

NEW COURSE FORM

1. General Information.				
a.	Submitted by the College of: <u>Education</u>	Today's Date:	<u>September 9, 2011</u>	
b.	Department/Division: <u>STEM</u>			
c.	Contact person name: <u>Christine Schnittka</u>	Email: <u>christine.schnittka@uky.edu</u>	Phone:	<u>859-257-1979</u>
d.	Requested Effective Date:	<input type="checkbox"/> Semester following approval	OR	<input checked="" type="checkbox"/> Specific Term/Year ¹ : <u>F 2012</u>
2. Designation and Description of Proposed Course.				
a.	Prefix and Number: <u>SEM 448</u>			
b.	Full Title: <u>Applications of Teaching Middle Level Science</u>			
c.	Transcript Title (if full title is more than 40 characters): <u>Apps of Tchng Middle Level Sci</u>			
d.	To be Cross-Listed ² with (Prefix and Number): _____			
e.	Courses must be described by <u>at least one</u> of the meeting patterns below. Include number of actual contact hours ³ for each meeting pattern type.			
	<u>2</u> Lecture	_____ Laboratory ¹	_____ Recitation	_____ Discussion
	<u>9</u> Clinical	_____ Colloquium	_____ Practicum	_____ Research
	_____ Seminar	_____ Studio	_____ Other – Please explain: _____	
f.	Identify a grading system:	<input checked="" type="checkbox"/> Letter (A, B, C, etc.)	<input type="checkbox"/> Pass/Fail	
g.	Number of credits: <u>3</u>			
h.	Is this course repeatable for additional credit?			YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>
	If YES:	Maximum number of credit hours:	_____	
	If YES:	Will this course allow multiple registrations during the same semester?	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	
i.	Course Description for Bulletin:	<u>A study of applied models and methodological strategies for teaching science at the middle school level. This course will include applications such as project based learning, engineering design-based science, interdisciplinary science, and other innovative methods for applying national and state science standards to real-world contexts. Special emphasis will be given to lesson study and peer teaching and evaluation. This course is in conjunction with an eight-week field experience, consisting of approximately 2.5 weeks at the start of the semester and 5.5 weeks during the middle of the semester. Candidates will also attend their field placement at other times (e.g., district pre-planning, flexible Fridays) during the semester.</u>		
j.	Prerequisites, if any: <u>SEM 348 or permission of instructor.</u>			
k.	Will this course also be offered through Distance Learning?			YES ⁴ <input type="checkbox"/> NO <input checked="" type="checkbox"/>

¹ Courses are typically made effective for the semester following approval. No course will be made effective until all approvals are received.

² The chair of the cross-listing department must sign off on the Signature Routing Log.

³ In general, undergraduate courses are developed on the principle that one semester hour of credit represents one hour of classroom meeting per week for a semester, exclusive of any laboratory meeting. Laboratory meeting, generally, represents at least two hours per week for a semester for one credit hour. (from SR 5.2.1)

