Chemistry 410  Spring 2015
Instructional Methods in the Chemistry Classroom

Class meetings:  5:00 – 6:15 PM Tuesdays and Thursdays in Kenan Lab B121
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Textbook and Required Ancillary Materials
•  Teaching Secondary School Science, 9th Ed, RW Bybee, JC Powell, LW Trowbridge
  Pearson, Merrill Prentice Hall, 2008  (optional)
•  WebAssign ONLINE homework client.  Access code is purchased on-line (required)

Purposes of this Course - This course is designed to help the pre-service teacher develop a
  teaching philosophy, observe, learn and develop methods and strategies to implement this
  philosophy, and evaluate student progress.

Major Course Units
•  Nature of science and scientific inquiry
•  Nature of Learning
•  Curriculum design, implementation and assessment
•  Observing and participating in a secondary school chemistry classroom

Course Objectives - Students will:
•  Develop an understanding of the overview of the fundamentals of chemistry
•  Develop an understanding of the nature of scientific inquiry
•  Be exposed to aspects of learning theory and its application to curriculum development
•  Be exposed to current chemical educational standards (NC Standard Course of Study)
•  Develop an instructional unit, short-term planning (one class period) and long-term
  planning (a complete multi-week instructional cycle)
•  Be exposed to and evaluate educational materials and methods that can be used as
  instructional resources
•  Develop materials that provide a valid assessment of student learning
•  Develop a strategy for the inclusion of classroom demonstrations and laboratory work.
•  Learn methods of laboratory management and safety.
•  Develop a professional and comprehensive teaching philosophy

Fieldwork
The field work component of this course is considered a laboratory experience, and is
responsible for one credit hour of the four credit hours of Chem 410.  The purpose of this
component of the course is to allow you to observe the dynamic in an actual classroom, allow
you to view and evaluate the classroom atmosphere, the teaching/learning dynamic over a
period of time.  The student will have an opportunity for instruction and to teach collaboratively
with the cooperating teacher.  A minimum of 10 weeks for a total of 30 hours of fieldwork in a
secondary school is required.  You will keep a teaching diary and turn in your observation and
evaluations on a biweekly basis.  The goal is to assign you to as a team of two to the same
classroom.  You will do two mini lessons in the class you observe.  You will work with your host
teacher on the content and form of these lessons.
Your classroom observations will include:

- **The Instructional Environment** - Note room arrangement, available technology, teaching tools, classroom procedures, record keeping, grading system, seating assignments, method of making classroom assignments, communicating expectations, due dates, policies on late or make-up work.

- **Classroom and Behavior Management** - Describe classroom and individual behavior, management techniques you observe. Include class rules, how the teacher monitors behavior, how off-task behaviors or inattention are addressed. Are rules consistently and equitably applied? Identify specific inappropriate behaviors, describe them, what caused the behavior, the teacher’s response, the effect on the student’s behavior, and the effect on the behavior of other students.

- **Instructional Activities** – Describe instructional activities you observe in the classroom; progression of instruction and development of concepts. Were the activities appropriate for the topic and meaningful to students? Were the students engaged? How frequently was feedback given to students? How were student questions addressed? What accommodations were made for differences in student learning styles and facilities? Were all students given equal opportunity to participate? What changes would you make in this area?

**Course Evaluation**

- **Professionalism** is expected at all times; in the classroom, in group work, and in the fieldwork experience. This includes attendance, punctuality, and professional appearance, taking advantage of opportunities to broaden personal knowledge, skills and experience. Practice effective communication in constructive classroom participation, dialogs with your instructor, cooperating teacher, and your students. (10%)

- **Chem 410 Interactive Notebook** will be kept on all of materials and activities in Chem 410. We will use the left page topic/ideas/article/video, right page your response to the material given in the left page. This can be a bound or loose leaf notebook. Pages must be numbered and the notebook must have an index. (5%)

- **Review of Topics in General Chemistry** will be documented by the on-line homework client WebAssign. We will take one or two topics (chapters) of general chemistry per week. You will be notified by email when the assignments are posted. Deadline extensions will not be granted. (10%)

- **Field Work**: Classroom diary, and reports on specific topics of observations. A description of your two mini lessons and a self evaluation of these presentations. (20%)

- **Scientific Method Module** introduction to constructing and evaluating a unit. This will include sample lessons, demonstrations, and laboratories. Preliminary mini-lessons will be presented by students. (5%)

- **Written Responses to Readings, Videos or Other Materials & Activities** can take the form of a brief paper, written reflections in your teaching journal, a draft of your teaching philosophy, verbal presentations, . Details of the assignments and deadlines will be given when assignment is made and posted on our course Sakai site. (10%)

- **Course Project** will be the design of a learning unit developed throughout the semester. It will reflect what we learn about scientific inquiry, learning theory, teaching strategies, learning assessment, classroom demonstrations and laboratory work. These materials must be scientifically accurate. Laboratories and demonstrations must be safe for secondary school students. (40%)