



The University of Georgia

ESCI 4460/6460: Methods of Science Teaching Fall 2009

INSTRUCTOR:

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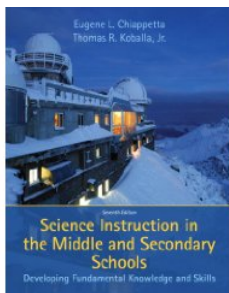
TIME:

Fall Semester (BLOCK 1)
Monday, Wednesday, Friday 8:00AM-11:00AM
August 17, 2009-December 8, 2009
Room: 215 Aderhold, 216 Aderhold, Georgia Botanical Gardens, Walton County Schools

Syllabus is subject to change depending on the dynamics of the class and instructors.

COURSE MATERIALS:

Required Books---



Chiappetta, E.L., & Koballa, T.R. (2010). *Science instruction in the middle and secondary schools*. Boston, New York, and San Francisco: Allyn & Bacon.

Environmental Literacy Council (2007). *Resources for environmental literacy*. Arlington: NSTA Press.

Roy, K.R. (2007). *The NSTA ready-reference guide to safer science*. Arlington: NSTA Press.

Sullivan, M. (2008). *All in a day's work: Careers using science* (2nd Ed.). Arlington: NSTA Press.

Required Materials---

Nature Journal (e.g., journaling notebook w/ plain pages), Sketch Pencils

Recommended---

Digital Camera, Colored Pencils, Specimen Jars

Optional Resources---

American Association for the Advancement of Science (1993). *Benchmarks for science literacy: Project 2061*. New York and Oxford: Oxford University Press. Retrieved on July 29, 2008, from <http://www.project2061.org/publications/bsl/online/index.php>

National Research Council (1996). *National Science Education Standards*. Washington DC: National Academy Press. Retrieved on July 29, 2008, from <http://books.nap.edu/openbook.php?isbn=0309053269>

COURSE DESCRIPTION:

What pedagogical tools and instructional strategies will equip new teachers to teach in rich, academically rigorous, multicultural and environmentally sensitive ways? This course emphasizes science teaching methods, teaching issues, multiculturalism, the role of the local communities and environments in science teaching, and professional development. This course emphasizes the essential elements of classroom management, asking questions, guiding activities, and engaging

in community and environmentally-centered projects through science education for community development. This course is also unique in that you will be asked to critically analyze environmental literacy resources related to science teaching and further develop your understandings of teaching investigation, writing, nature journaling and observation, safety and ethics. This course emphasizes how teachers work with students to foster sustained scientific interests, and become informed such that they will have greater access to environmental decision-making.

ATTENDANCE POLICY:

This course is based on John Dewey's (1916/1966 Democracy and Education) philosophy that, "since growth is the characteristic of life, education is all one with growing; it has no end beyond itself. The criterion of the value of school education is the extent in which it creates a desire for continued growth and supplies means for making the desire effective in fact" (p. 53). This course welcomes the influences of everyday knowledge and skills, personal and shared experiences, ceremonies, mentoring relationships, beliefs and values, expectations and traditional narratives. Attendance and participation in discussions and assignments are required for educational growth, however, it is recognized that students get sick. Two missed classes are permitted this session. Arriving more than 30 minutes late or leaving class with 30 minutes or more remaining is counted as an absence. Be prepared to discuss all absences with the professor and be aware that having more than two absences can result in you being dropped from the course.

ACADEMIC HONESTY:

The University of Georgia seeks to promote and ensure academic honesty and personal integrity among students and other members of the University community. In keeping with the University Honor Code and Academic Honesty Policy, each student is expected to do his/her academic work and to acknowledge fully any assistance and academic resources. All academic work must meet the standards contained in "A Culture of Honesty." All students are responsible to inform themselves about those standards before performing any academic work. Terms of this policy, resolution procedures, and consequences of violation are available at:

http://www.uga.edu/ovpi/academic_honesty/culture_honesty.html

REQUESTS FOR MODIFICATIONS:

It is policy of the University of Georgia to make reasonable accommodations for qualified individuals with disabilities. If you are a person with a disability and want to request accommodations to complete your course requirements, please make an appointment with the course professors as soon as possible to discuss your request. For information on documentation requirements, contact the office of Disability Services (2-8719).

CHEMICAL RIGHT TO KNOW TRAINING:

By Monday, August 24, 2009 please provide verification that you have completed the "Chemical-Specific RRT Training for Laboratory Personnel," provided online: <http://www.busfin.uga.edu/rtk/index.htm>

NOTES ON CLASS DISCUSSIONS:

This course welcomes a caring style with respect to conversation and interaction with peers. A caring style encourages paraphrasing of others' thoughts and asking questions as a way to offer interest and demonstrate attentiveness. A caring style offers compassion when others are frustrated. A caring style offers support for ideas to obtain clarity prior to critique. A caring style monitors their time so that they are not monopolizing the conversation---allow quieter others to voice their positions. A caring style is responsible to others to ensure that the current topic is given enough attention. Contrasting views are also appreciated and help to clarify others' ideas---so offer contrasting views when appropriate but in a constructive and inclusive way that permits effective exchanges.

