

EEB 409 Perspectives on Science and Mathematics

Fall 2014

Date/Time: M,W,F 12.20-1.10	Unique Number: 48000
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Course Objectives and Evidence of Student Learning and Engagement

<i>Students will...</i>	<i>Evidence</i>
describe the historical development of aspects of science and mathematics relevant to future teachers.	<ul style="list-style-type: none"> • Reading confirmation quizzes • Participation in class and weekly section discussions • Mid-term and final exam responses • Research paper
describe several analytic frameworks for understanding the history of science and mathematics.	<ul style="list-style-type: none"> • Reading confirmation quizzes • Participation in class and weekly section discussions • Mid-term and final exam responses
analyze the history and content of evolutionary theory.	<ul style="list-style-type: none"> • Reading confirmation quizzes • Participation in class and weekly section discussions • Written responses to questions high school students are likely to raise about evolution • Mid-term and final exam responses • Research paper
express ideas and opinions clearly and effectively in formal writing.	<ul style="list-style-type: none"> • 5E lesson plans • Various writing assignments
develop skills in searching for, retrieving, and evaluating the provenance and reliability of, source materials, on- and offline, including specific resources available to teachers.	<ul style="list-style-type: none"> • Participation in class and weekly section discussions • Research skills workshop with university librarian • 5E lesson plan citations • Research paper
integrate approaches and material learned in the course with independent research and science or math content to design middle and high school science and math lessons	<ul style="list-style-type: none"> • Three 5E lesson plans designed for middle or high school students that address standards and integrate approaches and material learned in the course with independent research and science or math content. • Teaching 5E lesson plan to peers • Feedback to peers on 5E lessons
reflect on and critique their own work, particularly lesson plans, and that of others.	<ul style="list-style-type: none"> • Two 5E lesson plans designed for middle or high school students that address standards and integrate approaches and material learned in the course with independent research and science or math content. • Teaching 5E lesson plan to peers • Feedback to peers on 5E lessons

Course Description

This upper-division course explores a selection of topics and episodes in the history of science and mathematics. The specific objectives and expectations in the table following this section are part of four broad, interlocking goals:

- to provide you with an overview of the history of science and mathematics;
- to enable you to put these historical perspectives and context to work in pedagogy;
- to promote intellectual curiosity and sharpen your critical thinking skills; and
- to improve your presentation and writing skills.

Expectations

1. Everyone is expected to attend class. You have one free absence without consequences. After that you must provide written medical proof of illness, or another acceptable exemption, otherwise, you will lose .5 percentage points for each absence.
2. Alongside the present syllabus, you should soon have a handout titled "Honor Statement with Incorporation of Plagiarism Policy" which has been prepared by the University of Tennessee. Accordingly, university policies on plagiarism and academic dishonesty will be enforced in this class.
3. In addition to the two textbooks listed below, several additional readings will be required. Those articles, or links to the articles, will be available on our course Blackboard site.
 - a. The Cult of Pythagoras: Math and Myths by Alberto A. Martinez (ISBN 978-0822944188)
 - b. Science Secrets: The Truth about Darwin's Finches, Einstein's Wife, and Other Myths by Alberto A. Martinez (ISBN 978-0822944072)

Assignments

Unit Plan: As a key component of this course, you will design and prepare a unit plan on a content area from your major that you would be expected to teach in a classroom (grades 7-12). The unit plan will consist of several parts:

- 1.) Unit plan overview based on Understanding by Design template
- 2.) A research paper on the historical development of the content of the unit
- 3.) Three 5-E lessons that would be a part of this unit. Two lessons will be written with your partner and each partner will write their own third lesson (this will count as your final exam).

Teach

You and your partner will teach one of your lessons to a group of peers, and participate in critiquing the lessons and teaching of other's lessons.

Midterm and Final Exams

The course includes a midterm exam designed to test the extent to which you have followed, engaged, and learned from the topics discussed in class, as well as from assigned readings. The final exam will be the third lesson plan for your unit.

Reading Assessments

The assigned readings for this course vary in length, and you are encouraged to read thoughtfully in all cases. Lightly skimming the material will not adequately prepare you for the level of critical thinking and engagement you are expected to display in class discussions. Some of the readings are from primary sources (such as writings by prominent scientists), other readings are from secondary texts (such as by historians). You are also required to do additional research and reading to inform your lesson plans. (Keep this in mind when budgeting your time for this course.) Various methods will be used to assess your understanding of the readings.

Assignments/Grading Policy

Activities	Points
Reading Assessments. There will be short quizzes each day for any reading assignments.	25
Research paper	15
First Lesson Plan	10
Midterm Exam	10
Second Lesson Plan	10
Teach	10

Third Lesson Plan (Final Exam)	20
TOTAL	100

Grading Scale

% of Points	Grade	Quality of Work
93-100, 90-92	A, A-	Exemplary: All aspects of the work are complete and well ABOVE the minimum level specified. Well written and free of typographical and grammatical errors. Application of concepts presented in class. Evidence of careful thought and reflection. Reflective application of assignment to future teaching and learning.
87-89, 83-86, 80-82	B+, B, B-	Well done: Two or more of the above elements missing or of lesser quality.
77-79, 73-76, 70-72	C+, C, C-	Acceptable: The task was completed at the minimum level specified. Most aspects of the assignment indicated a focus on task completion as opposed to careful reflection, analysis, and/or application.
67-69, 63-66, 60-62	D+, D, D-	Not acceptable: Several aspects of the assignment are missing or completed at a sub-standard level.
59 or below	F	Failing: Assignment not completed.

Late Work Policy:

Work turned in late without an extension negotiated at least a week in advance will be penalized one full letter grade.

Students with Disabilities:

Please contact the Office of Disability Services (ODS), 974- 6087, or find information at the <http://ods.utk.edu/> for all questions regarding academic or accessibility accommodations requests.

UT Policy on Scholastic Dishonesty:

Students who violate university rules on scholastic dishonesty are subject to disciplinary penalties, including the possibility of failure in the course or dismissal from the University. Since such dishonesty harms the individual, all students, and the integrity of the University, policies on scholastic dishonesty will be strictly enforced.

Timetable Calendar for Fall 2014

Classes Begin	Aug 20
Last Day to Drop without a "W" (full session)	Aug 29
Labor Day (no classes)	Sep 1
Fall Break (no classes)	Oct 16-17
Last Day to Drop with a "W" (full session)	Nov 11
Thanksgiving Holiday (no classes)	Nov 27-28
Classes End	Dec 2
Study Day	Dec 3
Exams	Dec 4, 5, 8-11