Science Careers and Workplaces (PubPolicy 6403)
Fall 2026

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Course Description: This course provides a comprehensive understanding of scientific careers and workplaces—valuable whether you work in these environments, study theor both.

Objectives:
To learn about scientific workforces (supply, demand); workplaces (academia, laboratories, industry); doctoral and post-doctoral education and careers; changes in careers and workplaces.

Materials:

All readings are available without purchases.

A. These two books are available for purchase from a range of sources. The selected chapters in the syllabus will distribute to you. Purchase is optional.

-Scott Montgomery. *Minds for the Making: The Role of Science in American Education, 1750-1990***.**
-Leslie Perlow. *Finding Time*.

B. Books appear below with Links to E-books in GT Library. We read only *parts/selections* from these books, as indicated in the syllabus.

-Elizabeth Popp Berman. *Creating the Market University*. Princeton University Press, 2015.
http://web.b.ebscohost.com.prx.library.gatech.edu/ehost/detail/detail?vid=0&sid=ad7d7050-eed0-4838-96daef745f743e48%40sessionmgr101&bdata=JnNpdGU9ZWhvc3QtbGl2ZQ%3d%3d#AN=408428&db=nlebk

-Daniel Greenberg. *Science for Sale*. University of Chicago Press, 2007.
https://ebookcentral-proquest-com.prx.library.gatech.edu/lib/gatech/detail.action?docID=408452

-Joseph Hermanowicz. *Lives in Science: How Institutions Affect Academic Careers*. University of Chicago Press, 2012.
http://web.b.ebscohost.com.prx.library.gatech.edu/ehost/detail/detail?vid=0&sid=96444081-f28d-4b64-aaec8265fb537ed3%40sessionmgr101&bdata=JnNpdGU9ZWhvc3QtbGl2ZQ%3d%3d#AN=318371&db=nlebk

-Steven Shapin, The Scientific Life. University of Chicago Press, 2008.
https://ebookcentral-proquest-com.prx.library.gatech.edu/lib/gatech/detail.action?docID=448586

-Paula Stephan. *How Economics Shapes Science*. Harvard University Press, 2015.
https://ebookcentral-proquest-com.prx.library.gatech.edu/lib/gatech/detail.action?docID=3301036

C. Bruce Tarter. The American Lab. John's Hopkins University Press, 2018.

https://research.ebsco.com/c/i2q7gb/search/details/s6fkoo3iif?db=e000xna

C. Other readings are available in electronic journals, indicated in syllabus – or they appear with a direct link in the syllabus.

Written and oral assignments:

1. This is a seminar/discussion class – that means the class revolves on active participation. **Attendance** is expected. If absence is necessary, please alert with an email message to the instructor.

2. Everyone participates in each session. In order to participate, everyone reads the materials thoroughly prior to the session.

3. Each participant has more primary (as well as the collective, shared) responsibility for two sessions where a session constitutes a given day listed in the syllabus. For these two sessions, the seminar leader(s) organize issues and questions, and guide discussion on the topic. Your aims in leading these sessions are to:

a. organize the central issues on the topic and accompanying readings;
b. raise critical questions on the topic/readings;
c. guide an interesting and informing discussion;
d. identify "take-away" lesions learned on the topic as they bear on our understanding of science careers and/or workplaces.

Following our first session, a form goes to you via email so that you can indicate your ranked-order of preferences for topics of sessions. The topics with seminar leaders are returned to you.

4. Each participant writes two short (7-8 double-spaced) page papers addressing for a given topic* and the set of accompanying readings:

a. central research issues posed on the topic/readings;
b. central methods involved;
c. research controversies and issues of dispute;
d. leading questions for continuing research on the topic.

*Topic is a subject corresponding to a given date/session.

The short papers cover each of the four areas (a.->d.) above. The papers work most successfully when divided into each of these areas (a.->d.) to assure that each area is covered.

