Eled. 437.001 Integrated Learning-STEM: Science, Math, Engineering and Technology in Field-Based Settings
COURSE SYLLABUS
Spring 2014

Instructor(s): Rhonda Clark, M.Ed.,
Field Liaisons & other instructors: Dr. Raine, Ms. Burbano, Mrs. Lee, Mrs. Martin, Mrs. McMichael, and Mrs. Oats
Office Location: Education South 225
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COURSE INFORMATION

Materials – Textbooks, Readings, Supplementary Readings:

Textbook(s) Required:
Nath, J.L., & Ramsey, J. (2010). Preparing to Teach Texas Content Areas: The TExES EC-6 Generalist & the ESL Supplement (2nd Edition). Prentice Hall **ISBN-13:** 978-0137040285

Field-Based Teacher Education Program Handbook [revised July 2013]

Course Description:
This course explores the integrated nature of learning with an interdisciplinary curriculum approach in the areas of science, technology, engineering and math. Seminars are conducted in CPDT centers; field-based applications take place in public schools under the guidance of public school teachers and university personnel that comprise the Instructional Leadership Team. Prerequisite ElEd 300; Rdg 350, 370; admission to teacher education program; placement in a CPDT center; minimum overall GPA of 2.5 and must have passed TSI.

This course is taught in an integrated manner during seminar by Center Faculty and includes ELED 437, 438, 443, and Rdg. 448.

Student Learning Outcomes:
The following learner outcomes are specific to the EC-6 science, math and technology standards
While engaged in learning and teaching, the intern will show evidence that s/he:

- can manage classroom, field, and laboratory activities to ensure the safety of all students and the ethical care and treatment of organisms and specimens;
- understands the correct use of tools , materials, equipment, and technologies;
- has theoretical and practical knowledge about teaching science, math, and technology, and about how students learn science, math, and technology;
- knows the varied and appropriate assessments and assessment practices to monitor STEM learning,
- understands the nature and history of STEM;
- understands how STEM affects the daily lives of students and how it interacts with and influences personal and societal decisions;
- knows the STEM content appropriate to teach the statewide curriculum [TEKS] in science, math and technology;
- understands standards-based, structured inquiry-based and real world problem-based learning that interconnects STEM-related subjects;
- understands the importance of illustrations and concrete examples with use of hands-on experiences, as well as content and vocabulary development for English language learners—example: use of cognates with English learners; and
- engages in critical thinking and problem solving to design and implement lessons with real-world solutions.

SCIENCE EC–6 STANDARDS

Standard I. The science teacher manages classroom, field, and laboratory activities to ensure the safety of all students and the ethical care and treatment of organisms and specimens.
Standard II. The science teacher understands the correct use of tools, materials, equipment, and technologies.
Standard III. The science teacher understands the process of scientific inquiry and its role in science instruction.
Standard IV. The science teacher has theoretical and practical knowledge about teaching science and about how students learn science.
Standard V. The science teacher knows the varied and appropriate assessments and assessment practices to monitor science learning.
Standard VI. The science teacher understands the history and nature of science.
Standard VII. The science teacher understands how science affects the daily lives of students and how science interacts with and influences personal and societal decisions.
Standard VIII. The science teacher knows and understands the science content appropriate to teach the statewide curriculum (Texas Essential Knowledge and Skills [TEKS]) in physical science.
Standard IX. The science teacher knows and understands the science content appropriate to teach the statewide curriculum (Texas Essential Knowledge and Skills [TEKS]) in life science.
Standard X. The science teacher knows and understands the science content appropriate to teach the statewide curriculum (Texas Essential Knowledge and Skills [TEKS]) in Earth and space science.
Standard XI. The science teacher knows unifying concepts and processes that are common to all sciences.

