

## CONCEPTS & APPLICATIONS IN PHYSICS I – Spring 2008

PHY 246-01                      4.5 credits                      T/Th                      9:00-11:50 AM                      Fawcett Hall Room 201

**Instructor:** Nephi Thompson    Room 251 Fawcett Hall    775-2760    [nephi.thompson@wright.edu](mailto:nephi.thompson@wright.edu)

**Office Hours:** T/Th 12:00 - 1:00PM; or by appointment

**Pre-requisite:** SM 145 and Math 143

**Text:** *The Physics of Everyday Phenomena, 4<sup>th</sup> Edition, by Griffith, which contains the PHY 246 Laboratory Manual by Basista, Howell*

**Course Description:** This course has been designed specifically for pre-service teachers. A small number of important introductory topics are covered in depth, with an emphasis on concept development and the development of reasoning skills necessary to perform scientific inquiry. The topics covered are: Motion, Forces, Work, and Energy. The text includes a conceptual textbook bound with a lab manual. The textbook will be used as reference to support concepts learned in class. The lab manual involves hands-on/ minds-on laboratory-based activities, inquiry-oriented instructional strategies, intensive study of a few basic physical concepts, equal emphasis on physics content and scientific process, and addresses common student difficulties and misconceptions.

**Goals:** The goals of this course are:

- a. to develop a sound understanding of basic physical concepts and the scientific reasoning skills necessary to apply these concepts to everyday life
- b. to serve as a model for the techniques of inquiry-based instruction and assessment
- c. to utilize activity-based instruction and cooperative learning groups

**Attendance/Participation:** Due to the nature of this course, attendance is required. To further encourage regular attendance, a portion of the final grade is devoted to this. For each hour a student is in class, he/she will earn one attendance point (up to 3 per class meeting). Also, the class will be divided into cooperative learning groups. The members of the groups will work together to perform experiments and exercises, with each member recording the results and answers to questions in their own lab manual. Assessment of classroom participation will be based on the checkpoint discussions of the activities with the instructor (participation points given for completed checkpoints).

**Homework:** Homework assignments may be assigned each class and will be due the following class period unless a student is absent. Points will be deducted for late homework (half credit if one class late, no credit thereafter).

**Tests and Quizzes:** These announced evaluations will be scattered throughout the modules. The evaluations will be based on scientific reasoning, rather than the memorization of facts and formulas.

**Writing Assignment(s):** Students will edit a traditional science lesson of the student's choice and add elements of the learning cycle and inquiry. Details and supporting information for this assignment will be given in class.

<u>Weighted Grade Distribution</u>	<u>Percent</u>	<u>Points</u>	<u>Grading Scale:</u>
Attendance/Participation	5%	30	A (90% and above)
Homework	20%	120	B (80%-89%)
Quizzes and/or Tests	40%	240	C (70%-79%)
Writing Assignment(s)	10%	60	D (60%-69%)
Comprehensive Final	25%	150	F (59% and under)

### Tentative Course Schedule:

Week 1	Intro; Pre-test; Ch. 2
Week 2	Motion (Ch. 2, 3)
Week 3	Motion (Ch. 2, 3)
Week 4	Motion, Forces (Ch. 3, 4)
Week 5	Forces (Ch. 4, 5)
Week 6	Forces (Ch. 4, 5)
Week 7	Forces, Circular Motion (Ch. 5, 6)
Week 8	Circular Motion, Work, Energy (Ch. 6, 8)
Week 9	Work, Energy (Ch. 8)
Week 10	Work, Energy (Ch. 8), Review

### Comprehensive Final Exam:

Tuesday June 10, 8:30-10:30 AM

### Student Code of Ethics

Please understand the policies of the university. They will be adhered to in this course.