AUBURN UNIVERSITY

SYLLABUS

 **1. Course Number:              CTSE 6000**

      Course Title:                 Technology and Applications in Science

      Credit Hours:              2 Semester Hours

      Prerequisite Admission to the College of Education: Secondary Science Education Program

      Corequisites:                 None

 Term:        Fall 2017

      Day/Time: Tuesdays 10:00am – 12:50pm

 **Please note some class meetings may be virtual via Zoom**

      Instructor: Dr. Melody Russell

      Office Address: 5004 Haley Center

      Contact Information: russeml@auburn.edu or (334) 844-6880

      Office Hours: By appointment

\*I will respond to emails typically within 48 hours unless I am away from the office. If you do not hear back within 48 hours of emailing please send another email.

**2. Date syllabus prepared: August 2017**

**3.  Texts and Major Resources:  Magana, S., & Marzano, R. (2014). Enhancing the Art & Science of Teaching with Technology. Bloomington, IN. Marzano Research.**

This course will require the use of the learning management system, ***Canvas*** which can be accessed from the Auburn University website ([www.auburn.edu](http://www.auburn.edu/)). An orientation can be provided by the Science Education Program.

**4.          Course Description:**

This course serves as an introduction and application of current and emerging instruction and communication technologies for integration in the secondary science program.  It is an introduction to technology tools supporting inquiry and the Next Generation Science Standards in the secondary science classroom. This course will also meet the “knowledge of” standards of the State of Alabama Technology Standards for education.

**5.      Course Objectives (standards for all) [additional standards for grad students]**

**Student Learning Outcomes-**

(Derived from the Alabama Quality Teaching Standards- EDUCATE Alabama Version)

3d.1 Identifies and integrates available emerging technology into the teaching of science.

1. Uses available technological resources to support instruction.
2. Integrates technological resources into standards-based unit and lesson planning.
3. Integrates multiple technological resources into instruction.
4. Plans and uses technology to address individual learner differences and needs.
5. Uses technological tools such as spreadsheets, webpage, digital video, Internet, and e-mail for instruction, assessment, management, reporting, and communicates with parents/guardians.

3d.2. Facilitates learners’ individual and collaborative use of technology and evaluates their technological proficiency.

1. Provides learners with available hardware and software to support content-learning, completion of assignments, and/or practice of basic skills.
2. Teaches procedures and routines that provide practice in using technology for academic purposes.
3. Assesses learners’ abilities in the use of technology and differentiates use accordingly.
4. Engages individuals and groups in learning experiences requiring the use of technology.

Alabama Quality Teaching Standards

O. (4)(d)1.(i) Strategies to identify and evaluate technology resources and technical assistance (i.e., those available on-line and on-site within a school and district setting.

P. (4)(d)1.(ii) Methods for assessing advantages and limitations of current and emerging technologies and on-line and software content to facilitate teaching and student learning.

Q. (4)(d)1.(iii) Strategies for developing and implementing a classroom management plan to ensure equitable and effective student access to available technology resources.

R. (4)(d)1.(iv) Safe, responsible, legal and ethical uses of technologies including air-use and copyright guidelines and Internet user protection policies.

S. (4)(d)1.(v) Characteristics of appropriate and effective learner-centered lessons and units that integrate technology.

T. (4)(d)1.(vi) Technology tools (including but no limited to spreadsheets, web page development, digital video, the Internet, and email) for instruction, student assessment, management, reporting purposes and communication with parents/guardians of students.

U. (4)(d)1.(vii) How to facilitate students' individual and collaborative use of technologies (including but not limited to spreadsheets, web page development, digital video, the Internet, and email) to locate, collect, create, produce, communicate and present information.

V. (4)(d)1.(viii) The variety and application of technologies that are responsive to diverse needs of learners, learning styles and the needs of all students (for example, assistive technologies).

W. (4)(d)1.(ix) Processes and criteria for evaluating students' technology proficiency and students' technology-based products within curricular areas.

X. (4)(d)1.(x) The resources for enhancing professional growth using technology (for example, through assessing web-based information, on-line collaboration with other educators and experts, and on-line professional courses).

\*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

Course Content and Schedule (Please note that there may be a day designated for library research for the chapter reading assignment for class discussion).

