

## **Spring 2015**

### **The Persistent Lack of Diversity in the Sciences, ICPR H161**

Professor Jeff Tecosky-Feldman

Professor Beth Willman

[jtecosky@haverford.edu](mailto:jtecosky@haverford.edu)

[bwillman@haverford.edu](mailto:bwillman@haverford.edu)

KINSC Hilles 207E

Strawbridge Observatory

Office hours:

Office hours:

#### Brief Class Description

Despite years of attention, the rate of participation of women and minorities in science, technology, engineering, and mathematics (STEM) is far lower than the overall representation of women and minorities in society at large. Increasing the diversity of participation in STEM fields has been identified as a national priority for the U.S., yet the origin, solution and importance of diversity related issues remain murky and controversial. On top of the broad and complex societal issues at play, research continues to systematically reveal psychological effects, such as unconscious bias and stereotype threat, that stifle efforts to increase diversity in STEM fields.

We will tackle just a narrow range of topics related to: i. What is the problem? ii. Why is change slow to come? and iii. What can be done to instigate change? We will explicitly consider the role of developing awareness, a primary goal of this class, when confronting the third question. This seminar is designed with science students in mind. However, there are no pre-requisites and any student may take this course.

#### Goals

Through reading, discussion, short written assignments, and presentations we will explore the issues outlined above, with the primary goal of developing our awareness of a critical societal and scientific issue - the lack of diversity in science and technology fields, particularly in the physical sciences. We will also develop our abilities to communicate verbally and in writing about issues related to diversity in the sciences.

#### Course Work

Assessment is designed for the fact that much of the learning for this class will take place through keeping up with readings and active participation in discussions (including both respectful listening and respectful contribution).

65% Participation - Keeping up with readings, active listening and contribution to discussions, submission of two discussion questions (or paragraphs, when needed) via Moodle by 8 pm the evening before class meets.

35% Research paper (6-8 pages) plus presentation - Each student will write a paper

on the topic of their choice. This project will include several deadlines through the course: a project proposal plus bibliography, a rough draft, and a 6-8 page paper.

Expectations for Attendance

On-time class attendance is mandatory. A significant amount of the learning in this course will take place during the class session itself. Excused absences must be discussed with Beth or Jeff before the class session, and include reasons such as illness, athletic game, and job interview. For each class missed (for any reason), a 2 page paper on the week’s topic must be submitted within a week of the missed class. After one inexcused missed class, each inexcused missed class will result in a decrease by a full step in the final course grade (for example a 3.7 would be decrease to a 3.3 and a 3.0 would be decreased to a 2.7).

Class Civility

It is likely that class discussions will touch on controversial topics and may include your colleagues holding strong, differing views. One of the most effective ways that we can learn from each other is the frank exchange of ideas, but its also very important for us to respect each others’ viewpoints. We need to remember to not take differing viewpoints personally. Derogatory comments, rudeness, and other forms of incivility will not be tolerated.

<b>Week</b>	<b>Topic</b>	<b>Assignments (in addition to reading)</b>
Week 1 Jan. 20	What is diversity and why does it matter?	
Week 2 Jan. 27	Unconscious bias and privilege	Take implicit bias test (implicit.harvard.edu), Google image search for scientists in popular media.
Week 3 Feb. 3	Stereotype threat	Watch A Class Divided on PBS website
Week 4 Feb. 10	Visitor - Jen Lilgendahl (Haverford) Identity Intersectionality	Project proposal and bibliography
Week 5 Feb. 17	Visitor - topic and readings TBD	

Week	Topic	Assignments (in addition to reading)
Week 6 Feb. 24	What can be done? Theories of intelligence, successful programs, increasing awareness	Paper rough draft
Week 7 March 3	Research presentations	Friday March 6 - Final paper

## Reading List

### **Week 1 (January 20) - What is diversity and why does diversity matter?**

1. Reading from Psychology is Social: Readings and Conversations in Social Psychology, Krupat, 1999, Fourth Edition, *Group Decision Fiascoes Continue: Space Shuttle Challenger and a Revised Groupthink Framework*
2. Read over **Chapter 1 - A Strong Science and Engineering Workforce** from this National Academies report from 2011: Expanding Underrepresented Minority Participation: America's Science and Technology Talent at the Crossroads.
3. NSF Broadening participation statement.
4. NSF page Broadening Participation for Greater Diversity
5. Read over **Chapter 2 - Dimensions of the Problem** from this National Academies report from 2011: *Expanding Underrepresented Minority Participation: America's Science and Technology Talent at the Crossroads*.
6. Read over **Chapter 1 - Women and Girls in STEM**, in the 2010 report by the American Association of University Women - *Why So Few? Women in STEM*.

### **Week 2 (January 27) - Unconscious bias and privilege**

1. Chapter 8 from Pythagoras's Trousers by Margaret Wertheim (book)
2. *Google, Tell Me. Is My Son a Genius?*, NY Times Op-Ed, Jan 18 2014, Seth Stephens-Davidowitz, <http://www.nytimes.com/2014/01/19/opinion/sunday/google-tell-me-is-my-son-a-genius.html>
3. *White Privilege: Packing the Invisible Knapsack*, Peggy McIntosh, 1988, <http://www.nymbp.org/reference/WhitePrivilege.pdf>
4. Bertrand & Mullainathan, 2004, American Economic Review, *Are Emily and Greg more employable than Lakisha and Jamal? A field experiment on labor market discrimination*
5. Goldin & Rouse, 2000, American Economic Review, *Orchestrating Impartiality: The Impact of "Blind" Auditions on Female Musicians*
6. Moss-Racusin, 2012, Proceedings of the National Academy of Sciences, *Science Faculty's Subtle Gender Biases Favor Male Students*