MATHEMATICS EC–6 STANDARDS

Standard I. *Number Concepts:* The mathematics teacher understands and uses numbers, number systems and their structure, operations and algorithms, quantitative reasoning, and technology appropriate to teach the statewide curriculum (Texas Essential Knowledge and Skills [TEKS]) in order to prepare students to use mathematics.
Standard II. *Patterns and Algebra:* The mathematics teacher understands and uses patterns, relations, functions, algebraic reasoning, analysis, and technology appropriate to teach the statewide curriculum (Texas Essential Knowledge and Skills [TEKS]) in order to prepare students to use mathematics.
Standard III. *Geometry and Measurement:* The mathematics teacher understands and uses geometry, spatial reasoning, measurement concepts and principles, and technology appropriate to teach the statewide curriculum (Texas Essential Knowledge and Skills [TEKS]) in order to prepare students to use mathematics.
Standard IV. *Probability and Statistics:* The mathematics teacher understands and uses probability and statistics, their applications, and technology appropriate to teach the statewide curriculum (Texas Essential Knowledge and Skills [TEKS]) in order to prepare students to use mathematics.
Standard V. *Mathematical Processes:* The mathematics teacher understands and uses mathematical processes to reason mathematically, to solve mathematical problems, to make mathematical connections within and outside of mathematics, and to communicate mathematically.
Standard VI. *Mathematical Perspectives:* The mathematics teacher understands the historical development of mathematical ideas, the interrelationship between society and mathematics, the structure of mathematics, and the evolving nature of mathematics and mathematical knowledge.
Standard VII. *Mathematical Learning and Instruction:* The mathematics teacher understands how children learn and develop mathematical skills, procedures, and concepts, knows typical errors students make, and uses this knowledge to plan, organize, and implement instruction; to meet curriculum goals; and to teach all students to understand and use mathematics.
Standard VIII. *Mathematical Assessment:* The mathematics teacher understands assessment and uses a variety of formal and informal assessment techniques appropriate to the learner on an ongoing basis to monitor and guide instruction and to evaluate and report student progress.
Standard IX. *Professional Development:* The mathematics teacher understands mathematics teaching as a profession, knows the value and rewards.

TECHNOLOGY STANDARDS (taken from http://www.sbec.state.tx.us/SBECOnline/standtest/standards/techapps_allbegtch.pdf)

Standard I. All teachers use technology-related terms, concepts, data input strategies, and ethical practices to make informed decisions about current technologies and their applications.
Standard II. All teachers identify task requirements, apply search strategies, and use current technology to efficiently acquire, analyze, and evaluate a variety of electronic information.
Standard III. All teachers use task-appropriate tools to synthesize knowledge, create and modify solutions, and evaluate results in a way that supports the work of individuals and groups in problem-solving situations.
Standard IV. All teachers communicate information in different formats and for diverse audiences.
Standard V. All teachers know how to plan, organize, deliver, and evaluate instruction for all students that incorporates the effective use of current technology for teaching and integrating the Technology Applications Texas Essential Knowledge and Skills (TEKS) into the curriculum.

COURSE REQUIREMENTS

Required Seminar Courses: Eled. 437, Eled. 443, Eled. 438, and Rdg. 448

1. *Attendance*— on time—at ***all*** scheduled university seminars, school-based class sessions, and school-based meetings.
2. Professionalism exemplified by preparation and enthusiasm for all school-based and seminar activities.
3. A weekly *Reflection Journal* of informal observation, reflections, and/or writing to learn activities in which teaching strategies, learning strategies, organization/management systems, effective instruction, and the accommodation of diversity are discussed.
4. Six formal written observations of mentors' lessons. [3 per rotation]
5. Six lessons (planned, taught, and evaluated). [3 per rotation] A minimum of one lesson per rotation should be evaluated by the liaison.
6. Weekly seminar activities as assigned in seminar.
7. Weekly *Individual Teacher Education Plans* (ITEPs) of planned and completed activities.
8. Teaching Inquiry Project – final project due in residency.
9. Technology requirements will be met by the use of eCollege/Dropbox as well as utilizing technology to teach lessons in the EC-6 classroom.
10. A digital *ePortfolio* that showcases growth as a teacher.
11. Extension activities following chapter readings related to the course content.
12. Register for TExES Certification Exams.
13. Check degree evaluation for accuracy.

Instructional / Methods / Activities Assessments

Instructional methods in this course will be delivered in a seminar setting, including but not limited to, lectures, discussions, internet researches, modeling, displays and presentations, classroom applications of TEKS & TExES Competencies, state standards, mini-teaches, and classroom teacher presentations. Also, instructional strategies utilized by the instructor will stress the importance of illustrations and concrete examples with use of hands-on experiences, as well as modeling content and vocabulary development for English language learners--- example: use of cognates with English learners. Instructor will model effective lesson design.

Content Lesson Requirements:

Lesson Plan – each formal lesson that is evaluated should be developed around Lesson Design or the 5 –E model and should include:

- follow TEKS objectives
- accommodations and modifications, including but not limited to…Ell's, gifted, and/or special needs
- at least one visual aid
- integration of technology and children's literature is encouraged

Formal Lesson Evaluation Requirements:

- Turned into mentor:
  - lesson plan
  - self-reflection using the evaluation tool
- Turned into liaison:
  - lesson plan
  - mentor's evaluation of lesson
  - a copy of liaison's formal evaluation of lesson

Disclaimer: The instructor reserves the right to make changes to the schedule of the class. Any alterations will be announced in class or via email by the instructor. Students who are unable to attend class due to an emergency should check their email, and connect with class peer to obtain information missed.

