MSED 250: Physical Science for Educators

Course Goals:
The primary goal of this course is to prepare pre-service K-8 teachers to help children:
understand, explore and discover physical science;
view science as an integrated discipline;
discover scientific principles through an inquiry/constructivist approach.

Course Description:
The course will introduce and explore fundamental concepts of physical science. Through discussions and hands-on laboratory experiences we emphasize the use of higher-level thinking skills without the prerequisite of advanced mathematics. This course will include study in scientific inquiry, the nature of matter, force and motion, work, electricity and magnetism, sound, light, chemical reactions, chemical equations, and related topics. The course aligns with national and state teaching standards, with applications for future elementary and middle grades classroom teachers. The primary instructional approach will be that of guided inquiry laboratory exploration and discussion, with minimal lecture time.

The intent of this course is to develop an understanding of fundamental physical science principles through the investigation of everyday phenomena using simple, low-cost experiments that can be repeated in the typical classroom. This is a science content course—not a course in teaching methods, but we will explore pedagogy appropriate to elementary classrooms.

This course uses your laptop extensively. You will be using it to retrieve and submit documents from WebCT, take measurements with various probes, visit online sites, submit labs, and take tests. It is essential that you bring your computer daily, and effectively maintain it so that it functions appropriately.

Prerequisite:
Enrollment in the Elementary Education program. (Note: this course does not satisfy the Division III Liberal Studies requirement.)

Required Hardware and Materials:
Laptop computer with online connection (used daily, bring your Ethernet cable…the wireless connection is occasionally poor in the room.)
Access to WebCT
Scientific calculator (or laptop calculator)
Specific software (to be downloaded in class)

Textbook:
No text is needed for this course. All materials will either be provided via
WebCT or available from other online sites. I realize that some students might want additional resources, so I am listing a few resources that you might consider. These are not required, and would be most useful as references for you once you are in your own classroom. You are free to take a look at them in my office to see if they are worth your investment.


Professional Participation and Attendance:
Your participation and attendance are expected and are reflected as a significant portion of your grade. Most days have required laboratory work that must be turned in that day. Missed labs cannot be made up. Learning should not be passive—and neither should you.

This course is experience-based and inquiry-based, and those experiences are situated in the laboratory. “Getting notes” and having your classmates help you catch up is laudable, but is in no way equivalent to interacting with the materials and the ideas developed during class. Historically, the difference between doing well in this course and doing marginally can be directly correlated to attendance.

The professor reserves the right, in the instance of group-created work, to award different grades to members of groups based on variability in their participation.

Cultural Diversity:
All course topics and assignments address issues related to human interactions and cultural diversity. Topics include conflict resolution, increasing cooperation and multicultural understanding, affirming diversity and pluralism, and modeling respect for diversity related to race, class, religion, gender, disabilities, English language acquisition, ability, culture, opinion and other human differences

Disability Services:
If you have a need for disability-related accommodations or services please inform the Coordinator of Disability Services in the Disability Services Office at 2001 C.B. Hedgcock (227-1700; TDD 227-1543). Reasonable and effective accommodations and services will be provided to students if requests are made in a timely manner, with appropriate documentation, in accordance with federal, state and university guidelines.