

Science Education (ESCI) 4000/7000  
Physical Science for Middle School Teachers  
Spring Semester, January 9-May 1, 2006  
Mondays, Wednesdays, Fridays, 11:15-1:10  
215 Aderhold Hall  
corequisite: ESCI 4440/6000

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The primary **texts** for the course are *Conceptual Physics*, preferably 10<sup>th</sup> Edition, by Paul Hewitt, recommended for purchase, and the Teachers' Edition of the Prentice-Hall middle school text *Science Explorer: Physical Science*, available for semester-long loan from the instructor. It is not necessary routinely to bring the books to class. Other text materials will *not* be as extensive as for ESCI 4430 and will consist of photocopied or loaned material drawn from a wide variety of sources, in accordance with accepted Educational Fair Use guidelines. A small three-ring binder for them should be sufficient. A library of books, videos, and software relevant to the course will be built and maintained in Room 215 during the semester.

The **specific schedule** will be determined, week-to-week and day-to-day, based on the progress and input of the class, plus considerations of coordinating with ESCI 4440 and accommodating that course's field experiences.

My available **office hours** are: most of the day on most Tuesdays and Thursdays; before class on Fridays, and after class any day.

**Attendance policy:** Attendance and class participation are not in themselves a formal aspect of the course grade, *except for scheduled quizzes and tests*, for which unexcused absences are not acceptable. My goal is to try to design class activities so that you feel that you are clearly missing something if you are not here (both physically and mentally!). Reasonable efforts will be made to provide make-up or rescheduled quizzes or tests in the case of excused absences.

**Mastery Learning policy:** Provision will be made for gaining credit for correcting and explaining incorrect or insufficient answers on quiz and test items, and for retaking tests.

<b>Grading Scale:</b>	<b>Elements of Grade:</b>
A = 90-100%	30% short quizzes, approximately weekly
B = 80 -89%	50% major unit tests, approximately 5
C = 70-79%	20% final exam (Monday, May 8, noon-3:00)
D = 60-69%	
F = <60%	

As stated by UGA policy, the course syllabus is a **general plan** for the course; deviations announced to the class by the instructor may be necessary.

In accordance with the **University Honor Code and Academic Honesty Policy**, academic work must meet the standards contained in *A Culture of Honesty*. Each student is responsible to inform themselves about those standards before performing any academic work. Details are available at <http://www.uga.edu/ovpi/honesty/acadhon.htm>

Final note: Although some of you may not know it yet, physical science is Really Cool Stuff! (and your instructor is really corny, but you already know that).

Topic outline:

Introduction to Forces and Physical Science Thinking

Falling

Floating and Sinking

Pushing and Pulling

Balancing

Methodology of Experimental Science

Gravity

Magnetism

Static Electricity

Electric Current and Circuits

Electromagnetic Induction

Sound and Waves

Light and Optics

Motion and Newton's Laws

Momentum, Energy, and Work

Technological Applications

Solids, Liquids, and Gases

Heat and Temperature

Structure of Atoms and Periodic Properties

Applications to Astronomy; Methodology of Observational Science

Modern Details

Diffraction and Interference

Quantum Phenomena and Theory

The Atomic Nucleus and Nuclear Reactions

Special Relativity

Conceptual Introduction to Current Research;

Methodology of Theoretical Science