AUBURN UNIVERSITY

SYLLABUS

**1.       Course Number:              CTSE 5000/ 6000**

           Course Title:                 Technology and Applications in Science

           Credit Hours:                2 Semester Hours

           Prerequisites: None

           Corequisites:                 None

**2.         Term:        Fall 2014**

             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

Preferred method of contact: Email

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

Check <schnittkadoor.tumblr.com> to see if I am in my office.

**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 if requested.

**Computer requirement:** You need a laptop computer you can bring to class (Mac or PC) and install software on for use. Please see your instructor if you do not have a laptop computer that you can bring to class and install software on.

**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, the Alabama Course of Study, the Next Generation Science Standards, and the National Science Education Standards in the secondary science classroom.

**5. Course Objectives**

A. Facilitate and inspire student learning and creativity by providing a variety of learning environments that foster collaboration and innovative thinking to solve real world issues and authentic problems using digital tools and resources. 290-3-3-.42 (4)(b)1.

B. Design, develop, use, manage, and assess authentic digital-age learning experiences that are aligned with subject-area content and the Alabama Course of Study: Technology Education to maximize content learning and address diverse learning styles, incorporating the use of formative and summative measurement tools to better inform learning. 290-3-3-.42 (4)(b)2.

C. Model and facilitate innovative digital-age work and learning experiences through the effective use of current and emerging tools to ensure success in a global and digital world whereby the teacher and learner locate, analyze, evaluate, manage, and report information as well as communicate and collaborate online fluently using a variety of technology-based media formats. 290-3-3-.42 (4)(b)3.

D. Promote, model, and communicate the safe, legal and ethical principles of digital citizenship, equitable access, digital etiquette, and responsible online social interactions in a global culture including respect for copyright, intellectual property, the appropriate documentation of sources, and Internet user protection policies. 290-3-3-.42 (4)(b)4.

1. The role, nature, limitations, and use of media and technology for instruction and scientific investigation, including the use of virtual labs, computers, probeware, and other emerging technologies. 290-3-3-.14 (2)(e)2.(ii)
2. Engage in professional growth and leadership activities, including modeling lifelong learning by participating in face to face and online learning communities to continuously improve professional practice using existing and emerging digital tools, resources, and current research that focuses on improved student learning, as well as promotes professional development of other educators. 290-3-3-.42 (4)(b)5.

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

**Week 1 (8/18/2014)**

Assignment: Read Flick & Bell (2000). Work on blog. *[GRAD: Browse Learning and Leading with Technology articles from 2008-2010]*

Activities: Course overview, discussion of syllabus and assignments. Join Edmodo. Install Dropbox. Start blog. 290-3-3-.42 (4)(b)1, 290-3-3-.42 (4)(b)3

**Week 2 (8/25/2014) Bring Computer**

Assignment: Read Bull & Bell (2008). Review ISTE national standards. Review state standards. *[GRAD: Browse Journal of Research on Technology in Education articles from 2001-2005]*

Activities: Explore Google Sites, and start creating Teacher Webpage. 290-3-3-.42 (4)(b)1, 290-3-3-.42 (4)(b)3, 290-3-3-.42 (4)(b)5

Module 1 Due: Reading response to Flick & Bell (2000). (10 points) Share blog address*. [GRAD: Summarize article from Learning and Leading with Technology, 2008-2010] (5 points)*

**Week 3 (9/8/2014)**

Assignment: Read Windschitl (2008). *[GRAD: Browse Contemporary Issues in Technology & Teacher Education articles from 2000-2005]*

Activities: Inquiry with ExploreLearning. Correlate activity to state and national standards. 290-3-3-.42 (4)(b)1, 290-3-3-.42 (4)(b)2

Module 2 Due: Reading response to Bull & Bell (2008). (10 points) *[GRAD: Summarize article from Journal of Research on Technology in Education from 2001-2005] (5 points)*

**Week 4 (9/15/2014) Bring computer**

Assignment: Read online documents about copyright laws and digital citizenship. Write lesson plan for ExploreLearning. *[GRAD: Browse Learning and Leading with Technology articles from 2011-2013]*

Activities: Create dropitto.me account. Create Wordle. Discuss copyright laws. Examine lesson planning. 290-3-3-.42 (4)(b)1, 290-3-3-.42 (4)(b)2, 290-3-3-.42 (4)(b)4

Module 3 Due: Reading response to Windschitl (2008). (10 points) *[GRAD: Summarize article from Contemporary Issues in Technology & Teacher Education articles from 2000-2005] (5 points)*