**Week 1 (SLO A, T, U ) August 22**

Course overview, discussion of syllabus and assignments. Due August 29: Read Chapter 1 in Magana & Marzano.; Due August 29, Tell me about yourself assignment

**Week 2 (SLO C, O, U ) August 29**

**Technology/Tell me about yourself assignment DUE TODAY**

Due Sept 5**:** Read Chapter 2 in Magana & Marzano

**Week 3 (SLO D, S ) September 5**

Due September 12 Read Chapter 3 in Magana & Marzano

**Research article review #1 Due today**

**Week 4 (SLO E, R) September 12**

Due September 19 Read Chapter 4 in Magana & Marzano

Due September 19-Technology Demo Lesson

**Week 5 (SLO B, O, S, X ) September 19-Microteaching Technology Demo Lesson Due today (If we do not have time for all students to go today then we will continue on September 26)**

Due September 26 Read Chapter 5 in Magana & Marzano

Due September 26-Technology Demo Lesson

**Week 6 (SLO E) September 26-Microteaching Technology Demo Lesson Due today (continued for students who did not present on September 19).**

Review for Midterm Exam

**Week 7 (SLO F ) October 3**

**Midterm Exam Today**

Due for October 10 Read Chapter 6 in Magana & Marzano

**Week 8 (SLO E, P, S ) October 10**

Due for October 17 Read Chapter 7 in Magana & Marzano

**Research Article Review #2 Due today**

**Week 9 (SLO F, G, H, V ) October 17**

Due for October 24 Read Chapter 8 in Magana & Marzano

**Week 10 (SLO G,H, I, W) October 24**

Due for October 31 Read Chapter 9 in Magana & Marzano

**Week 11 (SLO I, P ) October 31**

Due for November 7 Read Chapter 10 in Magana & Marzano

**Week 12 (SLO E, T ) November 7**

**Guest speaker (tentative). Using technology in the Science Classroom**

**Week 13 (SLO A,C,D ) November 14**

Technology-based programs in Science Education

**Research Article Review #3 Due Today**

**Thanksgiving Holiday Break-November 20-24**

**Week 14 (SLO E, Q , T) November 28**

Technology-based Programs in Science Education

**Week 15 (SLO A,B,C,D,E, F, G ) December 5**

Technology-based Programs in Science Education

Class wrap-up

**Classes end December 8**

**Study/reading days December 9-10**

**December 11-15 Final exam period. See AU exam schedule for final exam date. (Monday December 11, 12-2:30pm)**

Important dates:

August 28-Sep 11, Drop course penalty days-Dropping a course during these days will result in a $100.00 drop fee per course dropped.

September 11 is the 15th class day and the last day to drop a class with no grade assignment. Last day for potential refund for dropped classes.

October 6, Early alert/midterm grade deadline

October 10, Midsemester 36th class day

October12-13 Fall Break

November 3-Last day to withdraw with no grade penalty. “W” assigned.

**6. Course Requirements/Evaluation:**

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 |
|  |  |

The Alabama State Board of Education requires all students completing teacher certification programs to be assessed using the Alabama Quality Teaching Standards and program-specific standards.

Your final course grade will be based on the following:

Assignments Points

1. Tell us about you assignment 10 points
2. 5 Unannounced pop quizzes (5 points each) 25 points
3. Midterm Exam 25 points
4. Final Exam 30 points
5. Microteaching Lesson (Technology-based lesson) 10 points
6. Research journal article reviews (3) S/U (unsatisfactory scores on this assignment will result in 10 point deduction for each unsatisfactory rating).

Total points possible 100pts

***Project Assignments/Description***

1. **Tell me about yourself assignment (10 points) Due August 29, 2017**

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 PREZI presentation. (1 pt each)

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?
11. **Unannounced quizzes: There will be 5 unannounced quizzes (25 points)**
12. **Midterm Exam: Short answer, essay format. (25 points) October 3, 2017**
13. **Final Exam-Short answer, essay format (30 points) See AU final exam schedule**
14. **Microteaching Technology Demo Lesson (10 points)**

You will perform an inquiry based demonstration which actually “teaches something” to the class using technology and integrating technology (e.g. Vernier probes, App inventor, PHET simulations, Khan academy). 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. You must integrate technology into the lesson and demonstrate to the audience how they would use the same technology in a lesson. The microteaching lesson must address a science 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 using and/or integrating technology in no more than 10 minutes. ***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 in this syllabus. Students will have 15 minutes for the mini-lesson.

