

FYSM 153: \$cience

Intersections of Money and Discovery

Trinity College

Fall 2015

Class Meetings:

MW 1:15-2:30 pm
Clement 210

Instructor:

Prof. Michelle Kovarik
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Office Hours:

Clement 129
M 11-12 noon
W 2:30-3:30 pm
and by appointment

First-Year Mentor:

Katie Tully
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Inside this syllabus:

Required Materials	2
Grading	2
Assignments	2
Classroom Citizenship.....	3
Academic Integrity	3
Resources.....	3
FAQs	4
Important Dates	4
Schedule	5

Course Description & Objectives

Although scientific inquiry strives to be objective, financial and economic concerns inevitably influence human endeavors. This course will address key issues concerning how we pay for science, what science we fund, and who benefits when researchers' results are successfully commercialized. What proportion of our funding dollars should go to basic scientific research versus practical applications and technology development? Should the government receive royalties when publicly funded research leads to commercialization by a successful start-up company? Should pharmaceutical companies price new drugs to make them accessible to those in need despite high initial investment costs? Through readings, case studies, interviews, and hands-on research, we will explore these and other questions in the context of current scientific research and on-going policy debates.

After completing this course, students should be able to

- Articulate a framework for the relationship between curiosity-driven and utility-driven research, and classify specific research projects and funding priorities according to this framework
- Compare and contrast a variety of mechanisms for funding scientific research
- Describe the processes by which intellectual property is developed, protected, and commercialized
- Debate the high costs associated with new pharmaceuticals from the perspectives of multiple stakeholders

Course Format

Typically you will need to complete one or more reading assignments before class. These readings may be accompanied by a short, informal writing assignment at the start of class to ensure that you've prepared thoughtfully for our discussions. In class we will discuss the readings with short breaks for lectures to clarify factual content as needed. Your active participation in class discussions is required for this course format to succeed. We will also do informal writing in class. Other class periods will be dedicated to introducing you to academic resources at Trinity. We will have 3 non-cumulative quizzes throughout the semester over this factual content, and you will complete three longer, formal writing assignments and a presentation. These formal writing assignments will be completed in stages, allowing you to incorporate multiple course topics and to refine your final manuscript over several weeks.

Required Course Materials

- **Text**

Paula E. Stephan, *How Economics Shapes Science*, **2012**, Harvard University Press.

Available as hardcover, paperback, or Kindle

- **Coursepack**

Available for ~\$25 from the chemistry department office (Clement 206)

Moodle & Email

Moodle and e-mail will be used extensively in this course. All students are required to have an active e-mail account. Students will be expected to consult the Moodle site on a daily basis for assignment info, announcements, schedule changes, lecture materials, supplementary course materials and external links.

Formal Writing/Presentation

We will have three formal writing assignments and a final presentation assignment in this course. These four assignments will be weighted equally and will account for 40% of your grade in the course. At least one of the three writing assignments must be revised and resubmitted before the end of the semester; your final grade on the revised assignment will be the average of your first and second submissions. If desired, you may revise and resubmit all three assignments. Failure to revise at least one assignment will result in a penalty of -5% for your final grade. A brief sketch of each assignment is below; detailed instructions will be provided during the semester.

- 1) Comparing crowd-funding to traditional federal funding (~6-8 page paper)**

Identify two proposals with related goals funded through a crowd-funding site and the federal government, then compare and contrast the two proposals' scope and rigor.

- 2) Profiling an authentic research program at Trinity College (~6-8 page paper)**

Interview a research-active faculty member in the natural or social sciences and evaluate their research in terms of one or more of the models of basic and applied research discussed in class.

- 3) Critiquing a source of information on the U.S. patent system (~2 page paper+bibliog.)**

Listen to the SYSK podcast on patents, use an annotated bibliography to fact-check the information presented, then write a brief report evaluating the credibility of the podcast as a source.

- 4) Charting the development of a pharmaceutical (5-10 min presentation)**

Working with a partner, chart the history of an FDA-approved drug from lab to routine prescription.

Informal Writing

Throughout the semester, we will have informal, short (≤ 1 p.) writing assignments both in and out of class. For these assignments, the goals will be to synthesize concepts and examples from class, practice making use of evidence, and generate ideas for formal writing assignments. In general, these assignments will be assessed with an emphasis on content rather than structure or grammar. No late work or make-up assignments will be accepted; however, I will drop the lowest of your informal writing assignment grades.

How do you earn your grade?

Assessment	% of Grade
Formal Writing / Presentation	45
Informal Writing	25
Quizzes	20
Participation	10

Grading Scale

	+		-
A	98.00+	93.00+	90.00%+
B	87.00+	83.00+	80.00%+
C	77.00+	73.00+	70.00%+
D	67.00+	63.00+	60.00%+
F	<60.00%		

Quizzes

Your formal writing assignments will require a firm grasp of concepts and facts from the readings, lectures, and discussions. To check for this comprehension, we will have several quizzes over the course of the semester, worth 20% of your grade. Questions will include fill-in-the-blank, short answer questions, and short essays.