**Week 5 (9/22/2014)**

Assignment: Read Bell & Smetana (2008). Join NSTA Learning Community. *[GRAD: Browse Journal of Research on Technology in Education articles from 2006-2010]*

Activities: Explore Stellarium, Celestia, PhET, and other simulations of science. Explore NSTA Learning Community. 290-3-3-.42 (4)(b)1, 290-3-3-.42 (4)(b)2, 290-3-3-.14 (2)(e)2.(ii) , 290-3-3-.42 (4)(b)5

Module 4 Due: Reading reflection about copyright laws and digital citizenship. (10 points) Lesson plan with ExploreLearning. (20 points) *[GRAD: Summarize article from Learning and Leading with Technology from 2011-2013] (5 points)*

**Week 6 (9/29/2014) Bring computer**

Assignment: Install Jing and create an audiovisual presentation. Review videos on BozemanScience.com Choose ExploreLearning Gizmo and prepare to teach it. *[GRAD: Browse Contemporary Issues in Technology & Teacher Education articles from 2006-2010]*

Activities: Explore webquests. 290-3-3-.42 (4)(b)2, 290-3-3-.42 (4)(b)3

Module 5 Due: Reading response to Bell & Smetana (2008). (10 points) *[GRAD: Summarize article from Journal of Research on Technology in Education from 2006-2010] (5 points)*

**Week 7 (10/6/2014) Bring computer**

Assignment: Create a webquest. *[GRAD: Browse current articles from Learning and Leading with Technology, 2014]*

Activities: ExploreLearning peer teaching (20 points) 290-3-3-.42 (4)(b)3 290-3-3-.14(2)(e)2.(ii)

Module 6 Due: Jing audiovisual presentation. (20 points) *[GRAD: Summarize article from Contemporary Issues in Technology & Teacher Education from 2006-2010] (5 points)*

**Week 8 (10/13/2014)**

Assignment: Read Schnittka & Bell (2009) *[GRAD: Browse current articles from Journal of Research on Technology Education 2011-2014]*

Activities: Prezi, SlideShare, and PowerPoint tutorials. Explore TELS modules. 290-3-3-.42 (4)(b)1, 290-3-3-.42 (4)(b)2, 290-3-3-.42 (4)(b)3

Module 7 Due: Webquest (20 points) *[GRAD: Summarize a current article from Learning and Leading with Technology, 2014] (5 points)*

**Week 9 (10/20/2013)**

Assignment: Install 123D, learn how to use it, and design something. [GRAD: Browse current articles from Contemporary Issues in Technology & Teacher Education 2011-2014]

Activities: Smartboard tutorial and SmartScope tutorial. 290-3-3-.42 (4)(b)1

Module 8 Due: Reading reflection about Schnittka & Bell (2009). (10 points) *[GRAD: Review a current article from Journal of Research on Technology Education 2011-2014] (5 points)*

**Week 10 (10/27/2014) Bring computer**

Assignment: Register for Khan Academy. Review three Khan tutorials. *[GRAD: Develop draft of field experience.]*

Activities: Inquiry activity with Vernier probes 290-3-3-.42 (4)(b)2, 290-3-3-.14 (2)(e)2.(ii)

Module 9 Due: Design file for 3D printer. (20 points) *[GRAD: Review a current article from Contemporary Issues in Technology & Teacher Education 2011-2014] (5 points)*

**Week 11 (11/3/2014)**

Assignment: Review TED Ed and and YouTube EDU websites*.[GRAD: Secure location for field experience and meet with teacher. Continue to work on draft. Create lesson plan and assessments.]*

Activities: 3D printing tutorial. 290-3-3-.42 (4)(b)1, 290-3-3-.42 (4)(b)3

Module 10 Due: Review one Khan tutorial. (10 points) *[GRAD: Turn in draft of lesson plan.]*

**Week 12 (11/10/2014) Bring computer**

Assignment:Install Google Drive. Install OpenOffice. Continue to work on teacher website. *[GRAD: Work on field experience.]*

Activities: Explore all the productivity products provided by Google, and OpenOffice. 290-3-3-.42 (4)(b)1

Module 11 Due: Present and review one TED Ed or YouTube EDU video. (10 points). *[GRAD: Work on field experience.]*

**Week 13 (11/17/2014) Bring computer**

Assignment: Begin finding and reviewing items for resource collection. *[GRAD: field experience and assessment by this date.]*

Activities: Explore Google Earth. 290-3-3-.42 (4)(b)1, 290-3-3-.14 (2)(e)2.(ii)

Module 12 Due: Teacher website (30 points). *[GRAD: Work on field experience.]*

**Week 14 (12/1/2014) Last day of class**

Activities: Excel and data analysis. Grad students present lessons learned from field experience. 290-3-3-.14 (2)(e)2.(ii)

Module 13 Due: Activity collection (30 points) *[GRAD: Turn in field experience paper.] (25 points)*

**7. 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: 60 points

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

2. Peer Teaching in the classroom and Audiovisual Presentation: 40 points

To practice using educational technology in front of peers

3. Lesson plans (3): 20 points

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

5. Activity Collection: 30 points

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

6. Teacher Website: 30 points

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

7. Webquest: 20 points

To learn how to create compelling webquests for student use.

