

Organization of Program in Secondary Science Summer 2010 Course Syllabus and Timeline



AUBURN UNIVERSITY SYLLABUS

Course Number: CTSE 7530 Course Title: Organization of Program in Secondary Science

Credit Hours: 3

Prerequisites: none

Corequisites: none

Class meeting times: MWF: 6-9:00pm

Summer 2010 Semester

Mini-Semester I course: May 20-June 25/26 (Final Exam Period)

Date Syllabus Prepared: January 2006; revised May 2008; 2009; 2010

- Distributed May 2010

Texts or Major Resources: Required textbook: King, K. P. (2007). Integrating the National Science Education Standards into Classroom Practice. Roosevelt University: Upper Saddle River, New Jersey, Pearson, Merrill Prentice-Hall.

Students are required to have read any assigned readings out of this textbook in addition to the required textbook readings. A few copies of the following textbook will be placed on reserve in the LRC
Supplemental textbook: Science Instruction in the Middle and Secondary Schools- 5th or 6th edition by Chiapetta and Koballa (2006). I will try to put the 5th edition on reserve and give the corresponding chapters to the 6th edition so that there is more than 1 copy on reserve.

*Additional readings on various programs in science education and related topics will be disseminated during class meeting dates.

Science Education Standards:

Alabama Course of Study: Science. Download and print off ALL sections except grades K-5 sections. You will only need grades 6-12 from the course of study.

<http://www.alsde.edu/html/sections/documents.asp?section=54&sort=7&footer=sections>

National Science Education Standards. Refer to Content Standards 5-8 and 9-12, and Program Standards at:

<http://books.nap.edu/books/0309053269/html/index.html>

National Science Education Content Standards

[Unifying Concepts & Processes]

A: Inquiry

B: Physical Science

C: Life Science

D: Earth & Space Science

E: Science & Technology (*STS relevant*)

F: Science in Personal and Social Perspectives (*STS relevant*)

G: History and Nature of Science

Course Description: Program model components and standards in science education.

Various articles and readings will be disseminated and are considered required reading to prepare you for the material that will be covered in class.

*Please Note: This document is subject to minor amendments and we might need to adjust the schedule as we move through the summer semester, adjusting the pace for the readings and inserting into the agenda additional resources that may become appropriate. Pay close attention to assignment dates.

Course Objectives: This course is designed to teach you how to interpret and apply the Program Standards from the National Science Education Standards through exemplary curriculum resources and professional experiences. The material learned in this course can be integrated within your text-based curriculum and secondary subject area, middle or high school. Featured curricula will also emphasize student inquiry in learning and applying science like scientists. Much of the curricula will also focus on the study of environmental issues and problems as well as Science, Technology, and Society-STS contexts and applications of science.

To provide opportunities so that students will demonstrate:

1. Knowledge of the roles and responsibilities of members of different types of teams including, but not limited to, Building Based Student Support Teams. 290-3-3-.04(5)(c)1.(ii)
2. Knowledge of a range of professional learning opportunities, including job-embedded learning, district and state-sponsored workshops, university offerings, and on-line distance learning. 290-3-3-.04(5)(c)2.(ii)
3. Ability to articulate and reflect on a personal philosophy and its relationship to teaching practice and professional learning choices and commitment. 290-3-3-.04(5)(c)2.(iv)

We will use the frameworks provided by the National Science Education Standards (**p. 224 – See Table 1 below**) as a description for applying Program Standards (A-F) to our science courses and school programs.

Table 1. The *National Science Education Standards* envision change throughout the system. The program standards encompass the following changes in emphases:

LESS EMPHASIS ON	MORE EMPHASIS ON
Developing science programs at different grade levels independently of one another	Coordinating the development of the K-12 science program across grade levels
Using assessments unrelated to curriculum and teaching	Aligning curriculum, teaching, and assessment
Maintaining current resource allocations for books	Allocating resources necessary for hands-on inquiry teaching aligned with the <i>Standards</i>
Textbook- and lecture-driven curriculum	Curriculum that supports the <i>Standards</i> and includes a variety of components, such as laboratories emphasizing inquiry and field trips
Broad coverage of unconnected factual information	Curriculum that includes natural phenomena and science-related social issues that students encounter in everyday life
Treating science as a subject isolated from other school subjects	Connecting science to other school subjects, such as mathematics and social studies
Science learning opportunities that favor one group of students	Providing challenging opportunities for all students to learn science
Limiting hiring decisions to the administration	Involving successful teachers of science in the hiring process
Maintaining the isolation of teachers	Treating teachers as professionals whose work requires opportunities for continual learning and networking
Supporting competition	Promoting collegiality among teachers as a team to improve the school
Teachers as followers	Teachers as decision makers

