Curriculum and Teaching in Area of Specialization: Science
Spring 2014 Course Syllabus and Timeline

AUBURN UNIVERSITY
SYLLABUS

1. Course Number: CTSE 7520 (Tuesdays)
Course Title: Curriculum and Teaching in Area of Specialization: Science
Credit Hours: 3
Prerequisites: Graduate student status
Corequisites: None

2. Date Syllabus Prepared: January 2014

3. Text and major resources:

Required:
The First Days of School: How to be an Effective Teacher by Harry K. Wong and Rosemary T. Wong
Recommended readings:
Kozol, J. (1992) Savage Inequalities: Children America's Schools
Delpit, L. (2006) Other Peoples Children: Cultural conflict in the classroom. The New Press.
Dreamkeepers: Successful teachers of African American Students Gloria Ladson Billings
Tatum, B. (1997). Why are all the Black Kids Sitting Together in the Cafeteria: and other conversations about race.
The Biology Teacher

Office Hours: By appointment
On Campus (lecture): Monday 5:00pm-7:50pm. – HC 2438

Goals and Objectives – In this methods course we will learn and practice methods of teaching aligned with "inquiry" from the Next Generation Standards and *applied within* a Learning Cycle Model for teaching as outlined in the Alabama Course of Study: Science. While coteaching and learning new educational methods, you will begin to reflect on practice and make the necessary changes required of professional science educators to improve practice.

4. Course Description:

Nature of learners and of knowledge and implications for for building curricula and planning instruction in the area of specialization.

5. Course Objectives: The following objectives coincide with the goals mentioned above:

- To become a more effective and reflective science education practitioner.
- To become acquainted with the latest research on "best practices" and the underlying theories.
- To develop skills for effective leadership in science education, including:

The prospective Science teacher will become familiar with planning, teaching strategies, evaluation techniques and classroom management procedures needed to be a successful inquiry-based teacher. This course will combine hands-on experiences with learning theory. This course will address various issues relative to planning as well as effective teaching strategies, needed towards becoming a successful educator. We will also discuss modern ideas on cognition and learning for science students in the secondary school classroom. In addition, we will address various teaching strategies that address issues of equity and diversity in the science classroom. Students will select and demonstrate various teaching strategies and work in the field with experienced teachers in local schools to master these skills. The course emphasis on higher-order reasoning and process skills in grades 6-12 science will use both state and national standards as a guide.

This course combines hands-on experiences with learning theory. We will discuss modern ideas on cognition and learning for science students in grades six through twelve. We will derive a working definition of science literacy, and then discuss attributes of effective science teaching. I will model some teaching strategies which have been shown to be effective. We will discuss these, along with the objectives they were designed to accomplish. Then you will select your own objectives and use strategies to help students master them. By working with experienced teachers in local schools, you will learn how hands-on experiences are used to support meaningful learning in science. Our emphasis will be on learning higher-order reasoning and process skills in grades 6-12 science using state and national standards as guides.

All assignments are to be typed, double-spaced, and in APA style (6th ed).

Course Objectives:

The purpose of this course is to enhance your pedagogical skills and focus on teaching science. This course is an extension of the CTSE 4090/4100 courses and is offered as a graduate level methods course. The science teacher should understand the nature of science, its content and related concepts, as well as implications of secondary science education, the lives of our students, our community and society. The focus of this course will be on exploring science teaching in a variety of ways. This course will also focus on equity in science teaching, learning, and the education of students. Particular emphasis is placed on connecting the science curriculum and science learning goals to the direct lifestyles and perceptions of secondary level students. In addition, this course explores learning and inquiry from the perspectives of the scientific methodology and through purposeful processes of discovery, conceptualization, and understanding.

