



UNIVERSITY OF WISCONSIN—MADISON

Gender & Women's Studies 530, Biology and Gender

3 credits

Fall 2018

<https://canvas.wisc.edu/courses/118355>

Lecture: TR 9:30 – 10:45, Room 1313 Sterling Hall

Quick Details:

Instructor: Bruno Agudo, Ph.D. (they/them/their; she/her/hers)

Email: bruno.agudo@wisc.edu

(for short questions or to make appointments)

Office Hours: T/Th. 4-5 pm in 3418 Sterling Hall, or by appointment

Instructional mode: face-to-face course, Traditional Carnegie Definition

Course description:

This interdisciplinary course is not like most other Gender and Women's Studies courses. We will explore how biological principles shape our understanding of sex and gender, as well as how shifting notions of sex and gender shape biological research. To do this, we will cover a wide range of material including but not limited to cellular biology, psychology, the history of science, and biomedical ethics. This includes a critical examination of human and animal research, starting from evolutionary theories of sex and gender, and continuing with an emphasis on the brain and behavior. The course will discuss the historical impact of sexism and gender bias in the sciences, and will identify key scientific and ethical considerations for ongoing research in biology. Students will read some primary scientific literature to understand the value of good methodology and interpretations of science, and to identify important directions for future research on gender and biology that is informed by feminist principles, and rooted in a well-rounded ethical stance.

By the end of this course, students will be able to:

- Understand and critique existing scientific literature on the biology of sex and gender
- Describe how sexism and bias can shape biological research on gender
- Describe how the brain and behavior are central to biological justifications of sexism
- Understand how the social environment shapes the brain and behavior
- Identify critical topics and methodologies for future biological research within a feminist framework

Course Format:

In general, lecture and discussion formats will be combined in every class session. To meet the expectations on this course, the students must complete, prior to class attendance, the recommended readings assigned per week. The bibliography referred will be accessible through the online platform Learn@UW. Additionally, the students will be required to keep an online Notebook, to keep resumes and exercises during the course. The course will be split into three units: Part one examines current

biological theories of sex and gender. Part two explores how preconceptions of sex, gender, and race shaped the history and the philosophy of science. Part three introduces current debates about sex and gender in biomedical science, and looks into future research directions.

Grading:

Grading is based on a total of 1000 possible points from course assignments and exams. Grades are not weighted or rounded. The grading scale (according to UW standards) is:

Grade	Minimum points required	Grade	Minimum points required
A	925 (93%)	BC	775 (78%)
AB	875 (88%)	C	695 (70%)
B	825 (83%)	D	595 (60%)

Graded material includes the following:

- Class participation: 50 points
- Notebook: 300 points
- Exams (3): 150 points each 450 points
- Term paper *Final paper: 150 points
- *Presentation in panel: 50 points

There will be three, non-cumulative exams at the end of each section. Exams will consist of a combination of multiple-choice and essay questions. No makeup exams will be given unless the instructor has been contacted in advance, and an acceptable written excuse is provided by the student. Makeup exams will consist of essay questions. Students who do not take an exam and do not meet the conditions for taking a makeup will receive 0 points for that exam. Exams will cover both readings and lecture material. The exams dates are Oct 04, Nov 13 and Dec 20.

Attendance and Lecture expectations:

Students are expected to attend all lectures, but attendance will not be taken, and there is no need to report an absence to the instructor. It is the responsibility of each student to arrange with a classmate to make up missed class material. Lectures will include some important information that will be on the exams, and that may not be in the readings.

Cellphones and Laptops:

Cell phones may not be used in class. Please be sure to silence your phone before class, so that we have an optimal learning environment for all students. If possible, students are encouraged to take class notes by hand. Science has shown that the most useful notes for studying and learning are taken by hand (see: <https://www.scientificamerican.com/article/a-learning-secret-don-t-take-notes-with-a-laptop/>). However, students may take notes on a laptop if they wish, provided it does not become a distraction. Lecture slides will be posted on Learn@UW after class. Slides will include page numbers to make it easy to link your notes to them later. A note of warning: lecture slides are not detailed and do not include all of the information that would be needed to answer exam questions based on lecture.

Extra points

There are different ways in which you can earn extra points, here below you will find some suggestions. There is a maximum of 60 points that you can earn from all sources of extra credits.