In this course you will provide evidence for learning to:

1. Knowledge of the roles and responsibilities of members of different types of teams including, but not limited to, Building Based Student Support Teams. 290-3-3-.04 (5)(c)1.(ii)
2. Ability to articulate and reflect on a personal philosophy and its relationship to teaching practice and professional learning choices and commitment. 290-3-3-.04(5)(c)2.(iv)
3. Knowledge of a range of professional learning opportunities, including job-embedded learning, district and state-sponsored workshops, university offerings, and on-line distance learning. 290-3-3-.04(5)(c)2.(ii)

4. Utilize curricula that support the **National Science Education Content and Program Standards** across grade levels (e.g., life science and earth science) and disciplines (e.g. science and math) through use of inquiry-based approaches.
5. Connect science to community and student interests through application to social scientific issues and engineering.
6. Continue professional growth, collaboration, and networking through attending the state science teachers' conference.

Course Content and schedule:

Please note that this class meets every MWF from 6pm-9pm CST. All class meeting dates are considered mandatory. Students will also be required to participate in online discussions/assignments which may occur during class meeting dates. Attendance is considered mandatory and all absences must be in accordance to the Tiger Cub policy for excused absences and all absences excused or unexcused are still at the discretion of the professor of the course.

***Please note that additional readings and material will be disseminated and covered on the dates listed below even though they may not be included under the weekly agenda. Articles or readings will be passed or assigned no less than one week prior to the week that they will be discussed.**

Tentative schedule: Please keep in mind that we may have to adjust the pace of the course periodically.

***Minor Revisions/Amendments to class syllabus. Official class meeting dates changed due to class request during first week of class to change class from MWF 6-9 to MWR 6-9.**

May 21, 2010

Week 1 Introduction to course/review of syllabus-Assign Chapters 1-2 from King (2007) for discussion May 26. Students will work on STS projects and Featured curriculum program assignments during class period.

May 24, 2010; May 26, 2010; May 28, 2010

Week 2 May 24th, 26th, 28th -

Discuss lesson planning. Disseminate information on lesson planning or planning to teach science. Discuss Chapters 1-2 from King (2007) May 26.

May 28-discussion on lesson planning

May 24 Assign Chapters 3 and 4 from King (2007) for June 9th.

May 26 Assign Chapter (TBA) from textbook on reserve in LRC (Chiapetta & Koballa) for June 2, 2010.

Students will work on STS assignment (lesson plan and paper) and Featured curriculum/program assignments during class period.

May 31 (Official Holiday); June 2; June 3

Week 3 June 2, discussion on pedagogical strategies in science education. June 3rd Students will work independently or with classmates in LRC or AU library on Featured Curriculum/program assignment. **STS lesson plan due on Blackboard no later than June 3, 2010 9:00pm.**

June 3-1-2 page draft of Featured curriculum/program due for June 3, 2010 between 6-9:00pm. This draft should include a brief outline of the program and program background, as well as describe what you will present to the class on the June 23 due date. **This should be posted on Blackboard as an assignment between class meeting**

time of 6-9pm on June 3, 2010 (and is due no later than 9 pm CST). Points will be deducted from final project if this is not turned in.

Assign Chapter (TBA) from textbook on reserve in LRC (Chiapetta & Koballa) for June 10th.

June 7; June 9; June 10

Week 4 June 7, 9, 10th .

June 7 class discussion on various pedagogical strategies in science education and classroom management.

June 9-Discuss **Chapter 3 and 4 from King (2007)**. June 7, 9, and 10th students will also work on Featured Curriculum/Program project and Equity-based lesson plan (Students will research Multicultural Science Education).