NOTES on short papers:

a. Short papers may be on the same topic/readings addressed as seminar leader (3. above).
b. *At least one of the short papers* needs to be on subtopics under Section I and II in the syllabus.

This gives experience with the papers relatively early during the seminar and the opportunity for feed-back. The other of the two short papers may be on any topic from Sections I-IV.

c. Short papers are due: *the day/time for a session on a given topic/set of readings.

5. In addition, each participant write s longer paper (~12 double-spaced pages) for one of the topics of the outline for which you have *not* written a short paper, or on another topic of choice. You may use the format above (4.) or another format. If you use another format *or* chose a topic not in the outline, please discuss with me ahead. Appointments are available on Fridays at 2:00 pm throughout the semester, by arrangement.

Longer paper is due: Monday, Dec 14, 12 noon --send as Attachment to: **mary.fox@gatech.edu**

Evaluation:

Leader of seminar discussion (2)	15% each/30% total
Comments (strengths, areas for improvement) go to leaders following their session.	
Short papers (2)	20% each/40% total
Longer paper (1)	30%

POLICIES:

1, All written assignments represent students/ ideas expressed in their own words. .
Any source used, non-electronic (analog) or on-line (digital), is fully referenced and mandatory in all assignments..

The Georgia Tech Honor Code applies to students' assignments:
https://policylibrary.gatech.edu/student-life/academic-honor-code
Failure to comply is academic misconduct – and treated as such.

2. Except in cases of medical emergency, no late papers are accepted and no incomplete grades are given. Please also see option above to rewrite/resubmit one of the two shorter papers.

3. We abide by the Georgia Tech Faculty-Student Expectations Agreement:
https://catalog.gatech.edu/rules/21/

4. The Georgia Tech Disability Office provides services for disabilities:
https://disabilityservices.gatech.edu/

TOPICAL OUTLINE AND READINGS

Introductory session is: Wed/Aug 26 (no readings are assigned for this introduction)

I. Workforce of Science/Technology

A. Issues of Supply/Demand

-T. Kelly, W. Butz, S. Carroll, D. Adamson, G. Bloom (eds.). *The US Scientific and Technical Workforce*, pp. 3-7, and chapters 2, 4, 13.
Volume is on-line at:
https://www.rand.org/content/dam/rand/pubs/conf_proceedings/2005/CF194.pdf

-Paula Stephan. *How Economics Shapes Science* (E-book)
Shortages: pp. 164-166.
Foreign born: pp. 183-202.

B. Issues of "Exit"

- Maher, M. A., Wofford, A. M., Roksa, J., & Feldon, D. F. (2020). Exploring early exits: Doctoral attrition in the biomedical sciences. *Journal of College Student Retention: Research, Theory & Practice*, *22*(2), 205-226.
Link:to article:
https://journals.sagepub.com/doi/pdf/10.1177/1521025117736871?casa_token=ilpSB-tZWjQAAAAA:Mbzk86DOV8cyxxP6dHF7B7kH8tdjWd7nVlWAIuSmQAgi

Geuna, A., & Shibayama, S. (2015). Moving out of academic research: Why do scientists stop doing research?. In *Global mobility of research scientists* (pp. 271-303). Academic Press.
Link to article:
https://www.researchgate.net/publication/270884953_Moving_Out_of_Academic_Research_Why_Scientists_Stop_Doing_Research#fullTextFileContent

-Zhao, Z., Bu, Y., & Li, J. (2021). Characterizing scientists leaving science before their time: Evidence from mathematics. *Information Processing & Management*, *58*(5), 102661.
Link to article:
https://pdf.sciencedirectassets.com/271647/1-s2.0-S0306457321X00039/1-s2.0-S0306457321001497/main.pdf?X-Amz-Security-Token=IQoJb3JpZ2luX2V

C. Educational Preparation and Training for S/T Workforce

1. Historical Background on Science and American Education

-Scott L. Montgomery. *Minds for the Making: The Role of Science in American Education*, introduction (pp. 1-11), and chapters 2, 5-8, 10. Chapters will be distributed.