8. Design file for 3D printer: 20 points

To learn how to apply 3D printing to science education

9. Video reviews: 20 points

To practice evaluating educational videos

10. [Graduate Students- Research journal article reviews: 45 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- Field Experience: 25 points]

To practice theory and pedagogical techniques learned in class.

Total Undergraduate Points: 240 Total Graduate Points: 310

A = 216 - 240 points A = 270 - 310 points

B = 192 - 215 points B = 248 - 269 points

C = 168 - 191 points C = 217 - 247 points

D = 156 - 167 points D = 201 - 216 points

F = below 156 points  F = below 200 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 = 65-69, F = below 65%

AU eValuate Fall Semester evaluation dates: TBA

**8.   Class Policy Statements:**

Participation:  Students are expected to attend class, bring required materials, and participate in all class discussions and participate in all activities.  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.  Contact the instructor as soon as you know that you have to miss class for any reason. 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.  All absences must be documented and cleared with the instructor **in advance**. All work missed, even class work, will need to be made up and turned in within one week. Homework is always due on the due-date, even if class is missed. Do not wait until the night before class to complete your assignments!

Unannounced quizzes:  There may be unannounced quizzes covering assigned readings.

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. All work must be original. All infractions of the Academic Honesty Code will be reported to the Provost. (Note: All written work will be scanned for plagiarism. Be sure you know what plagiarism is.) Cheating will likely result in dismissal from the Teacher Education Program, and may result in dismissal from the university.

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

**9. Justification for offering CTSE 6000 as a graduate course:**

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 reflect upon his or her own teaching practice and analyze student results. The extra assignments for graduate students scaffolds them in the process of reading literature, carrying out a lesson with educational technology, collecting student 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.

**AQTS Course Assessment Map**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Course Objectives** | **Course Assessments** | | | | | | |
|  | **Reading Reflections and other Reviews** | **Peer Teaching** | **Lesson Plans and Lesson Designs** | **Activity Collection** | **Teacher Website** | **Research Summaries (GRAD)** | **Field Experience (GRAD)** |
| Facilitate and inspire student learning and creativity by providing a variety of learning environments that foster collaboration and innovative thinking to solve real world issues and authentic problems using digital tools and resources. 290-3-3-.42 (4)(b)1. |  | **x** | **x** | **x** |  |  |  |
| Design, develop, use, manage, and assess authentic digital-age learning experiences that are aligned with subject-area content and the Alabama Course of Study: Technology Education to maximize content learning and address diverse learning styles, incorporating the use of formative and summative measurement tools to better inform learning. 290-3-3-.42 (4)(b)2. |  | **x** | **x** | **x** |  |  | **x** |
| Model and facilitate innovative digital-age work and learning experiences through the effective use of current and emerging tools to ensure success in a global and digital world whereby the teacher and learner locate, analyze, evaluate, manage, and report information as well as communicate and collaborate online fluently using a variety of technology-based media formats. 290-3-3-.42 (4)(b)3. | **x** |  |  |  | **x** | **x** |  |
| Promote, model, and communicate the safe, legal and ethical principles of digital citizenship, equitable access, digital etiquette, and responsible online social interactions in a global culture including respect for copyright, intellectual property, the appropriate documentation of sources, and Internet user protection policies. 290-3-3-.42 (4)(b)4. | **x** | **x** | **x** | **x** | **x** |  |  |
| The role, nature, limitations, and use of media and technology for instruction and scientific investigation, including the use of virtual labs, computers, probeware, and other emerging technologies. 290-3-3-.14 (2)(e)2.(ii) | **x** | **x** | **x** | **x** |  | **x** |  |
| Engage in professional growth and leadership activities, including modeling lifelong learning by participating in face to face and online learning communities to continuously improve professional practice using existing and emerging digital tools, resources, and current research that focuses on improved student learning, as well as promotes professional development of other educators. 290-3-3-.42 (4)(b)5. |  |  |  |  | **x** |  | **x** |