

Integrated Science Research For Elementary Schools
SME 420 – Fall 2008
3 - 4:50 Tuesday and Thursday
110 North Kedzie

General Information

Instructor

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Office hours Friday 1-3pm or by appointment

Texts

Each student must obtain a copy of the 7th or 8th edition of *Meteorology Today* by Ahrens (ISBN 0495011622) and the second edition of *On Food and Cooking* by Harold McGee (ISBN 0684843285). Both books can be obtained through most bookstores or by ordering from amazon.com or barnesandnoble.com.

You may also want to purchase the *Dry Ice* curriculum teacher guide that we will be using for some of our science 'snacks' during the semester – it is a GEMS grade 6-8 units oriented around conducting research in the science classroom related to the nature of matter and may be useful for you in your future teaching. I will have some parts of it posted on Angel. It can be purchased for about \$21 at: <http://www.lawrencehallofscience.org/gems/>.

There will be some additional readings and references I will post on Angel.

Course Goals

The course has two parallel goals: to promote an understanding of the nature and process of scientific research, and to develop skills in the design, implementation, and analysis of integrative scientific research projects relevant to the K-8 science curriculum. This course is the last in the sequence of three courses (SME120, SME 320, and SME 420) in the Integrative Elementary Science major that are designed to integrate the major themes across life, earth, and physical science with the K-8 science curriculum. Additionally, this course will integrate pedagogical techniques from coursework in teacher education with the teaching of science. The course will also introduce you to safety in the classroom.

Objectives

Students will:

- revisit basic science content in earth, physical, and life science
- apply these basic concepts to research problems
- conduct research in a group setting
- conduct research as individuals
- analyze data using proper qualitative and quantitative methods
- convey research findings in both written and oral reports

Because you have taken courses in the basic sciences, I expect that you will have a lot of knowledge to bring to bear on the work that you'll be doing. However, I also expect that many ideas and concepts will be new to you and that you will have to "stretch your minds" to develop and implement your research projects. The instructor will act as a guide in this process. As you work through a research project, don't hesitate to ask for advice and information. Depending on the question/problem, I will: 1) send you to the appropriate resources; 2) have you think out loud to solve the problem yourself; or 3) give you the straight information. The first two options are optimal.

Attendance

Attendance is mandatory. This is a laboratory class and you can't accomplish what needs to be done by consulting a book. Plus, all of your work for Science I and II will be conducted in teams, and your team-mates are counting on you to be in class to work with them. If you can't come for a legitimate reason, please contact me via email to indicate why you are/were unable to attend.

We start at **3:00** and end at **4:50**.

Other Information

- There is no teaching assistant for this laboratory class. You will make or prepare most of the equipment, solutions and other materials for the course. Because SME 420 shares this room with two other courses, SME 120 and SME 401, everything must be cleaned up and put in its place before you leave for the day. If necessary, clean-up assignments will be made by the instructor.

- The first two projects will depend on working groups. It is critical that this work be shared equally among group members. If you believe that your group is not working well, please contact me and I'll help get you on track.

- I have indicated in broad terms in the **Course Schedule** what your assignment(s) will be. As a beginning professional it is your responsibility to fully prepare **before** you come to class. This preparation may entail locating and perusing a resource or writing a draft of a protocol. Your group will work more efficiently if everyone has completed assignments related to the various projects before coming to class.

- The course will have little formal "lecture." Most times we will have discussions (that means that you talk too!) about how to conduct science. If you feel you need more information about a particular topic, don't hesitate to ask. If it appears that the whole class requires some basic information, the instructors will provide mini-lectures.

- You must download the following safety manual (*Making the Connection*) and bring to our next meeting (I'll be checking!): <http://www.csss-science.org/safety.shtml>

Distribution of work toward final grade

Science I	15%
Science II	20%
Science III	30%
Homework and quizzes	15%
Class participation	10%
Laboratory notebooks	5%
Final Exam	5%