2. Contemporary Issues of Education and Training

-P. Stephan, *How Economics Shapes Science* (E-book)
Doctoral education: pp. 152-163.
Graduate students and post-docs: pp. 68-71.

-National Academies of Science. *Graduate STEM Education for the 21st Century*, chapters 1, 3, 6.
On-line:
https://nap.nationalacademies.org/catalog/25038/graduate-stem-education-for-the-21st-century

II. Sectors of Science/Technology Workplaces

A. Academia

-Max Weber. "Science as a Vocation." Published as "Wissenschaft als Beruf," Gesammlte Aufsaetze zur Wissenschaftslehre (Tubingen, 1922), pp. 524-55. Originally a speech at Munich University, 1918, published in 1919 by Duncker & Humblodt, Munich. On-line at:
https://sociology.sas.upenn.edu/sites/default/files/Weber-Science-as-a-Vocation.pdf

-Robert Birnbaum. *How Colleges Work*, ch. 1, on-line at:
http://web.pdx.edu/~fischerw/courses/advanced/methods_docs/pdf_doc/wbf_collection/0851-0900/0895_HowCollegesWork_01.pdf

-P. Stephan, *How Economics Shapes Science* (E-book)
Academic market: pp. 170-182.
Academic salaries: pp. 35-44.

-Joseph Hermanowicz. *Lives in Science: How Institutions Affect Academic Careers*, chapters 1-4. (E-book)

B. Research Laboratories

C. Bruce Tarter. The American Lab. Johns Hopkins University Press, 2018.
chapters 1-3, 13-15, 16-17, 20-21, (E=book)

C. Industry

-P. Stephan, *How Economics Shapes Science*, pp. 117-118, 158-163, 217-223. (E-book)

-H. Sauermann and P. Stephan, "Conflicting Logics? A Multidimensional View of Industrial and Academic Science"
On-line at: https://pubsonline.informs.org/doi/pdf/10.1287/orsc.1120.0769

D. Industry-Academia Cross-overs

-P. Stephan, *How Economics Shapes Science*, pp. 44-60. (E-book)

-Elizabeth Popp Berman. *Creating the Market University*, chapters 1 and 4. (E-book)

III. Conduct and Misconduct

- Mary Frank Fox and John M. Braxton. "Misconduct and Social Control in Science." *Journal of Higher Education*, 65(May/June 1994):373-383, on-line at:
https://www.researchgate.net/publication/11699226_Misconduct_and_Social_Control_in_Science_Issues_Problems_Solutions

-"Science Journal Pulls 60 Papers in Peer Review Fraud," *New York Times*, July 10, 2014, on-line at:
http://www.nytimes.com/2014/07/11/science/science-journal-pulls-60-papers-in-peer-review-fraud.html?_r=0

Richardson, R. A., Hong, S. S., Byrne, J. A., Stoeger, T., & Amaral, L. A. N. (2025). The entities enabling scientific fraud at scale are large, resilient, and growing rapidly. *Proceedings of the National Academy of Sciences*, *122*(32), e2420092122.
Link to article:
https://www.pnas.org/doi/pdf/10.1073/pnas.2420092122

IV. Transformations in the S/T Workforce and Workplaces

part 1:

-Steven Shapin, *The Scientific Life*, chapter 8. (E-book)

-Leslie Perlow, *Finding Time*, chapters 9-11. Chapters will be distributed.

part 2:

- Elizabeth Popp Berman, *Creating the Market University*, chs. 6 – 8. (E-book)

part 3:

-Daniel Greenberg, *Science for Sale*, part II (pages 181-254). (E-book)

Thanksgiving recess

Followed GT reading day.

Dec. 14: **Third Paper Due: 12 noon (via email)**