Instructor and Class Information

- Instructor: Dr. Brian Beavers, Department of Mathematics and Statistics, Stephen F. Austin State University
- Office: Math Building 310, STEM Building 310
- ZOOM Office: https://sfasu.zoom.us/my/drbeaverssf
- Email: beaversbd@sfasu.edu
- Telephone: 936.468.1433 (Math 310) and 936.587.9798 (Google Voice)
- Office Hours: 10-11am MTWRF, or by appointment

- Instructor: Dr. Josephine Taylor, Department of Biology, Stephen F. Austin State University
- Office: Math Building 103
- Email: jtaylor@sfasu.edu
- Telephone: 936.468.2268
- Office Hours: 3-4:40pm MW, 10:30-11:30am TR, or by appointment

Class Meeting Information

Class Meetings and Location: 3:30-4:45pm TR in Bush Mathematical Sciences Building Room 123. Each class meeting will also be livestreamed and recorded in ZOOM.

ZOOM Meeting Information:

- Link: https://sfasu.zoom.us/j/99793616606?pwd=RU1nUXNldGs2aFNwZ3ZTTWdQaTFoZz09
- Meeting Number: 99793616606
- Passcode: 502434

Course Expectations:

The following is an excerpt from SFA Policy 5.4:

*The federal definition of a credit hour is an amount of work represented in intended learning*
outcomes and verified by evidence of student achievement that is an institutionally established equivalency that reasonably approximates:

1. Not less than one hour of classroom or direct faculty instruction and a minimum of two hours out-of-class student work each week for approximately fifteen weeks for one semester or trimester hour of credit, or 10 to 12 weeks for one quarter hour of credit, or the equivalent amount of work over a different amount of time, or;
2. At least an equivalent amount of work as outlined in item 1 above for other academic activities as established by the institution including laboratory work, internships, practica, studio work, and other academic work leading to the award of credit hours.

To this end, all students in courses offered by Stephen F. Austin State University who wish to be successful should plan to spend a minimum of three hours of work for every credit hour associated with this course.

Expected activities to be completed in the time include reviewing course content, reading assigned course resources, completing all assigned exercises and projects, and performing periodic assessment preparation. Students should check daily for course announcements.

## Required Materials

- There is no required textbook to be purchased. Materials for class will be posted in D2L.
- Functional computer and internet connectivity, preferably high-speed
- ZOOM Video Conferencing (available from sfasu.zoom.us)

## About This Course

**Prerequisites:** JTCH 1102 (Step 2: Inquiry-Based Lesson Design)

**Course Topics:**

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<tr>
<th>Topic 1</th>
<th>Course Orientation</th>
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<tr>
<td>Topic 2</td>
<td>What is Science? What is Mathematics?</td>
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<td>Topic 3</td>
<td>Plato's Philosophy of Mathematics</td>
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<td>Topic 4</td>
<td>Revolutions in Astronomy</td>
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<td>Topic 5</td>
<td>Paradoxes of Division</td>
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<td>Topic 6</td>
<td>Minus Times Minus is What?</td>
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<tr>
<td>Topic 7</td>
<td>Radical Puzzles</td>
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<tr>
<td>Topic 8</td>
<td>Species, Monsters, and Things in Between</td>
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<td>Topic 9</td>
<td>Darwin's Path to Evolution</td>
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<td>Topic 10</td>
<td>Questions and Evidence on Evolution</td>
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<td>Topic 11</td>
<td>Secrets of the Alchemists</td>
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<td>Topic 12</td>
<td>Impossible Chemistry</td>
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<td>Topic 13</td>
<td>Discovery of the Electron</td>
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<td>Topic 14</td>
<td>Infinitely Small</td>
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<td>Topic 15</td>
<td>Prisoners of Probability</td>
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<td>Topic 16</td>
<td>The Age of the Earth</td>
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<td>Topic 17</td>
<td>Non-Euclidean Geometry</td>
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<td>Topic 18</td>
<td>Philosophies of Math: Choose or Sleepwalk?</td>
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</tbody>
</table>

**Course Description:** This upper-division history 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.

As a key component of this course, you will design and prepare two 5E Lesson Plans of 2,000 words each. You will select the subject of these lesson plans from a variety of options. (Detailed instructions will be distributed separately.) Once graded, you will incorporate corrections into your lesson plan and electronically post the revised product for an opportunity to improve your grade. Additionally, you will give a formal presentation of lesson plans to a group of peers, and participate in critiquing presentations of others.

