

History 329U – COURSE NUMBER(S)  
**Perspectives on Science and Mathematics**  
TIME(S), ROOM(S)  
Discussion sections: TIMES/PLACES

**Prof. Abigail Lustig**

408 Garrison Hall  
Office hours: OFFICE HOURS and by appointment

[ajlustig@mail.utexas.edu](mailto:ajlustig@mail.utexas.edu)

(I do not as a rule check e-mail 6 p.m.–8 a.m. or on weekends)

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This course will explore different ways that investigators since the seventeenth century have explained the workings of the natural world. This course has four interlocking goals: to give you an overview of the history of science and mathematics, for general education and to broaden your comprehension of the subjects you will be teaching; to enable you to put this broader history and context to work in pedagogy; to improve your writing skills to competence or mastery; and to improve your research and information analysis skills to competence or mastery.

There will be a **brief weekly writing assignment** due on Fridays: write one or two paragraphs on a question prompted by the week's lectures, readings, presentations, or discussions. Students will work in pairs to prepare **one 5E lesson plan** during the semester (on a subject to be determined in consultation with me), incorporating some aspect of the history of science or mathematics into a science or mathematics lesson, all or part of which will be presented in class. Immediately after the presentation, the jointly prepared 5E lesson plan will be posted on Blackboard for the entire class to comment on; a revised version will be due one week later. See the Perspectives 5E handout for further details. A **five-page historical paper** (approx. 1700 words) will be due [DATE IN THE THIRD OR FOURTH WEEK]. **One ten-page historical and analytical paper** (approx. 3500 words) on some aspect of the history of science or mathematics (topic again to be determined in consultation) will be due at the end of the semester, with a draft due [DATE THREE WEEKS BEFORE END OF SEMESTER]. See the essay handouts for further details. There will be **two quizzes on the historical material**, one at mid-semester and one on the date of the final, and **one research-skills quiz**, administered in discussion section.

This is an upper-division history course. The assigned readings vary in length, and are all from primary texts (from the seventeenth through the twentieth centuries). You will also be required to do additional research and reading for the two papers and the 5E lesson plan; keep this in mind when budgeting your time for this class. The class will be conducted as a mixture of lecture and discussion; attendance and participation are therefore crucial.

Course texts will be Charles Darwin, *On the Origin of Species* (1st edition); Mary Shelley, *Frankenstein*, both available at the Coop; and a course packet, available at the University Duplicating Service in GSB 2.130.

This is a Substantial Writing Component course; sixty-five percent of the final grade will be based on written expression. The grading breakdown is as follows:

Weekly writing assignments	10%
Class participation	10%
Section participation	5%
Research skills quiz	5%
Quizzes	each 10%
Short paper	10%
Long paper	20%
Lesson plan and presentation	20%

*Work turned in late without an extension negotiated at least a week in advance will be penalized one full letter grade the first day late, and a further letter grade increment for every day late thereafter. University policies on plagiarism and academic dishonesty will be enforced.*

<i>Date</i>	<i>Topic</i>	<i>Readings and Deadlines</i>
Wed. 1/19	<b>Introduction:</b> What is science for? Ways of knowing.	
Fri. 1/21	<b>Introduction:</b> Themes & questions to keep in mind.	
Mon. 1/24	<b>Natural History I:</b> The Renaissance and exploration.	Francis Bacon, "Of Travel".
Wed. 1/26	<b>Natural History II:</b> Ordering and organizing the natural world.	
Fri. 1/28	<b>Field Trip:</b> Herbarium.	
Mon. 1/31	<b>Natural History III:</b> Mapping nature.	Alexander von Humboldt, <i>Personal Narrative of Travels to the Equinoctial Regions of America During the Years 1799– 1804</i> , v. 1, Introduction and ch. 13.
Wed. 2/2	<b>Natural History IV:</b> Darwin, voyaging.	<b>Put library visit in around here?</b>
Fri. 2/4	<b>Natural History V:</b> Darwin, theorizing.	Charles Darwin, <i>On the Origin of Species</i> , ch. 1-4.
Mon. 2/7	<b>Natural History VI:</b> Darwin's implications.	
Wed. 2/9	<b>Analysis I:</b> Galileo and earthly and celestial motions.	Galileo Galilei, choose one: <i>The Starry Messenger</i> ; <i>Dialogue on the Two Chief World Systems</i> ; the Second Day; or <i>Discourse on Two New Sciences</i> , "From the Printer," and the Third Day.
Fri. 2/11	<i>5E Presentations</i>	<b>5-pager due around here— bump first 5Es down a week?</b>
Mon. 2/14	<b>Analysis II:</b> Newton and the unification of motions.	
Wed. 2/16	<b>Analysis III:</b> The Enlightenment – what is knowledge made of? The <i>Encyclopédie</i> .	Jean le Rond d'Alembert, Preliminary Discourse to the <i>Encyclopédie</i> of 1751.
Fri. 2/18	<i>5E Presentations</i>	

