Lyman Briggs College
Michigan State University

Spring 2015
LB 492 – Gender in the Physical Sciences

Monday & Wednesday 12:40pm – 2:30pm
W25E West Holmes Hall

Instructor

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Office Hours

Office Hours: Wed, 10am-12pm
E-186B Holmes Hall
or by appointment

COURSE DESCRIPTION

It's tough to identify gender bias. In real-life typically the most we can do is identify differences in outcomes – and those differences are stark. Women on average make less money, work jobs with less prestige, and participate in science differently. In this course we are going to examine the complex relationships between gender, race, and science. Our examination will highlight the theories of gender, implicit biases in gender and race, and the social structures of the sciences. The course will ask us to engage with efforts in education to address gender inequities. Students in this course will engage in critical thinking and discussions of primary source work in the sciences, social studies of science, and theories of feminism.

COURSE TEXTS

Schiebinger, L. (1999). *Has Feminism Changed Science?* Harvard University Press, Cambridge, Mass. (Any edition of this is fine)

Traweek, S. (2009). *Beamtimes and Lifetimes*. Harvard University Press. (This book is available in electronic form from the MSU library)

COURSE GOALS

The overarching goal of this course is to reflect on the role of gender in the sciences. More specifically, the primary learning goals of this course are to:

- Sharpen your critical thinking skills by analyzing works published by the media, academics, companies, and individuals.
- Improve your communication skills through oral discussions and presentations, as well as written assignments.
- Develop your understanding of the role of gender and gender bias in the sciences.
- Understanding how theories emerge and are tested by research and application.
- Enhance your group-work skills, developing teamwork and leadership responsibilities.

This course will require students to bring a healthy skepticism to the readings. We will find one author citing another, slightly misrepresenting the findings of the first. We will see contradictory claims, both from independent researchers and among review articles and books. The goal is not to dismiss the claims you initially disagree with, but to find ways of evaluating others' claims, despite a lack of expertise in the subject matter.

TOPICS

The central topics of the course will be developed over 16 weeks. Regular meetings are on Mondays and Wednesdays from 12:40pm to 2:30pm. The topics of the course are presented in three parts:

Part I: Unpacking Gender and Implicit Biases

Week 1 Course Overview; Introduction to terms and frameworks for thinking about gender

Week 2 The current status of the argument about women in the sciences

Week 3 Intersections of race and gender

Week 4 Implicit bias

Week 5 Evidence of Bias in Academia

Unit Paper: Implicit Associations Test & Self-Reflection

Part II: Social structures of the physical and computer sciences

Week 6 Overview of the sciences

Week 7 Social Structures in the Sciences

Week 8 Computer science & Chemistry

Week 9 Physics & Mathematics

Week 10 Nuclear Physics & the NSCL

Unit Paper: Gender Bias in the Sciences

Part III: Reimagining Science

Week 11 Science of Gender

Week 12 Feminist Epistemologies of Science

Week 13 The "Gift" of Mathematics and Science Thinking

Week 14 Stereotype Threat

Week 15 Educational Redesigns in the Sciences

Unit Paper: Reflection on the Future of Gender in the Sciences

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Week 16 Final Project Presentations

Specific readings assignments will be posted on the D2L calendar. This calendar will be updated frequently, but will also be complete and up-to-date 2 weeks ahead of the current date. ***You have significant say in what happens when***.

COURSE REQUIREMENTS AND EVALUATION

The following are brief descriptions of the responsibilities and assignments that will help you meet the goals of this course. Requirements for papers are described in detail on assignment handouts available on D2L. Further details about all assignments will be provided during class. Depending on how the course unfolds, some details may change. I will inform you of any changes in advance of the assignment due dates.

Course Participation

I expect all students to be active participants in every class meeting. There will be reading, thinking ("knowledge worrying"), and writing assignments in preparation for each class meeting. Each week will involve your participation in the discussion board on the D2L website. 20% of your final grade will be based on the quality of your participation both on the discussion board and in class. Course information, documents and the discussion board are available through the D2L website.

