PHY 245 CONCEPTS IN PHYSICS – Spring 2007

Early Childhood Education Majors only

Middle Childhood Education students will not receive credit for PHY246 required for licensure

PHY 245-01: 4.5 credits M,W 1:00 – 3:50 PM Fawcett Hall Room 018

Instructor: Ed Keener – Office in room 237 Fawcett Hall 775-2052 ed.keener@wright.edu
Office Hours: M,W 11:30 AM – 12:30 PM, or by appointment

Pre-requisite: SM 144, Math 143, and ENG 102

Text: *The Physics of Everyday Phenomena, 4th Edition, by Griffith, which contains the PHY 245 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, Energy, Electric Circuits, and Optics. The text includes a conceptual textbook bound with a lab manual. The textbook will be used as reference to support concepts taught 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. A student will receive 2 points if they are present when their name is called. If they arrive after their name is called they will receive 1 point. 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 will 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 critique a science lesson of the student's choice for evidence of the learning cycle and inquiry. Details and supporting information for this assignment will be given in class.

Weighted Grade Distribution	Percent
Attendance/Participation	10%
Homework	20%
Quizzes and/or Tests	35%
Writing Assignment(s)	10%
Comprehensive Final	25%

Tentative Course Schedule:

Week 1 Intro; Pre-test; Position and Motion
Week 2 Motion
Week 3 Motion; Forces
Week 4 Forces
Week 5 Forces; Energy
Week 6 Energy
Week 7 Electricity
Week 8 Electricity
Week 9 Optics
Week 10 Optics

Grading Scale:

A (90% and above)
B (80%-89%)
C (70%-79%)
D (60%-69%)
F (59% and under)

Comprehensive Final Exam:

Wednesday, 06 JUN 2007 – 1:00-3:00 PM

Student Code of Ethics

The Student Code of Ethics will be adhered to in this course.

SCHEDULE

PHY 245-01

Spring Qtr. 2007 M-W 1:00 – 3:50 PM

MONDAY	WEDNESDAY
26 MAR Introduction, Pre-Test, pp. 259-264 Read Chapter 2, H/W Section #1	**28 MAR** pp. 268-273
02 APR pp. 274-280	**04 APR** pp. 281-291, Read Chapter 3 H/W Section #2
09 APR pp. 292-296 H/W Section #3	**11 APR** **Review Motion**
16 APR **Motion Test**	**18 APR** pp. 299-305 Read Chapter 4
23 APR pp. 306-313	**25 APR** pp.314-324 H/W Section #1
30 APR pp. 325-333 H/W Section #2 & #3	**02 MAY** **Review Forces**
07 MAY **Forces Test**	**09 MAY** pp. 336-346, Read Chapter 6 H/W Part III
14 MAY pp. 347-355, Read Chapter 17 H/W Sections #1 & #2	**16 MAY** pp. 357-362 H/W Section #3
21 MAY pp. 365-374, Read Chapter 12 H/W Section #4	**23 MAY** pp. 375-384
28 MAY **University Closed**	**30 MAY** **Review**