NEW COURSE FORM

I.	Supplementary teaching component, if any:	<input type="checkbox"/> Community-Based Experience	<input checked="" type="checkbox"/> Service Learning	<input type="checkbox"/> Both
3.	Will this course be taught off campus?	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>	
4.	Frequency of Course Offering.			
a.	Course will be offered (check all that apply):	<input checked="" type="checkbox"/> Fall	<input checked="" type="checkbox"/> Spring	<input checked="" type="checkbox"/> Summer
b.	Will the course be offered every year?	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>	
	If NO, explain:	_____		
5.	Are facilities and personnel necessary for the proposed new course available?	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>	
	If NO, explain:	_____		
6.	What enrollment (per section per semester) may reasonably be expected?	<u>25</u>		
7.	Anticipated Student Demand.			
a.	Will this course serve students primarily within the degree program?	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>	
b.	Will it be of interest to a significant number of students outside the degree pgm?	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>	
	If YES, explain:	_____		
8.	Check the category most applicable to this course:			
	<input checked="" type="checkbox"/> Traditional – Offered in Corresponding Departments at Universities Elsewhere			
	<input type="checkbox"/> Relatively New – Now Being Widely Established			
	<input type="checkbox"/> Not Yet Found in Many (or Any) Other Universities			
9.	Course Relationship to Program(s).			
a.	Is this course part of a proposed new program?	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>	
	If YES, name the proposed new program:	_____		
b.	Will this course be a new requirement ⁵ for ANY program?	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>	
	If YES ⁵ , list affected programs:	<u>Middle School Teacher Education</u>		
10.	Information to be Placed on Syllabus.			
a.	Is the course 400G or 500?	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>	
	If YES, the <i>differentiation for undergraduate and graduate students must be included</i> in the information required in 10.b . You must include: (i) identification of additional assignments by the graduate students; and/or (ii) establishment of different grading criteria in the course for graduate students. (See <i>SR 3.1.4.</i>)			
b.	<input checked="" type="checkbox"/> The syllabus, including course description, student learning outcomes, and grading policies (and 400G-/500-level grading differentiation if applicable, from 10.a above) are attached.			

⁴ You must *also* submit the Distance Learning Form in order for the proposed course to be considered for DL delivery.

⁵ In order to change a program, a program change form must also be submitted.

NEW COURSE FORM

Signature Routing Log

General Information:

Course Prefix and Number: SEM 448

Proposal Contact Person Name: Christine Schnittka Phone: 859-257-1979 Email: christine.schnittka@uky.edu

INSTRUCTIONS:

Identify the groups or individuals reviewing the proposal; note the date of approval; offer a contact person for each entry; and obtain signature of person authorized to report approval.

Internal College Approvals and Course Cross-listing Approvals:

Reviewing Group	Date Approved	Contact Person (name/phone/email)	Signature
MSTE Program Faculty	9/8/2011	S.N. Wood / 850-322-4087 / susan.wood@uky.edu	
Curriculum & Instruction	10/7/2011	P. Fawson / 859-257-0767 / parker.fawson@uky.edu	
STEM Education	10/13/2011	J. Wilhelm / 859-257-1291 / jennifer.wilhelm@uky.edu	
C&C Committee	11/15/11	Doug Smith / 7-1824 / dcsmit1@uky.edu	
CoEd Faculty	12/13/11	Steve Parker / 7-8847 / spark01@uky.edu	

External-to-College Approvals:

Council	Date Approved	Signature	Approval of Revision ⁶
Undergraduate Council	2/28/2012	Sharon Gill	
Graduate Council			
Health Care Colleges Council			
Senate Council Approval		University Senate Approval	

Comments:

⁶ Councils use this space to indicate approval of revisions made subsequent to that council's approval, if deemed necessary by the revising council.

SEM 448
Applications of Teaching Science in the Middle School
Syllabus

“Research and Reflection for Learning and Leading”

Instructor:	Christine G. Schnittka
Office Location	113 Taylor Education Building
Phone Number	(859) 257-1979
Email	Christine.Schnittka@uky.edu
Virtual Office Hours	By appointment
Technological Requirements	Computer with internet access or access to UK computer facilities. Access to digital video recording devices (digital camera, digital video recorder, laptop webcams)
For Technological assistance	Contact TASC at http://www.uky.edu/TASC or call 859.257.8272 Contact Information Technology Customer Service Center http://www.uky.edu/UKIT or 859.257.1300
Technical Complaints	Contact the College of Education Instructional Technology Center at 859.257.7967 or contact Information Technology Customer Service Center http://www.uky.edu/UKIT or 859.257.1300
Preferred method for contacting instructor	Email
Anticipated Response Time	Within 24 hours
Face-to-Face Librarian	Brad Carrington, Education Librarian brad.carrington@uky.edu 859.257.7977
Face-to-Face Interlibrary Loan Service	http://libguides.uky.edu/educ
Course Website:	See Blackboard

Course Description

A study of applied models and methodological strategies for teaching science at the middle school level. This course will include applications such as project based learning, engineering design-based science, interdisciplinary science, and other innovative methods for applying national and state science standards to real-world contexts. Special emphasis will be given to lesson study and peer teaching and evaluation.