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. And as a final exam, you will have a 30-minute oral exam where you answer some questions about what you have learned over the whole semester.
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.)

Classes are conducted as a mixture of lecture and discussion. Accordingly, attendance and participation are important, as you can see from the grading distributions below. Attendance will be taken daily, and will be used in evaluating your overall grade for class participation. You are encouraged ask questions at any time during lectures, as well as to speak up and offer thoughts, ideas, and opinions during class discussions.

**Course Objectives:**

<table>
<thead>
<tr>
<th>Students will...</th>
<th>Evidence</th>
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<tr>
<td>describe the historical development of aspects of science and mathematics relevant to future teachers.</td>
<td>Reading confirmation quizzes Participation in class and weekly section discussions Mid-term and final exam responses</td>
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<tr>
<td>describe several analytic frameworks for understanding the history of science and mathematics.</td>
<td>Reading confirmation quizzes Participation in class and weekly section discussions Mid-term and final exam responses</td>
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<tr>
<td>analyze the history and content of evolutionary theory.</td>
<td>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 5E lesson plans</td>
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<tr>
<td>express ideas and opinions clearly and effectively in formal writing.</td>
<td>5E lesson plans Various writing assignments</td>
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<td>develop skills in searching for, retrieving, and evaluating the provenance and reliability of, source materials, on- and offline, including specific resources available to teachers.</td>
<td>Participation in class and weekly section discussions Research skills workshop with university librarian 5E lesson plan citations</td>
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</table>
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.

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

reflect on and critique their own work, particularly lesson plans, and that of others. 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

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

3. University policies on plagiarism and academic dishonesty will be enforced in this class. In addition to the policy statement at the end of this syllabus, a helpful website on avoiding plagiarism in history courses is: https://liberalarts.utexas.edu/history/about/academic-integrity.php

4. Readings will be posted in Brightspace, available online (from reliable sources), or handed out in class (if they are from outdated original sources). All readings will be announced on a weekly basis; if for whatever reason you miss a day of class, you are responsible for obtaining the assignment.

Assignments and Grading Policy

Grade Components:

<table>
<thead>
<tr>
<th>Activities</th>
<th>Points</th>
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<tbody>
<tr>
<td>Class Participation and Attendance</td>
<td>10</td>
</tr>
</tbody>
</table>
Reading Confirmation Quizzes 16
First Lesson Plan 16
Midterm Exam 16
Second Lesson Plan 16
Presentation 10
Final Exam 16

TOTAL 100

Grading Scale:

90 to 100 = A
80 to 89 = B
75 to 79 = C
70 to 74 = D
below 70 = F

Late Work Policy:
Assignments must be submitted on the dates due. In general, late work will not be accepted. One half of the assigned points will be deducted for work that is submitted after the due date unless there is a legitimate excuse.

The SFA Way

"...striving for personal excellence in everything that we do."

At Stephen F. Austin State University, our faculty, staff, alumni and students believe in doing things "The SFA Way." We expect the best from ourselves and from each other, and we hold each other accountable when we fail to maintain these standards.

Root Principles

Grounded in the five "Root Principles" below, members of the SFASU community seeks to strive for personal excellence in everything that we do.
The Principle of Respect:

Lumberjacks command respect and treat others with respect • They are considerate of others and tolerant of differences • They demonstrate respect for those around them by avoiding the use of offensive or profane language • They do not threaten or harm anyone and deal peacefully and civilly with conflict.

The Principle of Caring:

Lumberjacks think of the needs of others and seek to improve the quality of life of those around them • They are compassionate, empathic and kind • They respond with humility to those they have helped and express gratitude freely to those who help them • Lumberjacks prepare themselves to become leaders in their communities and workplaces • They dedicate themselves to excellence in their chosen field of study and to using what they learn in the service of others.