Total points possible 10 (2 points each)

Assignment will be graded based on the following:

1. Focuses students immediately before beginning demonstration with a question to pique their interest.\_\_\_\_
2. Explains to students by showing or performing the demonstration. Students learn by “doing” how the technology being used is applicable to the content they are learning and their daily lives.\_\_\_\_\_
3. Demonstration works effectively and the teacher demonstrates the ability to interest students.\_\_\_\_\_
4. Asks students to share their observations and involves students in the demonstration and lesson relative to the technology.\_\_\_\_\_
5. Alerts students to essential learning and important aspects of the demonstration. Highlights the “take-home message. Answered the question of “what should students have learned about the technology application used today?”\_\_\_\_\_

***Graduate Students Only***

1. **Select three (3) Research articles on the topic of technology and STEM or science education and provide a review of the article. S/U. Overall scores of unsatisfactory on this assignment will result in 10 point deduction from final grade. You must complete each question. If you miss 2 or more of the questions or if your answer for 2 or more of the questions is incomplete (for a-e) then you automatically receive an unsatisfactory rating.**

**Article must be related to the use or implementation of technology in STEM or Science Education.**

**Questions to be addressed for the research article:**

**Question a) Purpose for study? (describe the purpose of the study)**

**Questions b)Research methodology?**

**Question c) Sample selection technique, and sample size?**

**Question d) Data collection techniques and data analysis?**

**Question e) What are the major themes and findings, conclusion, how this adds to existing literature. Also address how you learned from this article and how you would integrate what you learned into your own classroom if you were teaching.**

Additional guidelines: You will provide a review and discuss 3 articles and You will select a research article to critique from a science education journal which addresses technology in the area of science or STEM education. All assignments must be typed, SS, minimum 1 page, maximum 2 pages and in APA style 6th edition. Please see me if you have questions about the article. Suggested journals include: Science Education, Journal of Teacher Education, Journal of Research and Science Teaching, College Science Teaching.

***Canvas, or Zoom discussion, online discussion board***

There may 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.

**7.   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 Student Policy Handbook [www.auburn.edu/studentpolicies](http://www.auburn.edu/studentpolicies) .  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 be on time to class. If you arrive after class has started you may not be allowed to enter the class and the missed class will be considered an unexcused absence. 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 may 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.

Students are responsible for checking class emails and Canvas daily, if you use email or Canvas. You are to use your AU official email address only for all correspondence with the instructor for the class.

Classroom Behavior: The Auburn University Classroom Behavior Policy is strictly followed in the course; please refer to the Student Policy eHandbook at <http://www.auburn.edu/student_info/student_policies/> for details of this policy.

Unannounced quizzes:  There will be 5 unannounced quizzes (5 points each/25 points total)

Accommodations:  Students who need accommodations are asked to electronically submit their approved accommodations through AU Access and 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 alternate time can be arranged. To set up this meeting, please contact me by e-mail. If you have not established accommodations through the Office of Accessibility, but need accommodations, make an appointment with the Office of Accessibility, 1228 Haley Center, 844-2096 (V/TT).

Honesty Code:  The University Academic Honesty Code and the AU ehandbook Rules and Regulations pertaining to Cheating and all Academic Honesty policies will apply to this class. All portions of the Auburn University Student Academic Honesty code (Title XII) found in the Student Policy eHandbook at <http://www.auburn.edu/student_info/student_policies/> will apply to this class. All academic honesty violations or alleged violations of the SGA Code of Laws will be reported to the Office of the Provost, which will then refer the case to the Academic Honesty Committee.

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
* **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.

Policies and Procedures

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 will not be tolerated. 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. Please maintain professional at all times both in the classroom and at the schools during your field placement and refrain from any and all derogatory or defamatory comments outside or inside of class about the instructor, teachers, school systems and administrators, other professors or classmates. If it comes to the attention of the instructor that a student is exhibiting this unprofessional behavior disciplinary actions may be taken to remove the student from the course and recommendation for removal from the program due to violation of the professional behaviors and memorandum of understanding contracts.