#Extra Credit# **Feminist Biology Symposium**

On Friday, October 5, GWS is hosting the Wisconsin Symposium on Feminist Biology. Here's the link to information and registration (<https://crgw.gws.wisc.edu/wisconsin-symposium-on-feminist-biology/>). If you attend the symposium all day on Friday (9 – 5), and turn in a 1- to 2-page paper (summary and why you liked it) on your favorite talk, you can earn up to 30 points of extra credit. The headliner is Dr. Daphna Joel of Tel Aviv University, one of the major contributors to the field of feminist biology (along with Dr. Ruth Bleier). **Papers are due Thursday, October 11**, in class. [Note that there is a \$20 registration fee for students that covers breakfast, lunch, and coffee breaks]

#Extra Credit# **Create Community: Take Action!**

By taking action on some issue related to this course you might earn up to a maximum of 30 extra credit points. For example, in the case of finding an offensive joke, advertisement, article, picture, etc in a journal, emailing a letter of complaint to the journal (or to one of its prominent advertisers) would make you earn 10 points. For a scientific journal (example, "[Harry Belafonte and the secret of the coconut milk proteome](#)"), emailing a scientist cheering them up to take action would be wonderful, and it will earn you 10 points. In case of organizing a campaign that resulted in dozens of people taking action you would have my sincere congratulations and 30 points of extra credit. Other activities, such organizing a debate group or event where people from different fields and backgrounds could converse about biology and gender and/or racial issues will earn you 20 points. Feel free to be creative, other more artistic formats such as comic, or stand-up comedy, audiovisual, etc, would be fun plus 20 points (there is not need for these productions to be public, although in case of highly motivated students we could organize an exhibition, after the completion of the course).

Course reading:

Fausto-Sterling, Anne. (2012) *Sex/Gender: Biology in a Social World*. New York, NY: Routledge.

The book will be available at *A Room of One's Own* Feminist Bookstore, 307 W. Johnson St. (<http://www.roomofonesown.com>). All other readings will be posted as PDFs on the class website or as links. Students are expected to complete the readings prior to class so that they can participate in discussions and activities.

Notebook Assignments:

Students will keep a digital notebook with a couple of exercises per week, related to the topics addressed in class and in the recommended readings – please see the separate sheet (on Learn@UW) with prompts for each week's notebook entry. Each entry should address the prompt given for that week, and should be written in professional language (no slang, checked for correct grammar and spelling, and using clear and concise language). You might be asked to connect current material to a previous topic, and I encourage you to look at your prior notebooks in preparing new entries. Notebooks are to be completed individually, not collaboratively. You do not need to refer to any sources other than the class reading list, and citations will be included in the word count.

Notebook entries are due on Learn@UW folder every week before Saturday 11:59pm, and will lose points if turned in late. Notebooks received after 48 hours will not be accepted.

Final Papers:

For the final paper, students will be asked to consider a research question related to gender, biology and human health. You will write a paper (6-7 pages, spaced at 1.5 lines, including bibliography, 11 – 12 point standard font, in .doc or .docx format) including the following sections: **1.** Introduction: State the

problem and summarize the scientific literature on the biology underlying this health issue. **2.** How do the biological, psychological and social interact in this health issue? **3.** What is a feminist (non-essentialist) interpretation of the origins and importance of the issue, and **4.** What kind of research would you do to address it? **5.** What are the research design issues that you would have to consider? **6.** What are some ethical issues that you would have to consider? You will be asked to find at least five original scientific sources (both original research and reviews) to craft your paper.

To help you organize and prepare, you will be asked to turn in a **preliminary outline of the paper on Monday, November 20.** You will then receive feedback that will help you to write your **final paper, due date November 29.** During the last week of classes, we will also hold **panel presentations** with groups of students covering similar topics.

Rules, rights and responsibilities

See the Guide's [Rules, Rights and Responsibilities](#)

Complaints

Occasionally, a student may have a complaint about a TA or course instructor. If that happens, you should feel free to discuss the matter directly with the TA or instructor. If the complaint is about the TA and you do not feel comfortable discussing it with them, you should discuss it with the course instructor. Complaints about mistakes in grading should be resolved with the TA and/or instructor in the great majority of cases. If the complaint is about the instructor (other than ordinary grading questions) and you do not feel comfortable discussing it with him or her, make an appointment to speak to the Gender and Women's Studies Chair, Judith Houck. They will attempt to resolve the issue informally and inform you of the Appeals Procedures if no resolution is reached informally.