7. Steinpreis, Anders & Ritzke, 1999, Sex Roles, *The Impact of Gender on the Review of the Curricula Vitae of Job Applicants and Tenure Candidates: A National Empirical Study*

### **Week 3 (February 3) Stereotype Threat**

1. Watch *A Class Divided*, a documentary by William Peters, 1985, <http://www.pbs.org/wgbh/pages/frontline/shows/divided/>. Read also brief articles linked at “Introduction”, “One Friday in April, 1968”, “An Unfinished Crusade”, and “Frequently Asked Questions”
2. Chapter from *Whistling Vivaldi*, by Claude Steele
3. Spencer, Steele, and Quinn, 1999, *Journal of Experimental Social Psychology*, *Stereotype Threat and Women’s Math Performance*

### **Week 6 (Feb 24) What can be done?**

1. Chapters 1 and 7 from *Mindset*, by Carol Dweck
2. Aronson, Fried, and Good, 2001, *Journal of Experimental Social Psychology*, *Reducing the Effects of Stereotype Threat on African American College Students by Shaping Theories of Intelligence*
3. “Struggle For Smarts? How Eastern and Western Cultures Tackle Learning.” <http://www.npr.org/blogs/health/2012/11/12/164793058/struggle-for-smarts-how-eastern-and-western-cultures-tackle-learning>
4. Tresman, U., 1992, *The College Mathematics Journal*, *Studying Students Studying Calculus: A Look at the Lives of Minority Mathematics Students in College*
5. Pope, Price and Wolfers. Economics Studies at Brookings working paper, February 2014. *Awareness Reduces Racial Bias*.
6. How One College is Closing the Gender Gap; <http://www.npr.org/blogs/alltechconsidered/2013/05/01/178810710/How-One-College-Is-Closing-The-Tech-Gender-Gap>
7. Miyake et al, 26 November 2010, *Science Magazine*. *Reducing the Gender Achievement Gap in College Science*
8. Meyerhoff program

## **Online Articles Submitted by Students and Faculty During the 2014 Seminar**

1. Intensive Small-Group Tutoring and Counseling Helps Struggling Students. (<http://www.nytimes.com/2014/01/27/education/intensive-tutoring-and-counseling-found-to-help-struggling-teenagers.html?emc=eta1&r=1>)
2. The Power of Workplace Diversity. ([http://www.vault.com/blog/workplace-issues/the-power-and-importance-of-diversity-in-the-workplace&utm\\_source=WCU Letter&utm\\_medium=Newsletter&utm\\_campaign=1 23 2014&referer\\_ID=7778&utm\\_source=WCN012314&utm\\_medium=email&utm\\_campaign=86277](http://www.vault.com/blog/workplace-issues/the-power-and-importance-of-diversity-in-the-workplace&utm_source=WCU+Letter&utm_medium=Newsletter&utm_campaign=1+23+2014&referer_ID=7778&utm_source=WCN012314&utm_medium=email&utm_campaign=86277))
3. Do More Women on the Board Mean Better Results? (<http://www.newyorker.com/currency-tag/do-more-women-on-the-board-mean-better-results>)
4. Differences in Research Funding for Women Scientists a systematic comparison of UK investments in global infectious disease research during 1997–2010. (<http://bmjopen.bmj.com/content/3/12/e003362.full>)
5. A Graduate Program Works to Diversify the Science World (<http://www.npr.org/blogs/codeswitch/2013/12/17/251957062/a-graduate-program-works-to-diversify-the-science-world>)
6. For Underrepresented Minorities, Bridge Programs Ease Transitions to PhD Studies ([http://academicplanning.columbia.edu/files/viceprovost/content/physics\\_today\\_mar\\_2011\\_bridge.pdf](http://academicplanning.columbia.edu/files/viceprovost/content/physics_today_mar_2011_bridge.pdf))
7. Amy Cuddy: Your body language shapes who you are (TED talk - [http://www.ted.com/talks/amy\\_cuddy\\_your\\_body\\_language\\_shapes\\_who\\_you\\_are](http://www.ted.com/talks/amy_cuddy_your_body_language_shapes_who_you_are))
8. Continuing Racial Gaps in AP Testing (<https://www.insidehighered.com/news/2014/02/11/study-shows-growth-ap-program-continuing-racial-gaps>)
9. Women Outnumber Men in UC Berkeley Intro to CS Course (<http://techcrunch.com/2014/02/21/women-outnumber-men-for-the-first-time-in-berkeleys-intro-to-computer-science-course/>)
10. Obama initiative to create opportunities for boys and men of color: <http://i2.cdn.turner.com/cnn/2014/images/02/27/2014youngmen.mem.rel.pdf>
11. A study on the lack of diversity in Google Doodles: <http://www.sparksummit.com/doodleus/>
12. Women Should Embrace the B's in College to Make More Later ([http://www.washingtonpost.com/opinions/catherine-rampell-women-should-embrace-the-bs-in-college-to-make-more-later/2014/03/10/1e15113a-a871-11e3-8d62-419db477a0e6\\_story.html](http://www.washingtonpost.com/opinions/catherine-rampell-women-should-embrace-the-bs-in-college-to-make-more-later/2014/03/10/1e15113a-a871-11e3-8d62-419db477a0e6_story.html))
13. A searchable index of diversity statistics for high schools: <http://ocrdata.ed.gov/DistrictSchoolSearch?ds=1>
14. TED talk about grit and growth mindset: <http://www.pbs.org/wnet/ted-talks-education/speaker/dr-angela-lee-duckworth/>