ESSC 347 – Methods for Teaching Secondary Earth Science
Course Syllabus—Fall 06

Instructor Dr. Rutherford
Meeting Times ESSC 347: M and W 12:30p-1:45p Room 241 Strong Hall
Office Hours M and W 11:00a-12:00p; T and R 10a-11a and 12p-1p in Dr. Rutherford's office room 236 Strong Hall
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Electronic Reserves http://reserves.emich.edu – look for material related to the course here (the password is methods)

Course Description

This class will introduce the student to: science content standards, hands-on activities, demos, laboratory organization, projects, assessments, differentiation, writing in science, technology, and homework. The preservice teacher should leave the class feeling prepared to student teach Earth Science.
Course Prerequisites: ESSC 212 and CURR 305

Attendance

Attendance is required. There is a lot of material being covered in this class; therefore it is important that you attend all the lectures. It is expected that you will stay for the entire class. You are responsible for all material covered in the class.

Course Objectives

I would like to feel you have been assessed according to the Standards for Science Teacher Preparation written by the National Science Teachers Association and passed these assessments. All too often you hear new teachers say that their education courses were not valuable. I would also like you to feel this course is worth taking. With that in mind I would like to make sure you leave this class with an overall plan to teach earth science, activities for every unit and knowledge to use them. I would also like us as a class to develop new activities for sharing with each other and our colleagues.
General topics to be addressed in this class are:

- Activities for high school students including
  - → laboratories
  - → projects
  - → demos
- Assessments for high school students including
  - → authentic, formative
  - → rubrics
  - → product
- Differentiation for high school students including
  - → special education
  - → TAG
- Writing in Science
- Technology in Science
- General Skills of Teaching
  - → 5 E instructional model
  - → misconceptions

Grading Scale

A: 92-100%	A-: 90-91%	B+: 87-89%	B: 82-86%	B-: 80-81%	C+: 77-79%
C: 72-76%	C-: 70-71%	D+: 67-69%	D: 62-66%	D-: 60-61%	E: <60%

You will be earning your grade. No grading curves are applied. I am always willing to help you if you are struggling. Feel free to see me in my office or email me. I often answer emails in the evenings just when you may need the help.

NCATE CONCEPTUAL FRAMEWORK

ESSC 347 is one of your Professional Studies courses required for secondary teacher certification. This course supports the National Council for the Accreditation of Teacher Education (NCATE) Conceptual Framework: ***Caring Professional Educators for a Diverse and Democratic Society.***

IMPORTANT NOTE: Two assignments in this course are linked to NCATE assessments: the Inquiry Project and the Secondary Methods Science Lesson Plan. Both assignments must be submitted through Live Text and you must receive a performance level of Acceptable or Target on each assessment to pass this course. Once your Live Text assignment is graded, the score is automatically submitted and permanently recorded in the College of Education's assessment program. There will be no resubmissions or rescoring – what you submit the first time is final. It is vital that you meet with me prior to submitting these assessments to discuss any questions or concerns regarding content and pedagogy. Any student receiving a score of Unacceptable on either assessment will not pass ESSC 347, and a course grade of C- or lower will be submitted at the end of the semester.

Required Material

1. Live Text subscription – This course requires a Live Text subscription. **You must use Live Text for one or more assessments in order to pass this course**. Live Text costs each student $66.75 for a five year subscription (or $81.75 if you add Untied Streaming video capabilities). United Streaming is not mandatory however it is a very powerful resource that you will want to consider purchasing.
2. Content Textbook such as Earth Science by Tarbuck and Lutgens, 11th ed. Prentice Hall or another quality teachers edition high school earth science text no older than 1998
3. Michigan State Board of Education, Michigan Goals and Objectives for Science high school http://www.michigan.gov/mde/0,1607,7-140-42814---,00.html
4. National Research Council (1996) National Science Education Standards (http://www.nap.edu/readingroom/books/nses/ , Washington, D.C.
5. Michigan High School Content Expectations http://www.michigan.gov/science/ http://www.michigan.gov/documents/Earth_HSCE_168206_7.pdf

Tentative Assignments

These assignments are not in order!

