PROJECTS IN SCIENCE II – Winter 2007

SM 446/646 Fawcett Hall, Room 018

Instructor: Mr. William Lohner Room 244 Fawcett Hall 775-2561 lohner.2@wright.edu
Office Hours: Tuesday & Thursday 8:00AM - 9:00AM or by appointment

Graduate Teaching Assistant: TBA Office: TBA Phone: Office Hours: TBA

Pre-requisite: Math 244, PHY 346, CHM 346, GL 346, BIO 346, SM 445

Course Objectives:

- To gain understanding of how science operates and to develop inquiry, science process and mathematical skills at an adult level.
- To develop the abilities to design and implement open-ended extended science investigations.
- To develop the abilities to analyze mathematically and interpret the results of science investigations.
- To develop an understanding of the nature of science, unifying themes and processes, and the relationships between science, society and technology.
- To begin to develop the teaching skills necessary to design classroom environments and provide the guidance for middle school students to participate in extended science projects.
- To develop assessment strategies for extended science projects.
- To effectively utilize technological resources for obtaining information, analyzing information, and communicating information.
- To develop mathematical understanding and reasoning through science applications, particularly in the areas of data analysis and representation.

Course Organization:

Long Term Projects: Students will work in pairs on extended science projects. Students have to maintain a log of all work done throughout the quarter. Maintaining a log consists of entering the day's date and keeping a record of all work done and data gathered on that day. Progress will be frequently checked by your instructor. Appointments to meet with the instructor and report on progress have to be made and kept without fail. Failure to keep appointments and to be punctual will result in loss of points. Projects have to be presented in class during the last two weeks of the quarter and a write-up of the project has to be submitted to the instructor.

Science Fair Assistance: All students will help local teachers with science fair judging and/or middle school student science fair projects. Students will complete a minimum of 15 hrs. OR help judge at least 2 science fairs in this activity. During the quarter, teachers contact WSU with requests for aid with science fair. This information will be forwarded to you through your instructor. It is up to you to act on the information and contact teachers who have requested help.

Evaluation: This will consist of points allotted for keeping appointments, evaluation by your partner, peer evaluation by the class when the projects are presented in class, and instructor evaluation of the project presentation and report.

Attendance is required. Since we will not be meeting every class time, it is imperative that you attend class on those days or times when you have scheduled to meet with the instructor.

Doing your Project

- Carry out your project as you had planned it during SM 445. While doing your experiment, check with your instructor regularly to ensure experiment progress.
- Analyze your data and represent your results. Check with your instructor about anlaysis of your data and to make sure your results tell you something about your hypothesis.

Final Report: Write up a final report for the project. The final report should include the following:

- Question and hypothesis
- Research base for your hypothesis, including at least 10 reliable background sources
- Experimental Design
- Results including data, evaluation of design
- Interpretation of results including discussions of results and conclusions from experiment
- Implications for Society, Science and Technology
- Further directions for your experiment

Class Schedule: During the first five weeks of the quarter we will be meeting once a week to present/review important topics related to your projects and the course objectives. There will be a test during week 6.

Week 1:	Problem/Question, Hypothesis Perform in-class activity. Evaluate problem/question in our "optical mouse" project.
Week 2:	Experimental Design. Do black-box activity for their projects. Discuss methods/procedures. Identify variables and categorize as independent, dependent, and control. Relate to our "optical mouse" project.
Week 3:	Data Collection/Data Analysis. Collect data for our "optical mouse" project. Begin with Summary Statistics and what they mean. Graphing, scatter plot, frequency distribution,
Week 4:	Data analysis, Drawing a conclusion. Continue with our data analysis.
Week 5:	Components of a Scientific Report/Presentation of research results
Week 6:	Wrap up.
Week 7:	No class.
Week 8:	No class.
Week 9:	No class.
Week 10:	Presentations and Reports due.
Finals week:	Presentations and Reports due.

Communication: Since we will not be meeting every class time it is imperative that students communicate with their partners and instructor. Information will be sent to you from your instructor through your Wright State e-mail account. Correspondence between group members and your instructor will include courtesy copies to ALL members of your group. Be sure to check your Wright State account frequently.

Weighted Grade Distribution	Points
Attendance and participation	50
Science Fair assistance	50
Partner evaluation	25
Peer evaluation	25
Report	100
Quiz	25
Homework	25
TOTAL:	**300**

Grading Scale:

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

NOTE: Failure to perform Science Fair assistance will NOT complete the course.

Student Code of Ethics

Please understand the policies of the university. They will be adhered to in this course. For more information see http://www.wright.edu/students/judicial/