Prerequisite:

Admission to TEP and 9 hours of science coursework and SEM 348. Or consent of instructor.

UK College of Education Professional Themes

This course will address the four themes of the conceptual framework for the UK professional education unit: **research**, **reflection**, **learning**, and **leading**. Students will be given the opportunity to review, analyze, discuss, and apply **research** from diverse perspectives in education, including professional scholarship and practitioner inquiry, in order to reflect on their own practices as they study, observe, and practice in P-12 school and university classrooms. **Reflection** will also be integrated into students' learning opportunities through the production of written essays and analyses of observation and teaching experiences to help students take advantage of the analytical and problem-solving skills that comprise critical professional reflection on one's own teaching. This course emphasizes the commitment of the professional education unit to ensure that its graduates move into their professional lives equipped for life-long **learning** as educators who will be active in **leading** colleagues in their schools, districts, and professional organizations. The ultimate goal in addressing these four themes is to produce teacher leaders who work together to improve student learning among diverse populations and improve education in Kentucky and beyond.

Course Learning Targets, Outcomes, and Assessments

This course has been designed to provide students with opportunities to acquire skills, knowledge, conceptual understanding, classroom experience, and practice teaching in their preferred content area(s). These learning targets are aligned with Senate Bill 1 expectations including, Kentucky Core Academic Standards, Assessment Literacy, College & Career Readiness, and Characteristics of Highly Effective Teaching and Learning. By the end of this course, students will have gained the following:

Learning Target/Outcome	Assessment (Formative/Summative)
<p>Self-assess dispositions and standards related to effective teaching and develop personal goals for growth</p> <ul style="list-style-type: none">• Characteristics of Highly Effective Teaching (http://www.education.ky.gov/KDE/Instructional+Resources/Highly+Effective+Teaching+and+Learning/HETL+Common+Characteristics.htm)• Kentucky Teacher (Initial) Standards (http://www.kyepsb.net/documents/EduPrep/Kentuckyteacherstandards.doc)• Appropriate content area standards	Self-assessment (Formative)
<ul style="list-style-type: none">• Plan and implement project-based lessons that meet state and national standards	Written lessons based on state standards and supportive texts (Summative)

<ul style="list-style-type: none"> • Know how to identify and address students' misconceptions about science concepts. 	Written assignments and class discussions (Formative)
<ul style="list-style-type: none"> • Develop an understanding of the nature of science and its implications for science teaching. 	Written assignments and class discussions (Formative)
<ul style="list-style-type: none"> • Develop, evaluate, and implement lessons that address key tenets of the Nature of Science research base. 	Written lessons based on state standards and supportive texts (Summative)
<ul style="list-style-type: none"> • Plan, evaluate, and implement engineering design-based lessons that meet state and national standards 	Written lesson plans and performance during field placement (Formative)
<ul style="list-style-type: none"> • Become committed to (and demonstrate competency in) using modeling-based and inquiry teaching methods. 	Peer teaching and field placement (Formative) and written evaluation of resources (Summative)
<ul style="list-style-type: none"> • Review standards documents for determining current and future directions in middle school science and use appropriate national and state standards to develop science lessons. 	Lesson plan development and other written assignments (Formative)
<ul style="list-style-type: none"> • Develop a plan for setting up and maintaining a science classroom and laboratory 	Written assignment (Summative)
<ul style="list-style-type: none"> • Plan and implement local science field trips 	Plan and conduct a trip for peers (Formative)
<ul style="list-style-type: none"> • Identify the benefits of informal science education (such as field trips and other out-of-school experiences) 	Written assignment (Summative)

<ul style="list-style-type: none"> • Demonstrate a commitment to meeting individual needs of students. 	Field experiences (Formative)
<ul style="list-style-type: none"> • Plan science instruction that relates to students' everyday lives 	Lesson plans and field experiences (Formative)
<ul style="list-style-type: none"> • Become committed to teaching science in a constructivist classroom. 	Written reflections (Formative)

Course Delivery

This proposed course is designed as a face-to-face course with a field placement.