Upon Completion of this course students should:

1. Prepare activities to enable youngsters to develop the science process skills. Also, techniques for decision making, problem solving and critical thinking (290-3-3.14(1)(a)4).
2. Distinguish between facts and concepts.
3. Prepare daily lesson plans, long-range plans and resource unit plans to operationalize stated objectives *[290-3-3-.14 (1) (b) 3,8]*.
4. Employ appropriate inquiry teaching strategies such as inductive demonstrations, laboratory experiments, cooperative learning, discussions, field trips, project-based instruction, and individualized instruction. (290-3-3.14(1)(a)5, (b) 4, 5)
5. Select and/or prepare appropriate media and technology for teaching science lessons (290-3-3.14(1)(a)3,7 (b)8).
6. Evaluate his/her teaching behaviors utilizing a combination of professional review, student feedback, and self assessment.
7. Evaluate the status of science education at the national, state and local level based the Next Generation Science Education Standards *[290-3-3-.14 (1) (b) 6,7]*.
8. Use various methods to assess and evaluate student achievement and performance in the affective, cognitive and psychomotor domains of learning.
9. Develop a discipline plan and employ a variety of strategies for classroom management and discipline.
10. Prepare science lessons for Exceptional students.
11. Address global and ethical issues in Science (290-3-3.14(1)(a)6, (b)2).

Students will …

1. **master beginning science teaching skills** *while also* managing students through peripheral participation and coteaching with an experienced classroom science teacher.
2. **demonstrate their knowledge and abilities** to use methods supporting inquiry including demonstration, laboratory, outreach projects, use of technology, questioning, discussion, and cooperative learning. ***[See weekly assignments].***
3. **properly plan and use standards-based practices** in the science classroom where they are most effective for student learning – i.e. use of a Learning Cycle Model. ***[See lesson plans].***
4. **self-assess their ongoing teaching abilities and dispositions** for professional growth in order to successfully meet the needs of diverse learners in the science classroom. ***[See dispositions form].***
5. **request and give professional assistance** in teaching and managing students through reflection**.**
6. Demonstrate an increase in readiness to teach science to children in multicultural and diverse classroom settings.
7. Engage in problem solving relevant to science teaching through consideration of teaching cases as well as their own experiences.
8. Learn to formulate questions or challenges about teaching science.
9. Develop, practice, and critique methods and hands-on activities that demonstrate science principles in the curriculum and their roles in real life situations.
10. Develop and document strategies to demonstrate personal development as a teacher, and lifelong learner.
11. Prepare and teach science lessons that are rich in content, and culturally varied instructional strategies that maximize *all* students' opportunities and participation in science.
12. Organizing instruction to actively engage students in learning science.
13. Learn how to grow and improve your pedagogy.

Recommended Text: Kozol, J. (1992) Savage Inequalities: Children America's Schools
Delpit, L. (2006) Other Peoples Children: Cultural conflict in the classroom. The New Press.
Dreamkeepers: Successful teachers of African American students Gloria Ladson Billings

Alabama Course of Study: Science (2005) Download and print all introductory pages and grades 6-8 science:
http://www.alsde.edu/html/sections/documents.asp?section=54&sort=7&footer=sections

Ancillary Text –

See New Science Education Conceptual Framework/Next generation standards (more information will be provided)
*Additional articles and readings will be disseminated or may be placed on reserve in the LRC or main library. You are responsible for reading all materials prior to the class meeting dates and should be prepared to facilitate and/or lead group discussions on articles assigned. Lack of preparation and failure to have read assignments may result in point deductions from your final course grades

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 professional education programs 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.

Participation

This class is intended to be both interactive and collaborative. You are expected to come to class prepared to discuss assignments. We will 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 addition, please make sure to check your e-mail on a daily basis. Occasionally information regarding the course may be e-mailed and students are held responsible for any information sent via e-mail. If you are having problems with your account please make sure to get the issues taken care of as soon as possible.

