILY.
4. Check with your instructor as soon as possible if you do not understand a concept.
5. Plan TWO (2) hours, THREE times a week to provide sufficient study time to cover reading, homework, and review.
6. Form a Study Group. Your study group can provide information that you might miss in class and provide a forum for questions and regular review of class material.

GRADING SCHEME

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| A | 90 – 100 |
| B | 80 – 89.9 |
| C | 70 – 79.9 |
| D | 60 – 69.9 |
| F | Below 60 |

You should keep a record of your point totals on quizzes, exams, homework and lab in order to verify and check my record keeping.

SEMESTER SCHEDULE (SUBJECT TO CHANGE)

Week Chapter & Topic (Time considerations may limit the amount of time spent on each topic)

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| 1 | Introduction: How is Science involved in Everyday Life? |
| 2, 3 | How “stuff” works—a scientific approach |
| 4 | Use of science in industry and business |
| 5, 6 | Building a house—science and engineering |
| 7, 8 | Things on the go—science of aircrafts and automobiles |
| 9 | Talking about the weather—the science of the atmosphere |
| 10, 11 | Electronics in the Home—the science of telephones, televisions, and computers |
| 12 | Changing seasons—the science of the seasons |
| 13, 14 | Science in the News, Weather (forecasting), and Sports |
| 14, 15 | Conclusion—the Science we encounter in our daily routines |
| 15 | Review, study, and final exam days |
| 16 | Final Examination |