

**Organization of Program in Secondary Science  
Summer 2015 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: Tuesdays 4-8:50pm  
Summer 2014  
Date Syllabus Prepared: Summer 2015

Texts or Major Resources: Recommended: NGSS-Can provide information as to where you can purchase or access this.

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 in the event that there are assigned readings from this textbook.

Recommended textbook: Science Instruction in the Middle and Secondary Schools- 7<sup>th</sup> edition by Chiapetta and Koballa (2006).

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

**New adoption expected fall 2015. We can review the new standards and also look at the old 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>

Please note new objectives will be out in sometime soon but we will work from the previous objectives until then.

Next Generation Science Standards/ NGSS (see online resources)

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: We will exam program models, components, and standards in the area of specialization.** This course is designed to teach you how to interpret and apply the Program Standards from the Next Generation Science Standards (NGSS) and Alabama Course of Study Objectives (ALCOS) 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 STEM 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)

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 NGSS 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 in 2462/4 Tuesdays 4:00-8:50pm. 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 ehandbook 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.**

Tuesday May 19: Introduction to course/review of syllabus  
What do you already know about science teaching? What do you want to learn about science teaching?

May 20-22 Drop course penalty days-Dropping course during these days will result in a \$100.00 drop fee per course dropped.

Tuesday May 26                      **Technology assignment due today**  
**Presentation of overview of “tell us about you” assignment**  
Lesson planning  
  
Library research day on curriculum assignment and Equity lesson plan

**Tuesday June 2                      Class will begin at 3:00/Workshops (Alabama Water Watch, ASIM)**

Please note that this document is subject to minor amendments or revisions at the discretion of the professor of this course

<b>Tuesday June 9</b>	<b>Microteaching I due today</b> Lesson planning Programs in Science Education NGSS
Tuesday June 16	AMSTI (tentative)  Library research day (research curriculum assignment, STEM lesson plan and Equity lesson plan)  June 17-Early Alert/Midterm Grade deadline  June 19-Mid-semester-24 <sup>th</sup> class day/Last day to withdraw from class with no grade assignment/
Tuesday June 23	Guest speaker (Library research on curriculum assignment STEM lesson plan and Equity lesson plan)
<b>Tuesday June 30</b>	<b>Microteaching II</b> Programs in Science Education NGSS ALCOS
<b>Tuesday July 7</b>	<b>STEM Lesson plan due</b>  <b>Programs in Science Education</b>
<b>Tuesday July 14</b>	<b>Equity based lesson plan due</b>
<b>Tuesday July 21</b>	Last day of Class <b>Curriculum Assignment due -Presentation of Curriculum assignment</b>
July 28 Reading day July 29-31 Final Exam period August 1 Graduation	

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

**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 Unknownhis 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:

### Assignments

### Points

1.	Tell us about you assignment	10 points
2.	Microteaching I and II (10 points each)	20 points
3.	STEM Lesson plan	10 points
4.	Equity Lesson plan	10 points
5.	Curriculum assignment	10 points
6.	4 Unannounced pop quizzes (5 points each)	20 points
7.	Final Exam	20 points
8.	Field based experience (10 hours)	Required (failure to complete this requirement and provide adequate documentation will result in 25 point deduction from final grade. At the discretion of the instructor of the course.

**\*\* 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.**

**Assignments (Assignments are to be turned in on paper at the start of each class meeting unless other guidelines are provided).**

#### **ASSIGNMENT 1 DUE MAY 26 OR JUNE 2**

##### **TELL ME ABOUT YOURSELF/TELL US ABOUT YOU (10 points)**

**Technology Assignment –Please post your assignment to the link provided in Canvas**

Directions: Answer each question completely and truthfully. This assignment is to be done as a PREZI 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?
10. What types of technology will you use in your classroom and how will you explain to students the importance or relevance of technology?