Participation

Active participation in class discussion will allow you to refine your ideas about course topics and practice articulating and supporting ideas for your writing assignments. As a result, participation is integral to your success and will be assessed accordingly using the rubric posted on Moodle. If you feel uncomfortable speaking up in class or have other concerns about participation, please arrange to meet with me as soon as possible to discuss ways to be an active member of the class.

Classroom Citizenship

Please familiarize yourself with the College's policies on attendance, absences, academic honesty, and classroom behavior as outlined in the Student Handbook. This course will be conducted in strict agreement with these policies.

Academic Integrity

Each student should be familiar with the Trinity College Student Integrity Contract and the section on Intellectual Honesty in the Student Handbook.

References. Any ideas in written assignments that (i) did not spring from your own mind and (ii) are not common knowledge to high school students should be cited at the end of each assignment. Rewrite all ideas in your own words *and* cite them. If you have a question about whether or not your rewording is acceptable, ask me! Use the *ACS Style Guide* to format your references. Plagiarism and academic dishonesty – copying from another student, copying from another source including the internet, failing to cite a reference, etc – will be subject to the strictest penalties.

Collaboration. I encourage you to discuss your writing with classmates and to help one another to edit and revise assignments. That said, I expect each of you to do your own work. If you have any questions about whether or not your collaboration with a classmate complies with my expectations, please talk to me about it *before* turning in an assignment.

Resources

First-Year Mentor

Katie Tully (kathryn.tully@trincoll.edu) is the first-year mentor for our seminar. You should feel free to reach out to her to discuss specific course requirements or assignments as well as any aspect of academic and intellectual life at Trinity.

First-Year Librarian

Jennifer van Sickle/Rob Walsh
Appointments available through the library homepage.
www.trincoll.edu/LITC/Library/

The Writing Center

Main Location: 115 Vernon St.
M-R 1:30-4:30 pm, 6:30-9:30 pm

Raether Library: 24-Hr Area, Level A
Tuesdays, 4-8 pm

Nutt Center Satellite: Room 183
Sundays, 7-10 pm

To schedule an appointment,
call 297-2468 or visit
<http://trincoll.mywconline.com/>

ACS Style Guide

You can refer to this reference for citation formatting online at pubs.acs.org, and copies are available in the main library and the Chemistry library.

Accommodation Requests

If you have a learning, medical or psychological condition that may affect your participation or performance in this class, please talk with me and contact Lori Clapis in Disability Services at 860-297-4025 or at Lori.Clapis@trincoll.edu.

Frequently Asked Questions (FAQs)

What should I do if I have to miss class?

Class attendance is mandatory and will be taken at the beginning of each class, so please be on time and do not miss class if at all possible. If you will be absent, please do the following:

- (1) Notify me as soon as possible, preferably before class and by email.
- (2) Email me any assignments that are due, drop them in CT208, or send them to class with a friend.
- (3) Contact a classmate to get notes and consult Moodle for any handouts that you missed.

What if I miss a quiz or in-class writing assignment?

If you miss a quiz or in-class assignment due to incapacitating illness or injury, you must submit confirmation from a medical professional or the Dean of Faculty. If you will miss a graded assessment for any other College-sanctioned reason (e.g., religious observance), you must discuss your absence with me at least 3 days prior. In these cases, your other quizzes or informal writing assignments will be weighted to replace the one missed or a make-up may be given at the instructor's discretion. Excluding exceptional circumstances (identified by the instructor), in all other cases, missed quizzes and in-class writing assignments will be marked as zeros.

Can I turn an assignment in late? May I have an extension?

Informal writing assignments will not be accepted late for credit, but you may turn them in late for feedback. Formal writing assignments and components of those assignments will be accepted late with a penalty of one letter grade per day. In exceptional circumstances, an extension may be granted. The extension must be requested in writing (by email) at least 24 hours before the deadline and must include evidence of progress on the assignment and a proposed new deadline, which may or may not be accepted.

Can I do extra credit?

There will be no extra credit in this class. Please don't ask! My philosophy is that you should spend your valuable time succeeding at the primary objectives for the course. If you have not completed the assignments designed to help you do this, you should not be spending time on additional work. If you have completed them, your grade should not be in need of a boost.

How can I tell what my current grade is?

Your grades for individual assignments and your overall course grade will always be available in the grade book in Moodle. If you have any questions or would like to discuss your performance in the class at any time, please come by office hours or make an appointment.

Whom should I contact for help with Moodle?

If you are having general technical problems logging on or using Moodle, you should contact the Help Desk at 860-297-2007 or helpdesk@trincoll.edu. If you are having specific problems with a file, link, or other content on our class site, you may want to contact me first so I can make sure it's not a mistake I've made in preparing the content. Our first-year mentor, Katie Tully, will also be a good resource for navigating Trinity's online systems, including Moodle and TCOOnline.

Important Dates

Mandatory Library Tour.....	9/13
Drop/Add Deadline	9/14
Withdraw Deadline	10/2
Proposal Comparison	10/7
Research Profile	11/4
Podcast Critique	11/23
Pharma Presentations	12/9