Unbridled Learning Initiatives

This course will provide students an opportunity to advance their knowledge and mastery of the “tools” associated with Kentucky education reform, including the Kentucky Core Academic Standards (as they become available), assessment literacy – assessment *for* learning, Characteristics of Highly Effective Teaching and Learning, College and Career Readiness, and the new accountability system as it becomes available. As students carry out projects and complete assignments that involve instructional activities for P-12 students in Kentucky schools, they will address one or more components of the Senate Bill 1 initiatives.

Required Texts

- Krajcik, J.S., Czerniak, C., & Berger, C. (2002). *Teaching Science in Elementary and Middle School Classrooms: A Project-Based Approach, Second Edition*. McGraw-Hill: Boston, MA.
- Bell, R.L. (2007). *Teaching the Nature of Science through Process Skills*. Boston: Allyn & Bacon.

- Additional readings will be posted on Blackboard, available from NSTA, or handed out in class.

- Additionally, you will use national science education reform documents, including Project 2061's *Benchmarks for Science Literacy* (Benchmarks)

<http://www.project2061.org/tools/bencho/bolintro.htm>

National Science Education Standards (NSES)

<http://www.nap.edu/readingroom/books/nses>

Kentucky Combined Curriculum Document (*Kentucky Program of Studies*, and *Kentucky Core Content for Assessment*) for Middle school science. It can be accessed online here:

<http://www.education.ky.gov/kde/instructional+resources/curriculum+documents+and+resources/teaching+tools/combined+curriculum+documents>

Common Core State Standards for English, Language Arts, & Literacy in History/Social Studies, Science, and Technical Subjects. Available here:

http://www.corestandards.org/assets/CCSI_ELA_Standards.pdf

Grades

Grades will be assigned as follows:

90 – 100% = A

80-89% = B

70-79% = C

60 – 69% = D

59% or below = E

Final Exam Information

Final exam date, time, and place will be posted in the schedule of courses.

Mid-term Grade

Mid-term grades will be posted in myUK by the deadline established in the Academic Calendar (<http://www.uky.edu/Registrar/AcademicCalendar.htm>)

Submission of Assignments

Use Blackboard to access course readings and messages, and to submit assignments. Assignments are due at the beginning of class on announced due dates. Any assignments submitted late decrease in value by 20% per day or part of a day.

Attendance

Attendance and effective participation/class contributions are essential. You are expected to be supportive and cooperative as you work collaboratively with other members of your group. If you expect to be tardy or absent from class, you should contact the instructor teaching the class in **advance** via email or phone to discuss the situation. Following professional etiquette, you also should inform at least one member of your group if you are going to be absent or tardy. Absences and tardiness will negatively affect your class participation grade. Two points (1%) are deducted from your final grade for every absence or for every two tardies. All absences and tardies should be explained in writing prior to the absence. Unanticipated absences or tardiness must be explained in writing shortly after the instance. Excused absences are outlined on page 72 of the University of Kentucky Bulletin, <http://www.uky.edu/Registrar/bulletinCurrent/Bulletin.pdf> .

Excused Absences

Students need to notify the professor of absences prior to class when possible. S.R. 5.2.4.2 defines the following as acceptable reasons for excused absences: (a) serious illness, (b) illness or death of family member, (c) University-related trips, (d) major religious holidays, and (e)

other circumstances found to fit “reasonable cause for nonattendance” by the professor.

