AUBURN UNIVERSITY

SYLLABUS

**1.       Course Number:              CTSE 6000**

           Course Title:                 Technology and Applications in Science

           Credit Hours:                2 Semester Hours

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

            Corequisites:                     None

**2.         Term:        Fall 2013**

             Day/Time: Mondays 6:00pm – 7:50pm

             Instructor: Dr. Christine Schnittka

             Office Address: 5072 Haley Center

             Contact Information: [schnittka@auburn.edu](mailto:schnittka@auburn.edu) or (334) 844-8277

             Office Hours: Mondays 3:30pm – 5:00pm and by appointment

**3.       Texts:        None required. Readings will be provided through *Canvas*.**

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/" \t "_blank)). An orientation can be provided by the Secondary 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 National Science Education Standards in the secondary science classroom. This course will also meet the “knowledge of” standards of the State of Alabama Technology Standards for education.

**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.
5. Evaluates trends in educational technology in the science classroom
6. Analyzes key research studies on the effective use of educational technology in the science classroom
7. Analyzes recent research trends on emerging uses of educational technology in the science classroom
8. Plans and conducts an action research project using educational technology
9. Presents the results of action research in educational technology to an audience of peers and professors

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

**Week 1 (SLO A ) *[SLO J]***

Assignment: Read Flick & Bell (2000). Work on Edublog. *[GRAD: Browse Learning and Leading with Technology articles from 2000]*

Activities: Course overview, discussion of syllabus and assignments. Join Edmodo. Install Dropbox. Start Edublog.

**Week 2 (SLO C ) *[SLO J]***

Assignment: Read Bull & Bell (2008). Review ISTE national standards. Review state standards. *[GRAD: Browse Journal of Research on Technology Education articles from 1990 – 2000]*

Activities: Explore Google Sites, and start creating Teacher Webpage.

Due: Reading response to Flick & Bell (2000). (10 points) Share Edublog address*. [GRAD: Review article from Learning and Leading with Technology, 2000] (10 points)*

**Week 3 (SLO D ) *[SLO J]***

Assignment: Read Windschitl (2008). *[GRAD: Browse Contemporary Issues in Technology & Teacher Education articles from 2000]*

Activities: Inquiry with ExploreLearning. Correlate activity to state and national standards.

Due: Reading response to Bull & Bell (2008). (10 points) *[GRAD: Review article from Journal of Research on Technology Education from 1990 – 2000] (10 points)*

**Week 4 (SLO E) *[SLO J]***

Assignment: Read online documents about copyright laws and digital citizenship. Write lesson plan for ExploreLearning. *[GRAD: Browse Learning and Leading with Technology articles from 2005]*

Activities: Create dropitto.me account. Create Wordle. Discuss copyright laws. Examine lesson planning.

Due: Reading response to Windschitl (2008). (10 points) *[GRAD: Review article from Contemporary Issues in Technology & Teacher Education articles from 2000] (10 points)*

**Week 5 (SLO B ) *[SLO K]***

Assignment: Read Bell & Smetana (2008). Join NSTA Learning Community. *[GRAD: Browse Journal of Research on Technology Education articles from 2000-2005]*

Activities: Explore Stellarium and other simulations of science. Explore NSTA Learning Community.

Due: Reading reflection about copyright laws and digital citizenship. (10 points) Create lesson plan with ExploreLearning. (20 points) *[GRAD: Review article from Learning and Leading with Technology from 2005] (10 points)*

**Week 6 (SLO E) *[SLO K]***

Assignment: Install Jing and create an audiovisual presentation. *[GRAD: Browse Contemporary Issues in Technology & Teacher Education articles from 2005-2010]*

Activities: Peer teach lesson with ExploreLearning (10 points)

Due: Reading response to Bell & Smetana (2008). (10 points) *[GRAD: Review article from Journal of Research on Technology Education from 2000-2005] (10 points)*

**Week 7 (SLO F ) *[SLO L]***

Assignment: Create lesson plan that has students creating audiovisual presentations about science. *[GRAD: Browse current articles from Learning and Leading with Technology]*

Activities: iMovie tutorial

Due: Jing audiovisual presentation. (20 points) *[GRAD: Review article from Contemporary Issues in Technology & Teacher Education from 2005-2010] (10 points)*

**Week 8 (SLO E ) *[SLO L]***

Assignment: Read Schnittka & Bell (2009) *[GRAD: Browse current articles from Journal of Research on Technology Education]*

Activities: Prezi, SlideShare, and PowerPoint tutorials. Explore TELS modules.