The Principle of Responsibility:

Lumberjacks do what is right • They persevere in times of adversity • Through self-control and self-discipline, they strive to do their best • Lumberjacks challenge each other to exceed expectations • They are active learners both inside and outside of the classroom • They are reliable; they do what they say they will do • Lumberjacks hold themselves accountable for their decisions •

The Principle of Unity:

Lumberjacks are loyal to their friends, family, university, state and country • Lumberjacks stand together against any adversary • They recognize that though we are very different from one another, we are united by the Lumberjack Spirit. Lumberjacks seek to understand the people and world around them • When one lumberjack fails, all fail • When one lumberjack succeeds, all succeed.

The Principle of Integrity:

Lumberjacks have the courage to do what is right, even when it is hard or unpopular • They respond to each situation with steadfast values that are not subject to change based on the actions of others • They seek opportunities to practice effective and ethical leadership • Lumberjacks are honest; they do not deceive, cheat or steal • Lumberjacks stand up for those who cannot stand up for themselves • As lifelong learners, lumberjacks are committed to continuously improving themselves.
Abiding by university policy on academic integrity is a responsibility of all university faculty and students. Faculty members must promote the components of academic integrity in their instruction, and course syllabi are required to provide information about penalties for cheating and plagiarism as well as the appeal process.

Definition of Academic Dishonesty
Academic dishonesty includes both cheating and plagiarism. Cheating includes, but is not limited to (1) using or attempting to use unauthorized materials to aid in achieving a better grade on a component of a class; (2) falsification or invention of any information, including citations, on an assignment; and/or, (3) helping or attempting to help another in an act of cheating or plagiarism. Plagiarism is presenting the words or ideas of another person as if they were your own. Examples of plagiarism include, but are not limited to: (1) submitting an assignment as if it were one's own work when, in fact, it is at least partly the work of another; (2) submitting a work that has been purchased or otherwise obtained from the Internet or another source; and, (3) incorporating the words or ideas of an author into one's paper or presentation without giving the author due credit. Please read the complete policy at http://www.sfasu.edu/policies/academic_integrity.asp.

Withheld Grades (Semester Grades Policy A-54)

Ordinarily, at the discretion of the instructor of record and with the approval of the academic chair/director, a grade of WH will be assigned only if the student cannot complete the course work because of unavoidable circumstances. Students must complete the work within one calendar year from the end of the semester in which they receive a WH, or the grade automatically becomes an F. If students register for the same course in future terms the WH will automatically become an F and will be counted as a repeated course for the purpose of computing the grade point average.

The circumstances precipitating the request must have occurred after the last day in which a student could withdraw from a course. Students requesting a WH must be passing the course with a minimum projected grade of C.

Students with Disabilities

To obtain disability related accommodations, alternate formats and/or auxiliary aids, students with disabilities must contact the Office of Disability Services (ODS), Human Services Building, and Room 325, 468-3004 / 468-1004 (TDD) as early as possible in the semester. Once verified, ODS will notify the course instructor and outline the accommodation and/or auxiliary aids to be provided. Failure to request services in a timely manner may
delay your accommodations. For additional information, go to http://www.sfasu.edu/disabilityservices/.

Acceptable Student Behavior

Classroom behavior should not interfere with the instructor’s ability to conduct the class or the ability of other students to learn from the instructional program (see the Student Conduct Code, policy D-34.1). Unacceptable or disruptive behavior will not be tolerated. Students who disrupt the learning environment may be asked to leave class and may be subject to judicial, academic or other penalties. This prohibition applies to all instructional forums, including electronic, classroom, labs, discussion groups, field trips, etc. The instructor shall have full discretion over what behavior is appropriate/inappropriate in the classroom. Students who do not attend class regularly or who perform poorly on class projects/exams may be referred to the Early Alert Program. This program provides students with recommendations for resources or other assistance that is available to help SFA students succeed.