June 10-Discuss classroom management and the beginning teacher-Impact on science teaching, learning, planning and organization.

Technology assignment-Tell me about yourself presentation due June 9, 2010.

Assign Chapter 5 and 6 from King (2007) for discussion on June 16.

June 14; June 16; June 17

Week 5 June 14, 16, 17 (June 14 and 17 will continue to discuss various pedagogical strategies in teaching science).

June 16 will discuss Chapter 5 and 6 from King (2007). Students will work on STS projects and Featured curriculum program assignments.

STS past to present paper due June 14, 2010

Assign Chapter 7 and 8 from King (2007) for June 21.

June 21; June 23; June 24 (Class meets Thursday on Monday Schedule per academic calendar); June 25-26 Final Exam Period

June 21 Discuss Chapter 7 and 8 from King (2007). June 23/24 Review chapters 1-8.

June 21st Equity-based/Multicultural lesson plan due-Assignment will also include 5 minute discussion/presentation with class on your lesson plan.

June 23 Presentations for featured curriculum due.

June 23-Featured curriculum assignment paper due.

June 24-Last day of class

Week 6 Final exam period (Time for exam listed in exam schedule)

June 26 Final Exam Period 7-9:30pm

Course Requirements:

- A. Attend and participate in all class sessions
- B. Complete mid-term and final exams
- C. Complete additional reading and writing assignments

Cultural Diversity

“I don’t care that you know. I want to know that you care”

Author Unknown

This course reflects the College of Education’s commitment to cultural diversity. The goal of the professional education program at Auburn University is to prepare outstanding educators who are competent, capable, and caring in complex, diverse educational arenas. Such individuals are

- Effective in their roles as culturally responsive teachers, designing and implementing sound meaningful and balanced instruction with the full range of learners.
- Effective as they assist learners in their comprehension of issues surrounding diversity; and
- Effective in their contributions of thoughtful and informed discourse to their own educational communities as they work to build equitable and supportive environments learners.

Expectations

In this course I expect you to:

- Reflect critically on all experiences and readings.
- Be prompt and in attendance at all course sessions.
- Demonstrate critical reflection through discussion, writing and course assignments.
- Complete assignments to the best of your ability.
- Communicate expectations and ideas.
- Recognize and validate the values of other class members.

Course Requirements/Evaluation:

This class is intended to be both interactive and collaborative. You are expected to come to class prepared to discuss assignments. We may also designate small groups during the initial class session, and you will spend some time doing group work. Learning is most effective when we fully participate in the process of constructing knowledge. In this course it is my expectation that everyone actively participate. Participation starts with preparation. It is my expectation that each class participant will be fully prepared for each day by having read the assigned materials and completed other work requested and required. In the event that you are not prepared to discuss the assigned readings and facilitate group activities the professor reserves the right to deduct 5 points from your final grade for each class meeting that you are not prepared.

General grading rubric for assignments

100%: beyond the call of duty; strikingly impressive; excellent in every way
90%: both complete and showing evidence of original, active, critical thought
80%: all specified aspects of assignments minimally completed
<80% one or more aspects of assignments missing or unacceptable

Grading Scale:

A	92%-100%
B	80%-91%
C	70%-79%
D	60%-69%
F	<60%

Course Evaluation

Your final course grade will be based on the following:

<u>Assignments</u>	<u>Points</u>
1. STS lesson plan	10
2. Equity-based lesson plan	10
3. STS Past to Present paper	10
4. Technology assignment-Tell me about yourself	10
5. Field experience component	Required
6. Unannounced pop quizzes (3 at 5 points each)	15
7. Featured curriculum and/or programs assignment	20
8. Final Exam	25

** Please note any incomplete assignments or assignments not typed up in the proper format will not be accepted. All papers must be in 12 font, Times New Roman, and double-spaced. All submitted work should be typed and neatly arranged. NO creative margins. Please start all assignments at the very top of the first page and put your name, assignment, and date on the very last page.

Field experience hours

Students must document 25 field experience hours either tutoring or working with some type of summer camp or summer program/outreach experience. Additional information will be disseminated. Failure to do this may result in point deduction from the students final grade. Please note that required hours may be flexible and dependent upon availability of programs, etc. However, this is at the sole discretion of the instructor for the course.