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.
- Participate fully in all class discussions

6. Course Content and Schedule

Tuesday January 14:	Introduction and review of syllabus
Tuesday January 21:	Discussion on journal articles Discussion on First Days of School Research journal articles
Tuesday January 28	Discussion on journal articles Discussion on First Days of School Research journal articles
Tuesday February 4:	Research on Instructional strategies (LRC) **Reflective reading due**
Tuesday February 11	**Microteaching** NGSS
Tuesday February 18:	Discussion on journal articles Discussion on First Days of School Research journal articles
Tuesday February 25:	**Midterm**
Tuesday March 4:	Discussion on journal articles Discussion on First Days of School Research journal articles
March 10-14	**Spring break**
Tuesday March 18	Discussion on journal articles Discussion on First Days of School Equity in Science Teaching
Tuesday March 25	Research on journal articles (LRC) **Reflective reading due**
Tuesday April 1	Discussion on journal articles Discussion on First Days of School Equity in Science Teaching

Tuesday April 8	Research on journal articles **Reflective reading due**
Tuesday April 15	**Microteaching due** Discussion on journal articles Discussion on First Days of School
Tuesday April 22	Last day of class

Please note the following:

Jan. 15-29 Dropping a course during these days will result in a $100 Drop Fee per course dropped. (Wed - Wed)

15th Class Day

Jan. 29

- Last day to drop from course with no grade assignment.
- Last day for potential tuition refund for dropped classes.

Mid-Semester (36th Class Day)

Feb. 27 - Last day to withdraw from course with no grade penalty. "W" assigned. (Thurs)

- Student deadline for request to move finals

Apr. 25	Classes End	(Fri)
Apr. 26-27	Study/Reading Days	(Sat - Sun)
Apr. 28 - May 2	Final Exam Period	(Mon - Fri)
May 3-4	Graduation	(Sat-Sun)

***Final exam date-See Final Exam schedule**

7. Course requirements and evaluation

Grading. Because this is a professional program, you will be evaluated using multiple means of authentic assessment: Pedagogical knowledge, reflective writing, teaching performance, and self-assessment.

Late/remedial work policy

An assignment will be penalized 1 point from the overall assignment grade for each day the assignment is not turned in. Any assignments more than 3 days late will not be accepted. **Please note that some assignments will not be accepted as late work.**

Grading Scale:

A	92%-100%
B	80%-91%
C	70%-79%
D	60%69%
F	<60% (less than 60 or 59 and below)

Grades of "D" are possible, but do not give credit for this course-failure (D or F) is not an option.
Students must retake the course if their final course grade is below a "C."

General grading rubric for assignments

100%: beyond the call of duty; strikingly impressive; excellent in every way
92%: both complete and showing evidence of original, active, critical thought
80%: all specified aspects of assignments minimally completed
<75% one or more aspects of assignments missing or unacceptable

Course Evaluation

Assignments	Points
1st exam/ Midterm	25 points

2 Micro-teaching lessons at 5 points each presentation	10 points
4 unannounced quizzes at 5 points each	20 points
2nd Exam/Final	30 points
3 reflective readings at 5 points each	15 points
(article or reading to be disseminated prior to due date)	

Project Descriptions

A. 3 Reflection papers (5 points).

Students will be provided two specific assigned readings where they will be required to write a 2 page minimum (3 page maximum) reflection. Guiding questions will be provided with each assigned reading. Questions for each assigned reading are as follows and each question is worth 1 point each.

1. Which three items surprised you the most about the assigned reading?
2. What did the piece tell you that you already knew?
3. What did the piece tell you that you did not already know?
4. What implications does this article have for teaching students?
5. What was the most memorable part of this piece/ or what impacted you the most in this reading?