#### **ASSIGNMENT 2-MICROTEACHING I AND II DUE JUNE 9 AND JUNE 30**

**Microteaching/Inquiry-based demonstration “Teach-a-Lesson” (Each presentation at 10 points-)**

**Microteaching I-Topic of your choice can be any area. Pick something you enjoy teaching about (i.e. hobby)**

**Microteaching II-Science content topic**

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.

Microteaching/mini lessons rubric:

CTSE 7530

SUMMER 2015

Teach-a-lesson/Mini-Lesson

10 pts

Each category is worth 1 point.

Name \_\_\_\_\_

1. Exhibits confidence in subject matter. \_\_\_\_\_
2. Focuses students immediately before performing demonstration. \_\_\_\_\_
3. Demonstration works effectively in producing phenomenon desired. \_\_\_\_\_
4. Explains to students by showing. \_\_\_\_\_
5. Demonstrates the ability to interest students. \_\_\_\_\_
6. Uses questions to stimulate inquiry. \_\_\_\_\_
7. Shows enthusiasm. \_\_\_\_\_
8. Asks students to share their observations. \_\_\_\_\_
9. Alerts students to essential learning. \_\_\_\_\_
10. Closes with a question or summary to encourage students to reflect on what they learned and concludes demonstration with a link to the content objective of study. \_\_\_\_\_

Total \_\_\_\_\_

### ASSIGNMENT 3

#### Science-Technology-Engineering and Mathematics (10 points total) Due July 7

**Guidelines: Assignment is to be turned in paper at the beginning of class.**

Select an STEM integrated topic that you think would be interesting and suitable for middle and/or high school students. Design a unique and creative lesson which integrates STEM into the middle and/or high school level. The lesson plan should be detailed and include goals and objectives for the lesson (see lesson plan outline below). 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 (STEM) Sample lesson plans will also be provided.

Lesson plan-9 points

Brief Presentation of lesson to class-1 point (presentation should include brief description of lesson topic, context, etc. No more than 5-10 minutes)

The lesson should also include the following:

Name:

Date:

Course:

Number of Students:

A. Alabama course of study objectives (ALCOS)

B. NGSS

C. Goals of the lessons

D. Objectives of the lesson (3-5) must be behavioral objectives (1 point)

E. Detailed list of materials and resources (1 point)

F. Safety accommodations

G. Special needs accommodations

H. Motivation/Engage @5-10 minutes (must be engaging and should not be bellwork, quizzes, lecture notes, etc.) (2 points)

I. Lesson Procedure (must be detailed and include all transitions from one activity to the next) (2 points)

J. Closure (1 point)

K. Evaluation/Assessment (each lesson should include some type of evaluation) (1 point)

L. Extension (should not be assigning students to merely begin their homework assignment).

Lesson must integrate STEM and have sound rationale and be aligned with the standards. (1 point)

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.

### ASSIGNMENT 4

**Equity-based/Multicultural Science Education lesson plan (10 points total ) Due July 14. Assignment is to be turned in on paper at the beginning of the class meeting.**

**Lesson plan-9 points**

**Brief presentation on lesson to class-1 point (presentation should include how this lesson addresses equity, diverse learning styles, etc. Also discuss briefly what you have learned through researching this lesson plan about multicultural science education and how you will apply this in your classroom.**

**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 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**

Date:

Course:

Number of Students:

A. Alabama course of study objectives (ALCOS)

B. NGSS

C. Goals of the lessons

D. Objectives of the lesson (3-5) must be behavioral objectives (1 point)

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- E. Detailed list of materials and resources (1 point)
  - F. Safety accommodations
  - G. Special needs accommodations
  - H. Motivation/Engage @5-10 minutes (must be engaging and should not be bellwork, quizzes, lecture notes, etc.) (2 points)
  - I. Lesson Procedure (must be detailed and include all transitions from one activity to the next) (2 points)
  - J. Closure (1 point)
  - K. Evaluation/Assessment (each lesson should include some type of evaluation) (1 point)
  - L. Extension (should not be assigning students to merely begin their homework assignment).
- Lesson must integrate Equity/Multicultural science and have sound rationale and be aligned with the standards. (1 point)