*Traditional Masters students- Please note that traditional Class A certification students will be required to complete a field project and 30 clock hours of field experience hours beginning Fall 2009 as a requirement for this course.

Assignments

1. STS lesson plan	10
2. Equity-based lesson plan	10
3. STS Past to Present paper	10
4. Technology assignment-Tell me about yourself	10
5. Field experience completion	Required
6. Unannounced pop quizzes (3 at 5 points each)	15
7. Featured curriculum or programs assignment	20
8. Final Exam	25

Some examples of Featured Curriculum, Programs, and Professional Development:

Great Explorations in Science and Math (GEMS) Curriculum – Grades 6-9
<http://www.lawrencehallofscience.org/gems/GEMS.html>

Alabama Math, Science, and Technology Initiative (AMSTI)

WISE program (Web-based Inquiry Science Environment)

Project Wet

Project Wild

Probe-Ware Laboratory Exercises – Grades 6-12 – Equipment and Texts in LRC – <http://www.vernier.com/>

Alabama (Auburn) Science in Motion Program – Grades 10-12 – (on-line): <http://www.auburn.edu/ausim/>

Alabama Water Watch Program – Grades 6-12 – (on-line): <http://www.alabamawaterwatch.org>

Cornell Environmental Inquiry Program – Grades 9-12 – (on-line): <http://ei.cornell.edu> ;
college students “practice” on-line: <http://ei.ed.psu.edu/CPR/>

Population Connection – Grades 6-12 – <http://www.populationconnection.org/>

Class Policy Statements:

Academic Honesty

Any questions related to academic honesty will be subject to the Policy on Academic Honesty as stated in the Tiger cub and Auburn University Bulletin.

Attendance

Attendance/Absences: Attendance is required at each class meeting. If an exam is missed, a make-up exam will be given only for University-approved excuses as outlined in the Tiger Cub. Arrangement to take the make-up exam must be made in advance. Students who miss an exam because of illness need a doctor’s statement for verification of sickness and should clear the absence with the instructor the day they return to class. Other unavoidable absences from campus must be documented and cleared with the instructor in advance.

*Attendance is mandatory and participation is paramount for success in this class. You are responsible for attending all class sessions.

Any absence not in accordance with AU Tiger Cub absence policies is considered unexcused and may result in a five point reduction (per absence) from the earned actual final grade (at the discretion of the professor for this course only). Should an extended illness or family emergency arise please notify your instructors as soon as possible. Medical and legal documentation must be provided within 7 days of the absence or it will be considered and unexcused absence. Students are still required to contact their professor in advance of an absence or soon thereafter, in the event of an emergency. Please follow the AU Tiger Cub for guidelines as to what qualifies as an excused absences based on AU policy. In the event of a medical emergency (or something pretty close to it) please make every effort to notify me in advance (prior to the class meeting). In that event, you are required to contact the instructor personally in advance for the absence via e-mail, telephone, or leave a message with the administrative asst. (Elaine Prust 844-4434) of the Dept. of Curriculum and Teaching, if you are unable to contact me personally.

*Please arrive at each class on time (6:00 pm) and be prepared to discuss and respond to issues and topics covered in the class. Excessive tardiness will not be accepted and two tardies (more than 10 minutes late) will be considered as one absence and will result in a 5 point deduction from your final grade. Moreover, late students may not be permitted to enter class and may be counted as an unexcused absence at the discretion of the professor of the course.

*If you miss a class, you are still required to turn in the assignments on time for full credit. Please contact me prior to turning in your assignment via e-mail as an attachment only. NO assignments will be accepted late at anytime. In the event that you are have an excused absence in accordance with AU’s excused absence policy all assignments must be turned in no later than 3 days after the date you miss class.

Preferably, unless you have a medical emergency make every effort to turn assignments in on the date that they are due even if you have an excused absence.

Policies and Procedures

Confidentiality is essential in this course. Any assignments, discussions, cases or episodes are not to be shared outside of this class.