B. Microteaching/Inquiry-based demonstration"Teach-a-Lesson" (2 presentations at 5 points each)

You will perform an inquiry based demonstration which actually "teaches something" to the class. This mini-lesson is an opportunity for you to micro teach to your colleagues and receive constructive feedback. You are expected to be creative and the lesson must be interactive. The microteaching lesson may address any topic. Make sure that the portion presented is very hands-on and interactive. In essence, the lesson plan should be designed to effectively "teach something" to the class in no more than 10 minutes. Therefore you must plan appropriately and determine what knowledge/principle, etc. is critical for the learners involved and the most effective way to convey the primary goals of the lesson. ***The lesson will be timed and a sign-up sheet will be provided.*** *No exceptions or late presentations will be accepted). A* rubric will be provided.
Students will have 10 minutes for the mini-lesson.

CTSE 7520
Spring 2014
Teach-a-lesson/Mini-Lesson
5 pts
Each category is worth 1 point.
Name_____

1. **Exhibits confidence in subject matter._____**
2. **Focuses students immediately before performing demonstration, uses questions to stimulate inquiry._____**
3. **Demonstration works effectively in producing phenomenon desired._____**
4. **Explains to students by showing, alerts students to essential learning throughout lesson._____**
5. **Demonstrates the ability to interest student, shows enthusiasm, closes with a summary of essential learning._____**

Total_____

C). 1st exam 25 points
2nd/ final exam 30 points

To evaluate your understanding of the various concepts, and terminology discussed in the class. The format of the midterm will be short-answer/discussion midterm. 1st exam is scheduled for and the 2nd exam is scheduled for

D) Four (4) Unannounced quizzes on additional readings designated class meetings. (20 points)

Students will be given a chapter or assigned reading at least one week prior to discussion on the reading. The readings for this course will supplement our discussions of science instructional strategies and help inform your practice relative to secondary science teaching. In order to facilitate our discussions students will be asked to present and give a synopsis of readings, as well as lead a discussion on the topics covered. Each student is expected to bring at least two questions or comments related to the topic covered for formal discussion in class and you are to turn in the following assignments for credit.

E). Canvas online discussion board

There will be some class meetings that utilize Canvas and entail on-line discussions or live chat discussions. Students are required to log in and participate in all discussion. Failure to participate will be considered an unexcused class absence and result in a 5 point deduction from your final grade for each time that you fail to participate.

F). Class Policy Statements:

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.

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 AU guidelines online. 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**.

Students are expected to attend all scheduled classes on campus AND scheduled field hours. You should give prior notice whenever possible of any extenuating circumstances that cause you to miss class or field commitment – notification does not mean that you are excused from class. **Only documented excuses as listed in the AU Bulletin are permissible without penalty**; **and documentation must be submitted within seven days of missing class.** Students will lose five points from their final course grade for each undocumented absence. Two tardies to class (more than 5 minutes late) will count as one unexcused absence and will result in a loss of five points from the final course grade. After three unexcused absences (or 4 tardies), students will be referred to the Office of Student Affairs to be withdrawn from the course.

Unannounced quizzes: There will be 4 unannounced quizzes.

Distance Learning Students: Unless specific instructions have been given for a designated course, students in distance education courses shall take all closed resource examinations under the supervision of an approved proctor. Examples of approved proctors include a school superintendent, a principal of a high school, or a dean or department head of a college. Proctors shall be verified and exams shall be sent directly to the proctor who will manage the examination in a secure manner, requiring students to present a picture ID.

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).

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

8) Justification for Graduate Credit (for Graduate Credit Only)

Contingency Plan:

If normal class and/or lab activities are disrupted due to a high number of students experiencing illness or an emergency or crisis situation (such as a widespread H1N1 flu outbreak), the syllabus and other course plans and assignments may be modified to allow completion of the course. If this occurs, an addendum to your syllabus and/or course assignments will replace the original materials.

Confidentiality is essential in this course. Any assignments, discussions, cases or episodes are not to be shared outside of this class.
*Please note that lack of professionalism in this course is unacceptable. This includes making any derogatory of 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.
The lesson plans you develop for class should also include the following unless otherwise instructed:
Name:
Date:
Course:
Number of Students:
A. Alabama course of study objectives (ALCOS)
B. Next Generation Science Standards
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.