Honors 3900

The Physics of Poetry and the Poetry of Physics: The Whys and Hows of Science and Literature

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Texts

- *Feynman*, Ottaviani and Myrick
- *Waterworks*, E. L. Doctorow
- *Frankenstein*, Jason Cobley and Mary Shelley
- *Arcadia*, Tom Stoppard
- *Contact* and *Creation* (movies)
- Selected readings

Course Description

Students will explore the epistemologies and histories of texts in both science and literature through reading various fiction and non-fiction genres. Issues of inquiry will include how science is represented in literature and how the humanities are seen by scientists. How does science use metaphors to explain the unexplainable? How does literature appropriate scientific theory as a subject?

Learning Objectives

Students will leave this class with an increased appreciation of the interplay of science and literature and how they are mutually shaped, used, and viewed. Specifically, students will gain

- a richer understanding of the complex ways a culture is shaped by science and technology, and of the ways scientific knowledge and scientific research practices are shaped by culture.
- A deeper appreciation of how and why literature uses representations of science, and how and why science uses literature to represent and advance itself.
• An improved recognition of the ways that science is viewed by those in the humanities, and how scientists view literature and the humanities.
• Improved written and oral communication skills, with a focus on rhetorical skills and argument.
• Improved critical thinking and reasoning skills, especially with regards to the production and cultural absorption of scientific knowledge and its subsequent portrayal in works of literature.
• Improved research skills.

Assessment

These learning objectives will be assessed continually throughout the course by means of

• Daily journal entries and online discussions by students. 20% of grade.
• Creative acts that reflect the learning objectives, such as writing prose and poems, and making in-class presentations. 30% of grade
• Researching a scientific hypothesis presented in science or science fiction literature. 20% of grade.
• Creating and presenting a final project that illustrates how the students have internalized the objectives of the course and used them to create something new and original. 25% of grade
• A survey of students’ attitudes toward science (similar to the NSF’s 2001 Survey of Public Attitudes Toward and Understanding of Science and Technology). 5% of grade

Assignments

**Daily journal and online discussion:** Students will write one double-spaced typed page per day on a direct prompt related to the next class period’s topic. These responses will be graded based on their engagement with the question asked rather than their “correctness.” The online discussions allow students who are reticent in class to express themselves more confidently in an online environment and to allow all students to show the whole class their thinking about a topic in a concrete way. This
assignment allows students a place to practice their critical writing skills and
to synthesize the epistemological paradigms of science and the arts.

**Researching the science in literature:** This assignment begins where the
previous one ends and asks you to go one step further. In one of the literary
pieces you read (assigned or of your choosing), you will parse out a
scientific hypothesis and put it to the test. You might do an experiment,
interview a scientist on campus, or do some research on the plausibility of
what is presented. What Dr. Griffiths in the English Department calls
“science fact versus science fiction.”

**Science in popular culture:** Chose a piece of popular culture and talk
about how scientists are represented. What is the rhetorical purpose? Why
are mad scientists mad? How come so many science fiction movies adopt
the same themes as cowboy movies? Why is science associated with
humorlessness?

**Final project:** “Where metaphors and science collide”: You will design
this project on your own. It might include an experiment, research, literary
analysis, film, or television. What are the whys and hows? This will also be
presented in a poster session.

**Course Syllabus**

**January 13 & 15: Discovering Your Own Epistemology: How Do You Know What You Know?**

**Tuesday:** Introduction

**Thursday:** Lakoff and Johnson, *Metaphors We Live By* (selected chapters),
a poem about science and a hypothesis about a poem (packet of class
readings).

**January 20 & 22: Poets, Scientists, and Other Dreamers**

**Tuesday:** Holton, *Einstein, History, and Other Passions* (selection)

**Thursday:** Auden “Ode to Terminus”
January 27 & 29: Literature Does Science

Mary Shelley’s *Frankenstein* (graphic novel)

February 3 & 5: Through a Glass Darkly: The Problem of the Mad Scientist

Doctorow, *Waterworks*, Szymborska “The Experiment” and “Discovery”

February 10 & 12: Rhythms of Poetry and the Heavens

*Tuesday:* Johnson, *Miss Leavitt’s Stars* (selection) and Cederberg, “Letters from an Observatory”
*Thursday:* Katherine Coles (theoretical physics and its metaphors)

February 17 & 19: Dreams and Dreamers

*Tuesday:* Lightman, *Einstein’s Dreams* (selections)
*Thursday:* Ottaviani and Myrick, *Feynman* (graphic biography)

February 24 & 26: Workshopping Your Poem and Testing Your Hypothesis

March 3 & 5: A Rose By Any Other Name: How Is An Algebra Problem Like a Poem?

*Tuesday:* beautiful and ugly mathematics
*Thursday:* a descent into chaos

March 10 & 12: Spring Break

March 17 & 19: @CharlesDarwin: Evolution and the Family Breakfast Table

*Tuesday:* Keynes, *Charles Darwin, His Daughter, and the Theory of Evolution* and *Creation* (movie, view outside of class)
*Thursday:* Workshopping the poems

March 24 & 26: Et in Arcadia Ego

Stoppard, *Arcadia*
March 31 & April 2: Health Gone Awry

**Tuesday:** Mukherjee, *Emperor of all Maladies* (selections)
**Thursday:** *The Man Who Mistook His Wife for a Hat* (selections)

April 7 & 9: The Why of X: The Portrayal of Women in Science

*Contact* (movie, view outside of class) and an episode of “The Big Bang Theory” (view in class)

April 14 & 16: Workshopping Your Final Project

April 21 & 23: Live Scientists and Poets: A Panel About Epistemology

**Tuesday:** Panel discussion
**Thursday:** Discussion

April 28: Finals Week Poster Presentation for Final Project

**Tuesday, 9:00 – 10:50 am**

Any student requiring accommodations or services due to a disability must contact Services for Students with Disabilities (SSD) in Room 181 of the Student Services Center (or Room 221 at the Davis Campus). SSD can also arrange to provide course materials (including this syllabus) in alternative formats upon request.