Late/remedial work policy

If you miss a weekly class, you are still required to turn in the assignments on time for full credit. NO late assignments will be accepted. All assignments are due at the start of each class meeting on the date they are scheduled.

Participation: Students are expected to participate in all class discussions and participate in all exercises.

It is the student's responsibility to contact the instructor if assignment deadlines are not met. Students are responsible for initiating arrangements for missed work.

Unannounced quizzes: There will be at least 3 unannounced quizzes.

Honesty Code: The University Academic Honesty Code and the Tiger Cub Rules and Regulations pertaining to Cheating will apply to this class.

Professionalism: As faculty, staff, and students interact in professional settings, they are expected to demonstrate professional behaviors as defined in the College's conceptual framework. These professional commitments or dispositions are listed below:

- Engage in responsible and ethical professional practices
- Contribute to collaborative learning communities
- Demonstrate a commitment to diversity
- Model and nurture intellectual vitality

*Please note that lack of professionalism in this course will not be tolerated. This includes making any derogatory or negative comments with regards to the course and its course contents, students, or the instructor of the course which can be deemed as unprofessional and will be duly noted and reported to the appropriate administration.

Accommodations: Students who need accommodations are asked to arrange a meeting during office hours the first week of classes, or as soon as possible if accommodations are needed immediately. If you have a conflict with my office hours, an alternative time can be arranged. To set up this meeting, please contact me by e-mail. Bring a copy of your Accommodation Memo and an Instructor Verification Form to the meeting. If you do not have an Accommodation Memo but need accommodations, make an appointment with the Program for Students with Disabilities at 1244 Haley Center, 844-2096 (V/TT).

Assignments

1) Science-Technology-and Society Lesson (10 points)

Due June 4, 2010 (Post on Blackboard in assignments no later than 9:00pm CST)

Guidelines:

Select an STS issue that you think would be interesting and suitable for middle and/or high school students. Design a unique and creative lesson which incorporates STS into the science classroom on the middle and/or high school level. You may also use the environmental science classroom. The lesson plan should be detailed and include goals and objectives for the lesson. The details of the lesson plan are paramount because any teacher should easily replicate the lesson. Remember that the goal is to integrate this lesson with society and make a connection between science and society through technology. Sample lesson plans will also be provided.

The lesson should also include the following:

Name:

Date:

Course:
Number of Students:

- A. Alabama course of study objectives (ALCOS)
- B. National Science Education Standards (NSES)
- C. Goals of the lessons
- D. Objectives of the lesson (3-5) must be behavioral objectives
- E. Materials and resources
- F. Safety accommodations
- G. Special needs accommodations
- H. Motivation/Engage @5-10 minutes (must be engaging and can not be bellwork, quizzes, lecture notes, etc.)
- I. Lesson Procedure (must be detailed and include all transitions from one activity to the next)
- J. Closure (can not be merely doing a homework assignment)
- K. Evaluation/Assessment (each lesson should include some type of evaluation)
- L. Extension (should not be assigning students to merely begin their homework assignment).

In addition, all lesson plans must include time limits and transitions to facilitate the lesson and make sure that it runs as smoothly as possible.

2) Equity-based/Multicultural Science Education lesson plan (10 points)

Due June 21st, 2010

Students will research the terms equity, social justice, multicultural science education, and multicultural education and devise a lesson plan that addresses diverse learning styles, and key aspects of multicultural science education, equity and social justice. The key is to think ensure that you promote success in science and make “Science is for all” (AAAS, 1998) relevant and a reality in the lesson plans that you implement and design. The lesson must be unique and the plan should be appropriate for the grade level that you intend to teach. The lesson plan must also follow the format provided for class (See assignment #1).