Due: Lesson plan that has students creating audiovisual presentations (20 points) *[GRAD: Review a current article from Learning and Leading with Technology] (10 points)*

**Week 9 (SLO F,G,H ) *[SLO L]***

Assignment: Create lesson plan that integrates effective use of interactive display systems [GRAD: Browse current articles from Contemporary Issues in Technology & Teacher Education]

Activities: Smartboard tutorial.

Due: Reading reflection about Schnittka & Bell (2009). (10 points) *[GRAD: Review a current article from Journal of Research on Technology Education] (10 points)*

**Week 10 (SLO G,H,I) *[SLO L,M]***

Assignment: Register for Khan Academy. Review three Khan tutorials. *[GRAD: Develop draft of action research plan.]*

Activities: Inquiry activity with Vernier probes

Due: Lesson plan that integrates effective use of interactive display systems. (20 points) *[GRAD: Review a current article from Contemporary Issues in Technology & Teacher Education] (10 points)*

**Week 11 (SLO I ) *[SLO M]***

Assignment: Review TED Ed and and YouTube EDU websites*.[GRAD: Secure location for action research. Continue to work on draft. Create research questions and methodology.]*

Activities: Flipping the classroom

Due: Present and review one Khan tutorial for the class. (10 points) *[GRAD: Turn in draft of action research plan.]*

**Week 12 (SLO E ) *[SLO L,M]***

Assignment:Install Google Drive. Install OpenOffice. Continue to work on teacher website. *[GRAD: Work on literature review for action research.]*

Activities: Explore all the productivity products provided by Google, and OpenOffice

Due: Present and review one TED Ed or YouTube EDU video. (10 points). *[GRAD: Turn in draft of action research plan.]*

**Week 13 (SLO A,C,D ) *[SLO M]***

Assignment: Begin finding and reviewing items for resource collection. *[GRAD: Conduct action research in a classroom.]*

Activities: Explore Google Earth

Due: 1st draft of teacher website. *[GRAD: Turn in literature review for action research.] (10 points)*

**Week 14 (SLO E ) *[SLO N]***

Assignment: Complete Teacher Website and Activity Collection *[GRAD: Analyze data and work on results section]*

Activities: Excel and data analysis. Grad students present action research.

Due: *[GRAD: Turn in data analysis for action research.] (10 points)*

**Week 15 (SLO A,B,C,D,E, F, G ) *[SLO N]***

Activities: Present websites and activity collections

Due: Teacher Website (30 points) and Activity Collection (30 points) *[GRAD: Action research paper due] (50 points)*

**6. Course Requirements/Evaluation:**

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.

1. Reading Reflections from assigned practitioner-based articles: 38 points

To gain a better understanding of best practices in the classroom.

2. Peer Teaching in the classroom and Audiovisual Presentation: 57 points

To practice using educational technology in front of peers

3. Lesson plans (3): 38 points

To apply techniques learned to create full length lesson plans for science that embed educational technology for learning science

5. Activity Collection: 38 points

To find, evaluate, and collect educational technology resources about a particular topic, and share the collection with classmates

6. Teacher Website: 38 points

To learn how to create a website for communicating with students and parents

7. [Graduate Students- Research journal article reviews: 57 points]

To understand trends in educational technology research for science teaching, to critique research studies, and begin to plan for an independent action research study

8. [Graduate Students- Action Research: 57 points]

To practice writing literature reviews, planning and conducting an investigation, and analyzing data. The intent is to lead to presentation and/or publication.

Total Points: 380

A = 342 - 380 points

B = 304 - 341 points

C = 266 - 303 points

D = 247 - 265 points

F = below 247 points

Any assignment presented or turned in late will be penalized 10% for each day late. Late assignments presented or turned in late after two days will not be accepted without prior approval of the instructor.

The final grade will be determined by the following grading scale:

A = 90-100, B = 80-89, C = 70-79, D = 60-69, F = below 59.5%

AU eValuate Fall Semester evaluation dates: December 1-8, 2013

**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" \t "_blank) .  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**.

Unannounced quizzes:  There will be no unannounced quizzes.

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 Student Policy Handbook 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:**

This course is designed to give the beginning teacher practical experience learning about and using educational technology to teach science. However, it gives the more advanced learner experience reviewing research related to the use of educational technology, and the opportunity to conduct his or her own action research project and analyze the results. The extra assignments for graduate students scaffolds them in the process of reading literature, writing a literature review, carrying out an investigation with educational technology, collecting data and analyzing the results. The graduate student will complete the course not only with the basic knowledge of implementing technology tools in the classroom, but with the more advanced application of reading, analyzing, and conducting research.