Students anticipating an absence for a major religious holiday are responsible for notifying the instructor in writing of anticipated absences due to their observance of such holidays no later than the last day in the semester to add a class. Information regarding dates of major religious holidays may be obtained through the religious liaison, Mr. Jake Karnes (859-257-2754).

Students are expected to withdraw from the class if more than 20% of the classes scheduled for the semester are missed (excused or unexcused) per university policy.

Verification of Absences

Students may be asked to verify their absences in order for them to be considered excused. Senate Rule 5.2.4.2 states that faculty have the right to request “appropriate verification” when students claim an excused absence because of illness or death in the family. Appropriate notification of absences due to university-related trips is required prior to the absence.

Excessive Absences

According to the Rules of the University Senate, those students who miss more than 20% of the class FOR ANY REASON may be dropped by the instructor from the class. This is true even if you are sick and have medical excuses. The rationale for this rule is that people who miss more than 20% are not really receiving the content of the course.

From the Rules of the University Senate, Part II, 5.2.4.2 Excused Absences:

If attendance is required or serves as a criterion for a grade in a course, and if a student has excused absences in excess of one-fifth of the class contact hours for that course, a student shall have the right to petition for a “W,” and the faculty member may require the student to petition for a “W” or take an “I” in the course. (US: 2/9/87; RC: 11/20/87)

Participation and Professionalism

The Middle Level Teacher Education Program (MLTE) is a teacher preparation program, and as such expects you to work and to transition into the teaching profession. This entails both mature personal behavior and professional conduct based on the College of Education’s Functional Skills and Dispositions (see Student Handbook at <http://education.uky.edu/AcadServ/content/student-handbook-education-programs>). These include 1) communicating appropriately and effectively, 2) demonstrating constructive attitudes, 3) demonstrating the ability to conceptualize key content, 4) interacting appropriately with diverse groups in educational settings (including colleagues and students), and 5) demonstrating a commitment to professional ethics and behavior.

Students who fail to attend class on a regular basis, participate as expected, and/or conduct themselves professionally or ethically will be required to meet with the instructor to set improvement goals, and may face failure or expulsion based on due process policies set by the College of Education and Teacher Education Preparation program. You are encouraged to

communicate regularly with the instructor so that you are aware of your standing. This may be accomplished via face-face meetings during office hours and via email.

Students with Special Needs

If you have a documented disability that requires academic accommodations, please see me as soon as possible during scheduled office hours. In order to receive accommodations in this course, you must provide me with a Letter of Accommodation from the Disability Resource Center (Room 2, Alumni Gym, 257-2754, email address: jkarnes@email.uky.edu) for coordination of campus disability services available to students with disabilities.

The course will be conducted with openness and respect to all individuals' points of view and experience. The activities and discussions will not tolerate discrimination or prejudice toward any person or group's religion, ethnicity, disability, gender, or sexual orientation.

Ethics Statement

This course and its participants will not tolerate discrimination, violence, or vandalism. STEM Education is an open and affirming department for all people, including those who are subjected to racial profiling, hate crimes, heterosexism, and violence. We insist that appropriate action be taken against those who perpetrate discrimination, violence, or vandalism. The University of Kentucky is an Affirmative Action and Equal Opportunity institution and affirms its dedication to non-discrimination on the basis of race, color, religion, gender, age, sexual orientation, domestic partner status, national origin, or disability in employment, programs, and services. Our commitment to non-discrimination and affirmation action embraces the entire university community including faculty, staff, and students.

All students are expected to conduct themselves in an appropriate and ethical manner during their UK classes and related field placements, as befitting students, future teachers, and ambassadors for the University of Kentucky. Any unethical behavior in class or during your field placements may result in failure for the course and/or expulsion from the MLTE program, determined on a case-by-case basis. Faculty will follow all university due process procedures in cases of academic or ethical misconduct. Please consult Dr. Susan Wood, Director of the MLTE Program if you have questions regarding this requirement.