Mon. 2/21	<b>Analysis IV:</b> The Enlightenment – what is work made of? Rational production.	Adam Smith, <i>An Inquiry into the Nature and Causes of the Wealth of Nations</i> , ch. 1.
Wed. 2/23	<b>Analysis V:</b> The Enlightenment – counting things and people.	
Fri. 2/25	<i>5E Presentations</i>	
Mon. 2/28	<b>Experiment I:</b> Making new effects – academics and the reliability of knowledge.	
Wed. 3/2	<b>Library information skills workshop.</b>	
Fri. 3/4	<i>5E Presentations</i>	
Mon. 3/7	<b>Experiment II:</b> Making new effects – electricity.	
Wed. 3/9	<b>Experiment III:</b> Making new things – plant & animal breeding.	William Herbert, <i>Amaryllidaceae</i> , pp. 366-380. Darwin, <i>Origin</i> , ch. 1.
Fri. 3/11	<b>Experiment IV:</b> Making new things – organic chemistry.	<b>Deadline for final paper abstract conferences.</b>
Mon. 3/21	<b>Field trip:</b> HRC.	Mary Shelley, <i>Frankenstein</i> .
Wed. 3/23	<b>Experiment V:</b> Reproducibility – print & replication.	
Fri. 3/25	<i>5E Presentations</i>	
Mon. 3/28	<i>Quiz I</i>	
Wed. 3/30	<b>Technoscience I:</b> Global science – The Royal Botanic Gardens, Kew.	
Fri. 4/1	<i>5E Presentations</i>	
Mon. 4/4	<b>Technoscience II:</b> R&D – nylon.	
Wed. 4/6	<b>Technoscience III:</b> Big science – the atomic bomb.	
Fri. 4/8	<i>5E Presentations</i>	

Mon. 4/11	<b>Technoscience IV:</b> Big science – the atomic bomb continued.	J. Robert Oppenheimer, “The Open Mind”.
Wed. 4/13	<b>Technoscience V:</b> Science and commerce – tobacco.	<b>Paper rough drafts due.</b>
Fri. 4/15	<i>5E Presentations</i>	
Mon. 4/18	<b>World-readings I:</b> Seventeenth-century hermeneutics.	
Wed. 4/20	<b>World-readings II:</b> Natural theology.	William Paley, <i>Natural Theology</i> , ch. 1–3. Darwin, <i>Origin</i> , ch. 6 & 14.
Fri. 4/22	<i>5E Presentations</i>	
Mon. 4/25	<b>World-readings III:</b> Natural atheology.	Richard Dawkins, <i>The Selfish Gene</i> , ch 1-2.
Wed. 4/27	<b>World-readings IV:</b> Human nature – improving people, eugenics.	Francis Galton, <i>Hereditary Genius</i> , “Introductory Chapter” and “Classification of Men According to their Natural Gifts”.
Fri. 4/29	<i>5E Presentations</i>	
Mon. 5/2	<b>World-readings V:</b> Human nature – making up people.	
Wed. 5/4	<b>Final lecture/discussion:</b> What is (history of) science for?	
Fri. 5/6	<i>Quiz II</i>	<b>Paper final drafts due. Bump Quiz II down to final date.</b>