3) STS: Science, Technology, and Society Past to Present (10 points)

Due June 14th, 2010

1. Discuss the historical perspective of Science, Technology, and Society (STS). Review the research on STS prior to 1957 and discuss why 1957 was used as a cut-off date. You will have to dig into the research because earlier works in STS may not necessarily be referred to as STS. In addition, from an historical perspective you must use at least 3 sources of citations from this era. Check the library under the title Science, Technology, and Society or STS. I have found several references and resources pertaining to STS in the past. Robert Yager is one possible resource. Maximum 2-3 pages but no less than 2 pages. Double-spaced, APA 6th ed. **(5 points)**
2. Discuss the STS movement from a current perspective. Address what current research has to say about STS. Discuss what impact STS has on student performance. Please discuss the value or relevance of an STS-based curriculum. What are the current arguments in the science classroom used to support the STS movement as a curriculum reform? Discuss the meaning that STS has for science teachers. Please use at least 3 reference sources and proper citations. Maximum 2-3 pages but no less than 2 pages. Double-spaced, APA 6th ed. **(5 points)**

4) TELL ME ABOUT YOURSELF (10 points)

Technology Assignment

Due June 9th, 2010

Directions: Answer each question completely and truthfully. This assignment is to be done as a powerpoint presentation. You are only allowed to have 10 slides in this presentation. The entire presentation must contain the following: 10 slides, 5 website links, 5 pictures.

You must answer the following questions in the powerpoint presentation.

1. Tell me about your hometown (socio-economic status, location, town characteristics, student diversity, etc.)
2. Tell me about your high-school (socio-economic status, location, town characteristics, student diversity, etc.)
3. Why do you want to become a teacher or why did you become a teacher?
4. Tell me two interesting facts about yourself and how they shape you as a person?
5. Address a "good" science experience during any grade-level and how it impacted your perception of science.
6. Address a "bad" science experience during any grade level and how it impacted your perception of science.
7. What do you feel is the "purpose" of science in public/private school?
8. What do you think is the role of a science teacher?
9. What is an example of a technology-based lesson that you can integrate into your classroom based on your content area?

What types of technology will you use in your classroom and how will you explain to students the importance or relevance of technology?

5) Field experience hours

Students must document 25 field experience hours either tutoring or working with some type of summer camp or summer program/outreach experience. Additional information will be disseminated. Failure to do this may result in point deduction from the students final grade. Please note that required hours may be flexible and dependent upon availability of programs, etc. However, this is at the sole discretion of the instructor for the course.

*Traditional Masters students- Please note that traditional Class A certification students will be required to complete a field project and 30 clock hours of field experience hours beginning Fall 2009 as a requirement for this course.

6) Unannounced quizzes: There will be at least 3 unannounced quizzes. **(3 at 5 point)**

7) Featured curriculum or Featured program assignment

Due June 23rd, 2010

Rubric (20 points)

Students are to investigate one featured curriculum/programs listed below (or an approved curriculum program outside of the list provided) and present the following information regarding the curriculum or program:

Student name _____

Grade _____

1. A one-page minimum double-spaced (two-page maximum) description of the curriculum or program and its origin (i.e. history, how long it has been around, etc.) A brief description of how this curriculum or program can be integrated into the science classroom which details the NSES standards as well as ALCOS that are covered. Make sure to discuss how the curriculum or program aligns with and can be used to support the main content categories of the National Science Education Standards (NSES) as well as the Alabama Course of Study Objectives. Also include the grade level, and a detailed lesson plan the group has developed (in the format described in the course) which integrates some aspect of the curriculum or program. Points will be

- deducted if the lesson is not an active learning-oriented lesson plan and activity/demonstration.
(10 pts) _____
2. A brief demonstration or activity from the curriculum. Students will do the demonstration or activity in front of the class as a presentation. This demonstration should be no longer than 10 minutes and engage the audience in some aspect. Please do not stand and lecture or do a powerpoint presentation. The demonstration or activity must be hands-on and minds-on. Please check the LRC for current Alabama science textbooks which can be used to select a topic/unit.
(10pts) _____

Additional guidelines:

3. Please make sure to provide all necessary citations for any materials or resources used or adapted.
4. Lesson plan must be unique and creative and not simply duplicated from an existing lesson found on the topic covered.
5. Students should be able to find access to lessons, activities, resources, and information on the curriculum and programs selected to present in class. If not, it is your responsibility to inform the professor as soon as possible so that you may be assigned another project in order to receive a grade.
6. Students will give a brief overview of the curriculum and present the demonstration or activity (10 minutes). A sign-up sheet will be passed out. Points will be deducted if students go over the presentation time.
7. No late presentations.

8) Final Exam-25 points (Final exam period June 25-26)