Academic Integrity:

Per university policy, students shall not plagiarize, cheat, or falsify or misuse academic records. Students are expected to adhere to University policy on cheating and plagiarism in all courses. The minimum penalty for a first offense is a zero on the assignment on which the offense occurred. If the offense is considered severe or the student has other academic offenses on their record, more serious penalties, up to suspension from the university may be imposed.

Plagiarism and cheating are serious breaches of academic conduct. Each student is advised to become familiar with the various forms of academic dishonesty as explained in the Code of

Student Rights and Responsibilities. Complete information can be found at the following website: <http://www.uky.edu/Ombud>. A plea of ignorance is not acceptable as a defense against the charge of academic dishonesty. It is important that you review this information as all ideas borrowed from others need to be properly credited.

Part II of *Student Rights and Responsibilities* (available online <http://www.uky.edu/StudentAffairs/Code/part2.html>) states that all academic work, written or otherwise, submitted by students to their instructors or other academic supervisors, is expected to be the result of their own thought, research, or self-expression. In cases where students feel unsure about the question of plagiarism involving their own work, they are obliged to consult their instructors on the matter before submission.

When students submit work purporting to be their own, but which in any way borrows ideas, organization, wording or anything else from another source without appropriate acknowledgement of the fact, the students are guilty of plagiarism. Plagiarism includes reproducing someone else's work, whether it be a published article, chapter of a book, a paper from a friend or some file, or something similar to this. Plagiarism also includes the practice of employing or allowing another person to alter or revise the work which a student submits as his/her own, whoever that other person may be.

Students may discuss assignments among themselves or with an instructor or tutor, but when the actual work is done, it must be done by the student, and the student alone. When a student's assignment involves research in outside sources of information, the student must carefully acknowledge exactly what, where and how he/she employed them. If the words of someone else are used, the student must put quotation marks around the passage in question and add an appropriate indication of its origin. Making simple changes while leaving the organization, content and phraseology intact is plagiaristic. However, nothing in these Rules shall apply to those ideas which are so generally and freely circulated as to be a part of the public domain (Section 6.3.1).

Please note: Any assignment you turn in may be submitted to an electronic database to check for plagiarism.

Legal Action

Students charged with violations of criminal law will be suspended immediately from the Teacher Education Program and/or field experiences until the case is settled. Students are responsible for reporting such charges to the Program Faculty Chair.

Commitment to Diversity & Equity

The MLTE Program is committed to: making diversity central to policies, decisions, and practices; evaluating progress toward diversity in the program; disseminating results widely; and using these results to strengthen diversity for the Commonwealth.

Equitable access to high quality instruction in Kentucky's schools is directly and indirectly affected by UK's MLTE program's beliefs in and support for social diversity in schools. Moreover, the Commonwealth is directly affected by the ability of its youth to acquire high levels of skill in science that can then be used by them as citizens to enhance their communities and participate in the state's ongoing progress and prosperity in local, regional, national, and global contexts. Therefore, it is essential for our teacher candidates to understand issues related to social diversity and make a commitment to value diversity as they engaged in teaching, research, reflection, learning, and leadership. By valuing diversity, our program is committed to enabling and empowering all people in educational contexts regardless of their race, ethnicity, gender, social class, sexual orientation, domestic partner status, and so forth.

Commitment to Addressing the Achievement Gap

The MLTE Program aligns itself with the positions of the National Science Teachers Association regarding cultural and linguistic diversity in science education. *As stated by the NSTA, "Children from all cultures are to have equitable access to quality science education experiences that enhance success and provide the knowledge and opportunities required for them to become successful participants in our democratic society."* (NSTA, 2011)

National Science Teachers Association. (2011). Multicultural science education. Downloaded from <http://www.nsta.org/about/positions/multicultural.aspx>