Final Grading

Grading will reflect a combination of seminar and field work. ***Field focus: prior preparation, strength and delivery of lessons, knowledge of subject matter, utilization of lesson design, and assessment of student progress.***

The following holistic scoring will be utilized:

A (90 – 100%) = Commendable. Well above average in initiative, thought, organization, reflection, and implementing professional choices. Evidences extensive control of own decision-making and learning processes. Monitors, adjusts, and manages independently. Excellent attitude, attendance, participation and completion of assignments by due date
B (80 – 89%) = Developing. Functional, but in need of instruction regarding initiative, thought, organization, reflection, and implementing professional choices. Evidences some control of own decision-making and learning processes. Monitors, adjusts, and manages--but requires intervention. Good attitude, attendance, participation and completion of assignments by due date
C (70 – 79%) = Needs Improvement. Some lack of initiative, thought, organization, reflection, and responsibility. Evidences little to no control of own decision-making and learning processes. Does not adequately monitor, adjust, and manage. Sometimes exhibits poor attitude, attendance, participation and completion of assignments by due date.
D – (less than 70%) = Not recommended for teacher certification

Attendance at the seminars is required to maximize the learning. Many activities will be conducted during seminar and only those students present at the time will receive the points assigned to the activity. Those not in seminar during STEM instruction and activities will have 5 points deducted from their total.

TECHNOLOGY REQUIREMENTS

The following technology is required to be successful in this web enhanced course:

Internet connection – high speed recommended (not dial-up)
Word Processor (Microsoft Office Word – 2003 or 2007)
Access to University Library site
Access to an Email

Additionally, the following hardware and software are necessary to use eCollege:

Our campus is optimized to work in a Microsoft Windows environment. This means our courses work best if you are using a Windows operating system (XP or newer) and a recent version of Microsoft Internet Explorer (6.0, 7.0, or 8.0).

Courses will also work with Macintosh OS X along with a recent version of Safari 2.0 or better. Along with Internet Explorer and Safari, eCollege also supports the Firefox browser (3.0) on both Windows and Mac operating systems.

It is strongly recommended that you perform a "Browser Test" prior to the start of your course. To launch a browser test, login in to eCollege, click on the 'myCourses' tab, and then select the "Browser Test" link under Support Services.

ACCESS AND NAVIGATION

Access and Log in Information

This course may be facilitated using eCollege, the Learning Management System used by Texas A&M University-Commerce. To get started with the course, go to https://leo.tamu-commerce.edu/login.aspx.

You will need your CWID and password to log in to the course. If you do not know your CWID or have forgotten your password, contact Technology Services at 903.468.6000 or helpdesk@tamucommerce.edu.

COMMUNICATION AND SUPPORT

Interaction with Instructor Statement:
The instructor(s) of this course will be available to students before, during, and after seminar as well as in the field setting. They also may be contacted through email and phone.

Instructor(s) & e-mail:

Rhonda Clark	Rhonda.Clark@tamuc.edu
LaVerne Raine	LaVerne.Raine@tamuc.edu
Debra Lee	Debra.Lee@tamuc.edu
Betty Martin	bettymartin@cawb.com
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Ellen Oats	Ellen.Oats@tamuc.edu

US Mail: C&I Dept., A&M University-Commerce, P.O. Box 3011, Commerce, TX 75429
Telephone: 903.886.5931
FAX: 903.886.5581

COURSE AND UNIVERSITY PROCEDURES/POLICIES

Course Specific Procedures:

Academic Honesty Policy
Texas A&M University-Commerce does not tolerate plagiarism and other forms of academic dishonesty. Conduct that violates generally accepted standards of academic honesty is defined as academic dishonesty. "Academic dishonesty" includes, but is not limited to, plagiarism (the appropriation or stealing of ideas or words of another and passing them off as one's own), cheating on exams or other course assignments, collusion (the unauthorized collaboration with others in preparing course assignments), and abuse (destruction, defacing, or removal) of resource material.

Suggested web resources to students for reference regarding what constitutes plagiarism and how to avoid it. http://www.plagiarism.org/ or http://www.unc.edu/depts/wcweb/handouts/plagiarism.html or http://www.indiana.edu/~wts/pamphlets/plagiarism.shtm

University Specific Procedures:

ADA Statement
The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you have a disability requiring an accommodation, please contact:

Office of Student Disability Resources and Services
Texas A&M University-Commerce
Gee Library 132
Phone (903) 886-5150 or (903) 886-5835
Fax (903) 468-8148
StudentDisabilityServices@tamuc.edu

Student Conduct
All students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment. (See *Code of Stude uide Handbook).*