Accommodations:

McBurney Disability Resource Center syllabus statement: The University of Wisconsin-Madison supports the right of all enrolled students to a full and equal educational opportunity. The Americans with Disabilities Act (ADA), Wisconsin State Statute (36.12), and UW-Madison policy (Faculty Document 1071) require that students with disabilities be reasonably accommodated in instruction and campus life. Reasonable accommodations for students with disabilities is a shared faculty and student responsibility. Students are expected to inform faculty of their need for instructional accommodations by the end of the third week of the semester, or as soon as possible after a disability has been incurred or recognized. The instructor will work either directly with you or in coordination with the McBurney <https://www.scientificamerican.com/article/a-learning-secret-don-t-take-notes-with-a-laptop/> Center to identify and provide reasonable instructional accommodations. Disability information, including instructional accommodations as part of a student's educational record, is confidential and protected under FERPA. Please provide the instructor with a copy of your McBurney document by Wednesday, September 21. Additionally, students with family responsibilities that may interfere with the course schedule should email the instructor by Sept. 21 (*the sooner the better*) to discuss how they may be more successful.

Diversity & Inclusion

Institutional statement on diversity: "Diversity is a source of strength, creativity, and innovation for UW-Madison. We value the contributions of each person and respect the profound ways their identity, culture, background, experience, status, abilities, and opinion enrich the university community. We commit ourselves to the pursuit of excellence in teaching, research, outreach, and diversity as inextricably linked goals.

The University of Wisconsin-Madison fulfills its public mission by creating a welcoming and inclusive community for people from every background – people who as students, faculty, and staff serve Wisconsin and the world.” <https://diversity.wisc.edu/>

Academic integrity

By enrolling in this course, you agree to uphold the highest ethical standards of academic scholarship throughout the semester. Acts of academic misconduct are taken very seriously. Such acts diminish the educational experience for all involved – students who commit the acts, classmates, and instructors. Academic misconduct includes, but is not limited to, cheating on assignments and exams, stealing exams, sabotaging the work of classmates, submitting fraudulent data, plagiarizing the work of classmates or published and/or online sources, acquiring previously written papers and submitting them (altered or unaltered) for course assignments, unauthorized collaboration, and assisting fellow students in acts of misconduct. Students who have knowledge that classmates have engaged in academic misconduct should report this to the instructor.

Your instructor will contact you if she has concerns about academic misconduct. You will have an opportunity to explain your work and address your instructor’s concerns. Following the meeting, if your instructor believes that you engaged in misconduct, she will decide on an action. Following UW protocol, your instructor will inform the Dean of Students’ Office of the outcome of the meeting and proposed sanction. Penalties for substantiated cases of academic misconduct include a zero on the assignment or exam, a lower grade, and failure in the course. Repeated acts of academic misconduct may result in more serious actions such as probation or suspension. For complete information on proper conduct, academic misconduct, and sanctions, please see: <http://www.students.wisc.edu/doso/academic-integrity/>.

It’s easy to avoid plagiarism – identify and cite your sources! For detailed information on how to avoid plagiarism, please see the following: <http://writing.wisc.edu/Handbook/QuotingSources.html>

Need additional help with writing? Visit the Writing Center: 6171 Helen C. White Hall, call for an appointment (608-263-1992), or consult the Center’s resources online at www.wisc.edu/writing/.

General Content Notification

In this course, we will discuss a variety of difficult topics, including descriptions of discrimination and harassment, and various forms of violence. While these topics can be uncomfortable to think about, we cover them because they are an important part of the social and historical context of science, and understanding them will help us to choose better directions in the future. You (the individual student) each know best how to prepare for and engage with this material in a way that works for you. In our classroom, we will be committed to maintaining considerate and respectful discussions with each other, especially around these topics.

CLASS SCHEDULE

PART 1 – What do we mean when we talk about sex and gender?

Week 1. Introduction to biology and gender

Sept 6: Course intro, questions about gender, sex, and biology.

Course syllabus

Week 2. Sex / gender – origins and definitions

Sept 11: Definitions of sex/gender – genes, hormones, and development.

Chapters 1,2, and 3 In: Fausto-Sterling, A. (2012) *Sex/Gender: Biology in a Social World*. New York, NY: Routledge. (pp 1-26)

Sept 13: Sex in the animal world – lots of ways to do it!

Chapter 2: Sex vs. Gender AND Chapter 3: Sex within bodies (pp. 22 - 42).