Session Leadership

As you are preparing for careers in which you are likely to be instructors, team leaders, and/or project designers, this assignment involves the preparation and leading of discussion/activities for one class session. You will be working with partner(s) to prepare and lead the session. 10% of your grade will be based on this activity.

Unit Papers

For each unit in the course, there will be an essay due (approximately 1,000 words long) that is designed to help you reflect on the articles and essays from the unit and how they connect to your life. There will be times when we share these papers with our peers in class, so please prepare your papers accordingly. The purpose of these papers is not to state your opinion on the matter, but to reflect on the readings from the course and how they relate to your own experiences. More detail on the topics of these papers will be provided within each unit. The papers will be uploaded to the Dropbox on D2L. Each of these three papers will make up 15% of your grade.

Empirical Project: Interview with 2 Past, Current, or Future Sciences Professionals

The final project for this course will involve interviewing 2 people who work or plan to work in the sciences. Interviewees can be:

- Professionals (e.g. professional scientists, technicians)
- Office/Lab workers (who may or may not have official STEM training or actually do STEM work in these contexts – for instance, an administrative assistant at a science lab or office could be included as an interviewee)
- someone who is currently training to be a professional (e.g., a science undergraduate who works in a research environment or graduate student)
- someone who was training to be a STEM professional or did work in a STEM context but left for another career option

At least one of your interviewees must be from an underrepresented group in STEM professions (i.e., a woman, a person of color, a sexual minority, someone from a working class background, etc.).

Develop your interview questions based on themes and analyses in course readings. For instance, pay attention to factors in interviewee's life histories and contemporary situations that have propelled these individuals towards a STEM career, as well as any challenges they have experienced or situations/interactions they have observed related to the ways in which race, class, gender, sexuality, dis/ability, etc. can matter in STEM contexts. Also pay attention to things like the ratio of men to women (and/or white people to people of color) in different types of jobs at their places of employment or in their schooling and what type of flexibility is provided to persons with children or other family obligations (like caring for aging parents). It might also be interesting to ask about what role your interviewees think scientific knowledge should play in personal and public decision-making (e.g., how much authority and weight should scientific knowledge have and why).

You do not need to turn in actual interview transcripts. You are only required to have these conversations, listen, and learn. These conversations give you a chance to APPLY THE COURSE MATERIAL. Use the course material to make some sense of what you're hearing from these interviewees. Are their experiences typical or atypical? Are their expectations realistic or idealistic? What would the various authors we have read say is going on in response to the data you have collected? Do their experiences and observations fit specific demographic, economic, and historical trends? Be sure to say whom you interviewed – not by name but by their position within STEM fields and other demographic information.

To communicate your work with this final project, you will produce a written paper that synthesizes your interview project and reading assignments. You will also create a presentation for the class. More details on the project will be provided in a handout on D2L. The project, which is comprised of several stages throughout the semester, is 25% of your grade.

COURSE POLICIES

Grade Scale
LB492 is graded on a straight scale (no curve!). This means that EVERY student can (and is encouraged to) earn a 4.0 grade for the course.

90 or above - 4.0
85 to 90 - 3.5
80 to 85 - 3.0
75 to 80 - 2.5
70 to 75 - 2.0
65 to 70 - 1.5
60 to 65 - 1.0
59 or below - 0.0

Academic Honesty
Unless otherwise instructed, all assignments must be completed individually; they must be your own work. Forming study groups and seeking of help from peers is strongly encouraged, but you must complete your own assignments.

Students with Disabilities
Any student with a disability should contact the MSU Resource Center for Persons with Disabilities, as well as the instructor, to ensure that accommodations can be made

Expectations for written work
All written work should be typed in Microsoft Word. Specific page length and formatting requirements for each assignment will be provided in the assignment description handouts. Punctuation, grammar, expression, and proper citation of sources are the responsibility of the author and are evaluated as part of the grade on an assignment. You are free to use whatever citation format you prefer.

Late assignments
All assignments must be turned in by the dates and times given. If circumstances make completing the assignment on time impossible, you must notify me at least 24 hours in advance and we will decide an appropriate deadline. No credit will be given for late assignments if prior notice has not been provided. Extra credit work will NOT be accepted.