Commitment to Technology

The Initial Preparation Certification Program in Middle Level Education is committed to teaching candidates so they use technology as a personal and professional tool. Our program is guided by NCATE standards, EPSB Kentucky Teacher Standards, EPSB Themes, and UK College of Education Technology Standards as they relate to technology. *As stated by the NSTA, "Computers have become an essential classroom tool for the acquisition, analysis, presentation, and communication of data in ways which allow students to become more active participants in research and learning."* (NSTA, 2011)

National Science Teachers Association. (2011). The use of computers in science education. Downloaded from <http://www.nsta.org/about/positions/computers.aspx>

Course Components

Course readings and assessments have been selected and arranged in compliance with policies set forth by *Unbridled Learning*, the Kentucky Teacher Standards, SPA Standards, Kentucky Core Academic Standards, University of Kentucky Teacher Leader Standards, University of Kentucky Functional Skills and Dispositions, University of Kentucky Technology Standards, the Kentucky Education Professional Standards Board (EPSB) themes of Diversity, Assessment, Literacy, and Closing the Achievement Gap, and the National Council for the Accreditation of Teacher Education Standards.

Task	Task Description	Standards Alignment
Weekly Reflections	Students will read chapters in the two texts, and reflect on the applications for science teaching.	KTS 1,2 NCATE/NSTA 1,2,3,4,6
Portfolio #1	Students will work in groups to plan and conduct a field trip to a local science-themed destination.	KTS 8,9,10 NCATE/NSTA 4,5,6,7,9, 10
Portfolio #2	Students will create a safety plan for their future science laboratory and classroom.	KTS 1,2 NCATE/NSTA 9
Science Notebooks	Students will record data from investigations conducted in class. Their notebook will be evaluated for thorough and thoughtful analysis of data.	KTS 1,2 NCATE/NSTA 1,2,3,7,8
Portfolio #3	Students will create two lesson plans and teach the lessons. Reflection and analysis of lessons will be performed.	KTS 1,2,3,4,5,7 NCATE/NSTA 1,2,3,4,5,6,7,8,9
Activity Collection	Students will collect activities related to a particular topic, including activities that involve computer technology, then create a collection for distribution to peers.	KTS 1,2,6 NCATE/NSTA 1,2,3,6
Lesson Study	Students will perform a science lesson for their peers and receive critical feedback from instructor and peers.	KTS 1,2,3,4,7 NCATE/NSTA 1,5,9

Course Grades:

Portfolio entries (3), 20 points each	60
Lesson Study	20
Activity Collection	20
Reading Guides(6)	60
Science Notebook	20
Effective participation/attendance in class	<u>20</u>
	200

THE INSTRUCTOR RESERVES THE RIGHT TO CHANGE ANY PART OF THIS SYLLABUS DURING ANYTIME IN THE SEMESTER. STUDENTS WILL BE ADEQUATELY NOTIFIED WHENEVER CHANGES OCCUR.

Course Schedule and Outline

Class Number and Date	Topics, Agenda, and Readings
Class 1	Candidates in field
Class 2	Candidates in field
Class 3	Candidates in field
Class 4	Project based science. Read and reflect on Krajcik, J.S., Czerniak, C., & Berger, C. (2002).
Class 5	Engineering design based science. Read and reflect on various curriculums. Review of solar energy, heat transfer, and natural energy sources.
Class 6	Nature of Science. Read and reflect on Bell (2007). Review of astronomy. Portfolio #1 due.
Class 7	STEM, Literacy, Social Studies, and Arts interdisciplinary emphasis. Review of ecosystems. Portfolio #2 due.
Class 8	Lesson Study
Class 9	Candidates in field
Class 10	Candidates in field
Class 11	Candidates in field
Class 12	Candidates in field
Class 13	Candidates in field
Class 14	Science field trips. Portfolio #3 due.
Class 15	Make and Take science activities and demonstrations. Setting up a science classroom.
Class 16	Exam review. Activity collection due.

THIS SCHEDULE IS SUBJECT TO CHANGE WITH PRIOR COMMUNICATION TO STUDENTS.