## **ASSIGNMENT 5**

### **CURRICULUM ASSIGNMENT (TURN IN ON PAPER DURING CLASS)**

#### **Rubric (10 points)**

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

Student name \_\_\_\_\_

Grade \_\_\_\_\_

1. A one-page minimum double-spaced (two–page maximum) description or overview of the curriculum or program or resource and its origin (i.e. history, how long it has been around, etc.) (2 points). A brief description of how this curriculum or program can be integrated into the science classroom which details the NGSS standards as well as ALCOS that are covered (1 point). Make sure to discuss how the curriculum, program aligns with and can be used to support the main content categories of the NGSS as well as the Alabama Course of Study Objectives. Also include the grade level, and a detailed lesson plan developed (in the format described in the course) which integrates some aspect of the curriculum or program (2 points). Points will be deducted if the lesson is not an active learning-oriented lesson plan and activity/demonstration. (5 pts total) \_\_\_\_\_
2. A brief demonstration or activity from the curriculum, program, or resource (5 points). 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 lecture or do a powerpoint presentation. The demonstration or activity must be hands-on and minds-on. If technology based please be sure to make arrangements so everyone has access to a laptop, etc.. Please check the LRC for current Alabama science textbooks which can be used to select a topic/unit. (5pts total) \_\_\_\_\_

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 (15 minutes maximum). A sign-up sheet will be passed out. Points may be deducted if students go over the presentation time.
7. No late presentations.

#### **Some examples of Featured Curriculum, Programs, Professional Development, or Additional Resources**

Great Explorations in Science and Math (GEMS) Curriculum – Grades 6-9

<http://www.lawrencehallofscience.org/gems/GEMS.html>

WISE program (Web-based Inquiry Science

Environment) Project Aquatic

Biological Sciences Curriculum Study (BSCS)

Computer science (ALICE, APP inventor)

Robotics (LEGO/VEX)

KHAN Academy

Project Learning Tree

PHET Simulations

The Physics Classroom

HudsonAlpha

Chicago Grass Roots Curriculum

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

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

[You can not do Population Biology, ASIM, Alabama Water Watch or AMSTI, or Project Wild since we will have workshops on these programs.](#)

## ASSIGNMENT 6

Unannounced quizzes: **There will be at least 4 unannounced quizzes.** (4 at 5 points)

## ASSIGNMENT 7

**Final exam-see AU final exam schedule**

## ASSIGNMENT 8

### Field experience hours

All students must complete and document 10 field experience hours either tutoring or working with some type of summer camp or summer program/outreach experience while enrolled in this course. Format and guidelines are disseminated in class and will also be attached to Canvas in the files section.

See categories below for additional information.

### **Category A**

Any students that started the program (meaning you enrolled prior to summer 2015) and you need to complete your field experience hours to meet your 150 field hours requirement you will need to **complete 25 field hours** in this course per the current program of study requirements for 25 field hours to be completed in CTSE 7530. **See Advisor for details**

### **Category B**

Any students that started the program (meaning you enrolled prior to summer 2015) that have completed your 150 field hours must complete **10 field hours** for this course. **See advisor for details**

### **Category C**

Any student that started the program summer 2015 must complete **10 field hours** for this course.

Essentially everyone will need to complete a minimum of 10 field hours for this course. The field experience must be approved by the instructor for the course. You must provide an overview of what you will do to complete your field hours no later than June 2. **See advisor for details**

### **Category D**

\*Traditional Masters students- Please note that traditional Class A certification students will be required to complete a field project and 25-30 clock hours of field experience hours beginning as a requirement for this course. See advisor for details

**Please do not wait until the last minute to schedule or complete the field hours. If you do not have the field hours completed and documented by July 28 you will receive an automatic 25 point deduction from your final grade.**



## **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 ehandbook 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 ehandbook 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 (4:00 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 4 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

Please note that this document is subject to minor amendments or revisions at the discretion of the professor of this course

- 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).

Name:

Date:

Course:

Number of Students:

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- 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
- 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.

We will also review and use the 5E model (more information will be provided).