NOTES ON MEETING AT THE STATE BOTANICAL GARDEN OF GEORGIA:

The State Botanical Garden of Georgia is an extension of the University of Georgia, which offers different educational gardens and context of a natural environment to enhance our work together. Teachers will be outside during all weather conditions during the duration of the course, with the exception of extreme stormy conditions, and should be prepared with needed clothing and items (e.g., hiking boots, sunscreen, sunglasses, hat, umbrella, etc.). The purpose of meeting at the Botanical Garden is to engage in the competency of teaching science outdoors in natural settings. While teachers may be limited to teaching science in a classroom (indoors) for some topics, there are enormous benefits to engaging youth in the competency of investigating science out-of-doors. This course emphasizes science education for community development which can be easily justified by the Georgia state science performance standards, which allows teachers to make the case that their students will benefit from doing science outside. Environmental literacy is a large part of science education.

NOTES ON COURSE ASSIGNMENTS:

Quality work is expected from beginning teachers. Any writings require a bibliography or reference list and should follow the style of the fifth edition of the Publication Manual of the American Psychological Association. Materials may be returned if they do not meet expectations.

All assignments should be typed, spell-checked, grammatically correct and legible (dark print, 12-pt font, and single spacing with 1" margins). Late and make-up assignments are not permitted. Optional assignments are listed for the benefit of a student who misses a deadline for any reason.

ASSIGNMENT PROFICIENCY AND SUMMARY:

Assignment proficiency is achieved by meeting 90% of the required expectations for completing assignments (rubrics). Assignments may be re-completed to meet the proficiency requirements. See grading percentages below.

Assignment 1: Reflective Essay (5%)

The Reflective Essay is to show what you know about science teaching. Based on your knowledges and skills, experiences, beliefs and values, and expectations, provide a rationale for why you enrolled in this course and how you anticipate growing as a result. This essay should be at least 2-3 pages double-spaced and provide reasonable justifications for your perspectives. Justifications are reasons, facts, or explanations that are supported with evidence. If what you know about science teaching is that "the student takes notes," for example, then you may want to write about your experience in a middle or high school science classroom when a science teacher lectured while writing notes on the board and you were asked to take notes.

Assignment 2: Introduction Letter and Syllabus (5%)

The introduction letter is to show what you have learned about presenting yourself as a person and as a competent science teacher to students, guardians and parents. This letter should include your professional and personal interests. This letter should be one page single-spaced with details about how you intend to work with your students to foster sustained scientific interest so they may better access environmental decisions. The class syllabus is to show what you have learned about organizing your course, policies and procedures, discipline plan, and how a democratized classroom increases student participation. The syllabus should be 2-3 pages single-spaced with how you intend to foster a safe environment. Examples of both will be provided in class.

Assignment 3: Fire Safety Certificate (5%)

The fire safety training and certificate is to show what you have learned about how to deal with emergency situations such as a fire in the classroom. Wear appropriate clothing to extinguish fire (long-sleeved shirt, jeans, and sneakers. Note that your clothing may smell like smoke after class).

Assignment 4: Garden Earth Naturalist Conference (Citizen Science Methods) (10%)

The purpose of participating in the Garden Earth Naturalist Conference is to show what you have learned about how to engage others (e.g., teachers and students) in the competency of the environments in which they live, through science investigations. Your project will depend on the GEN Module that you are assigned (e.g., modules 1-4) (see rubric).

Assignment 5: Safety Plan and LessonBox for Teaching Safety/Ethics (Presentation) (20%)

The purpose of writing a safety plan (i.e., safety and welfare of students) is to show what you have learned about the role of safety and welfare in science education, and the specific safety and ethical challenges related to your science content area. This plan should be designed according to the Safety Plan Rubric that will be provided in class.

Assignment 6: Reflective PhotoEssay (5%)

The Reflective PhotoEssay is to show what you have learned about teaching science, classroom management, asking questions, guiding activities, safety, analyzing resources, and citizen science. You are encouraged to take photos of the learning experiences you engage in (I will also have some photos to provide you). Provide a rationale (including examples) for how you have developed as a teacher. This essay should be five pages double-spaced with photos and provide detailed artifacts. For example, if what you have learned is "how to put out a fire in case of an emergency," then provide a photo of this experience and write a short description of how this photo provides evidence of what you have learned to do.

Assignment 7: Quizzes (cumulative grade) (50%)

Short quizzes demonstrate that you have read the assigned teaching articles, chapters, and other selections.

NOTES ON PARTICIPATION IN LEARNING EXPERIENCES:

Part of your grade will be based on participating in the following learning field experiences. These experiences are designed to enhance your development and to help you do well with assignments. A short description of how these experiences will contribute to your development is offered below.

Daily Reflections

The daily reflections are designed to serve as a way of monitoring and adjusting the learning experiences based on the needs of the students in the class. Each class will end with a 15 minute reflection period for how we can apply what we have learned to science teaching, what challenges in science teaching what we have learned will help you with, and what else you need to know to use what we have learned effectively.

Nature Journal

The purpose of this activity is to show the ways in which nature writing can be used to teach (and enhance) scientific observation skills and to generate scientific questions for investigations. Moreover, nature writing can be used as a way to elicit students' knowledges, beliefs and values, expectations, and shared experiences (as pedagogical knowledge) for teaching science knowledge. The purpose of the nature journal is to show how to enhance student's observation skills as a way to participate more fully in developing an understanding of complex relationships. The nature journal should be a journaling notebook used to take field notes, drawings and sketches, photos or artifacts from your interactions at the Georgia botanical garden. This experience should be in the format of a guide for students, or a working example that may be used to teach field notes, nature journaling and science observation.

Optional Assignments (TBD)