1. Read and review at least one article on an Earth Science topic from *The Science Teacher* and describe what you learned from the article and your opinions on the journal as a whole. Include the reference and a copy of the article. No longer than one single-spaced, type-written page, margins 1 inch, 12 point font, Times New Roman. (30 points)
2. Develop a Movie Clip Lesson Plan including a presentation and a reflective essay (100 points)
3. Alter a Cook-book laboratory into an inquiry-based laboratory, include a lesson plan, a presentation and a reflective essay (100 points)
4. Develop a "Rights and Responsibilities" information sheet for the first day of school. Include information about homework, classroom behavior, safety in the classroom, preparedness for learning, bathroom and hall passes. (20 points)
5. Blackboard presentation (10 points)
6. Readings preparation for participation in class, these will be in the form of small quizzes (50 points)
7. General Science Lesson Plan (200 points)
8. Power-point assignment and presentation, this is during our final exam time (100 points)
9. Do I have the skills in each content area? (40 points)
10. Mock interview! (50 points)
11. Willow Run teaching assignment (100) see below

You are expected to hand in all assignments on the scheduled date. If you have an officially verified reason for missing an assignment then you will be allowed to hand it in late. If you know you cannot be present on an assignment due date (for example, work schedule, a regularly scheduled sports event, etc.) you may hand it in early. However, if you are part of a team presenting and you cannot be present and we cannot move the time for your team to present you will forfeit your presentation points.

Willow Run

Dates for working with Willow Run middle school students:
There are only 2 consecutive dates per person. In other words one group of 3-4 students will cover November 2 and 4, then the next group of 4 students will cover the next two dates, and so on. You will be evaluated by the Sidney Bailey, a former principal from Grand Rapids.

Tuesday at 2:45 pm till 3:45 pm, and on Thursday at 4:15 pm till 5:15 pm.
Be sure you are there at least 15 minutes prior to the time you need to present!! Add in time for preparation and clean-up time.

Presentations

Presentations are very important as practice for a preservice teacher. However, there is often not enough time during class time. If the class is very full then we may have to have one less presentation of those scheduled.

Using a Computer

I expect you to be able to use a computer. As part of the class I expect you to answer emails politely and in a timely manner. I will be using email to send you material and to keep in contact. This includes in the future for job information I may be aware of!

Letter of Reference

If you would like me to provide you with a letter of reference then I must come and see you sometime during your student teaching assignment otherwise I will not write a letter for you. This means you need to make an appointment with me during your student teaching. I like to get to know other science teachers and to see you in action.

Expectations

Work must be NEAT! If the written portion of your work cannot be understood due to sloppiness or poor grammar, then it will be graded as an incorrect answer.

Classroom Conduct

Students are expected to abide by the **Student Conduct Code** and assist in creating an environment that is conducive to learning and protects the rights of all members of the University community. Incivility and disruptive behavior will not be tolerated and may result in a request to leave class and referral to the *Office of Student Judicial Services (SJS)* for discipline. Examples of inappropriate classroom conduct include repeatedly arriving late to class, using a cellular telephone, or talking while others are speaking. You may access **the Code** online at www.emich.edu/sjs.

Academic Integrity

Academic dishonesty, including all forms of cheating and/or plagiarism, will not be tolerated in this class. Penalties for an act of academic dishonesty may range from receiving a failing grade for a particular assignment to receiving a failing grade for the entire course. In addition, you may be referred to the *Office of Student Judicial Services* for discipline that can result in either a suspension or permanent dismissal. The **Student Conduct Code** contains detailed definitions of what constitutes academic dishonesty, but if you are not sure about whether something you're doing would be considered academic dishonesty, consult with the instructor.

Students with Disabilities

If you wish to be accommodated for your disability EMU Board of Regents policy #8.3 requires that you first register with the *Access Services Office (ASO)* in room 203 King Hall. You may contact *ASO* by telephone at (734) 487-2470. Students with disabilities are encouraged to register with *ASO* promptly as you will only be accommodated from the date you register with them forward. **No retroactive accommodations are possible.**

Please note that this syllabus may change according to the needs of the class. There may be changes to the schedule or exam dates so attend class regularly in case of any changes.

Standards for Science Teacher Preparation

Standard 1 Content

1a) Know and understand the major concepts and principles of the teaching discipline(s) as defined by state and national standards of the science education community.
1b) Know and understand major concepts and principles unifying science disciplines. (See National Science Education Standard=s Unifying Concepts@).
1c) Design, conduct and report investigations within a science discipline.
1d) Apply mathematics in problem-solving and scientific investigation.

Standard 2 Nature of Science

2a) Know and understand the philosophical nature of science and the conventions of scientific explanation.
2b) Engage K-12 students effectively in studies of the nature of science and conventions of scientific explanation.

Standard 3 Inquiry

3a) Know and understand scientific inquiry and its relationship to the development of scientific knowledge.
3b) Engage K-12 students effectively in scientific inquiry appropriate for their grade level and abilities.

Standard 4 Context of Science

4a) Know and understand the relationship of science to other human values and endeavors.
4b) Engage K-12 students effectively in the study of the relationship of science to other human values and endeavors.
4c) Relate science to the personal lives needs and interests of K-12 students.

Standard 5 Skills of Teaching

5a) Use diverse and effective actions, strategies and methodologies to teach science.
5b) Interact effectively with K-12 students to promote learning and demonstrate student achievement.
5c) Organize and manage science activities effectively in different student groupings.
5d) Use advanced technology to teach K-12 students science.
5e) Use prior conceptions and K-12 student interests to promote learning.

Standard 6 Curriculum

6a) Develop coherent, meaningful goals, plans, and materials and find resources.
6b) Relate plans and resources to professionally-developed state and national standards, including the National Science Education Standards.
6c) Plan and develop science curriculum addressing the needs, interests and abilities of all preK-12 students.

Standard 7 Social Context

7a) Know and understand the values and needs of the community and their effect on the teaching and learning of science.
7b) Use community human and institutional resources to advance the learning of science in the classroom and field.

Standard 8 Assessment

8a) Align science goals, instruction and outcomes.
8b) Know and use a variety of contemporary science assessment strategies to determine preK-12 student needs and levels of learning and development.
8c) Use assessment appropriately to determine, guide and change science instruction.

Standard 9 Environment for Learning

9a) Create and maintain a psychologically and socially safe and supportive learning environment.
9b) Manage the activities and materials of science safely in storage areas, labs and field.
9c) Keep and use living organisms as in the classroom in a safe, ethical and appropriate manner.

Standard 10 Professional Practice

10a) Know and participate in professional organizations and activities of the science education community beyond the classroom.
10b) Behave ethically and in best interests of preK-12 students and the community.
10c) Engage in reflective practices and make continuous efforts to improve in practice.
10d) Work willingly with peers, supervisors and others in a professional manner.

ESSC 347 Name _____

DO I HAVE THE SKILLS IN EACH CONTENT AREA?

Fill in the table below with assignments that will cover each of the areas in the High School Content Expectations. If your CURR 305 unit topic covered an earth science topic write the title and professors name in the appropriate box. Your animation, movie clip lesson plan, inquiry based laboratory lesson plan. If your curriculum unit topic did not cover an earth science area, use your demonstration.

This page must be handed in during the final exam time for 40 points.

Earth Science Content Expectations	Description of an Assignment that covers the Standard
E2: Earth Systems	
E3: Solid Earth	
E4: Fluid Earth	
E5: The Earth in Time and Space	