In: Roughgarden, J. (2004) *Evolution's Rainbow: Diversity, Gender, and Sexuality in Nature and People*. Berkeley, CA: University of California Press. Retrieved from:

<http://site.ebrary.com/lib/wisconsin/detail.action?docID=10755768>.

Week 3. Hormones, brains and the push for dichotomy

Sept 18: Do hormones tell the story of sex and gender?

Fausto-Sterling, A. (2000) Do sex hormones really exist? In: *Sexing the Body: Gender Politics and the Construction of Sexuality*. New York: Basic Books. (pp 170-194)

Sept 20: “Sex differences” in the brain, taken to the extreme:

Fine, C. (2010) Why you should cover your head with a bag if you have a secret you don't want your wife to find out. In: *Delusions of gender: how our minds, society and neurosexism create difference*. London: Icon Books. (pp 14-26)

Baron-Cohen, S. (2002) The extreme male brain theory of autism. *Trends in Cognitive Science* 6(6): 248-254.

Week 4. Gender identity and the quandary of biological essentialism

Sept 25: Brain and behavior in the center of hormonal struggles

Fine, C. (2010) Chapter 9: The “Fetal Fork”. and Chapter 10: In “The darkness of the womb”. In *Delusions of gender: how our minds, society and neurosexism create difference*. London: Icon Books. (pp 100-117)

Van Anders SM, Steiger J, Goldey KL. (2015) Effects of gendered behavior on testosterone in women and men. *PNAS 112(45)*: 13805-13810.

Sept. 27: Hormones, Brains, and gender identity

Chapters 4 and 5 In: Fausto-Sterling, A. (2012) *Sex/Gender: Biology in a Social World*. New York, NY: Routledge. (pp 27-69).

Hampson, S. (2015, July 19). Science in transition: Understanding the biology behind gender identity. The Globe and Mail. Retrieved from: <http://www.theglobeandmail.com/life/science-in-transition-understanding-thebiology-behind-gender-identity/article25553156/>.

***Optional reading:*

Chapter 6: “Thinking About Homosexuality” In: Fausto-Sterling, A. (2012) *Sex/Gender: Biology in a Social World*. New York, NY: Routledge.

Week 5. The future beyond dichotomy (Exam 1)

Oct 2: More complex than the number two: Beyond brain dichotomies

Rippon G, Jordan-Young R, Kaiser A, Fine C. (2014) Recommendations for sex/gender neuroimaging research: key principles and implications for research design, analysis, and interpretation. *Frontiers in Human Neuroscience 8*: 650. doi: 10.3389/fnhum.2014.00650

Oct. 4: Exam 1

Friday, October 7: Wisconsin Symposium on Feminist Biology!

PART 2 – The making of sex and gender in the biological sciences

Week 6. Myths and story-telling in the birth of evolutionary science

Oct. 9: Myth-making in science, and human nature

Fuentes, A. (2012) Myths about human nature are powerful. *Race, Monogamy, and Other Lies They Told You: Busting Myths about Human Nature* Berkeley, CA: University of California Press. (pp 3-26)
Retrieved from: <http://site.ebrary.com/lib/wisconsin/detail.action?docID=10563852>.

Oct. 11: Myths of gender, evolution, and pre-history

Adovasio JM, Soffer O, and Page J. (2007) The stories we have been told. *The Invisible Sex*. HarperCollins e-books. (pp 7-26)

Roughgarden, J. (2004) “The theory of evolution. *Evolution's Rainbow: Diversity, Gender, and Sexuality in Nature and People*. Berkeley, CA: University of California Press. (pp 159-172)
Retrieved from: <http://site.ebrary.com/lib/wisconsin/detail.action?docID=10755768>.

Week 7. The history of evolutionary science: hits, misses, and big trouble

Oct. 16: But what is evolution?

Fuentes, A. (2012) Evolution Is Important – but May Not Be What We Think. In *Race, Monogamy, and Other Lies They Told You: Busting Myths about Human Nature*. Berkeley, CA: University of California Press. (pp. 42-64)

Retrieved from: <http://site.ebrary.com/lib/wisconsin/detail.action?docID=10563852>.

Oct. 18: A legacy of sexism, racism, and colonialism.

Schiebinger, L. L. (1993). Theories of gender and race. *Nature's Body: Gender in the Making of Modern Science*. Boston, MA: Beacon Press. (pp. 143-183)

Gould, S.J. (1981) Measuring Heads (“Women’s Brains”). *The Mismeasure of Man*. New York, NY: W.W. Norton and Company, Inc. (pp 135-141)

Week 8. But isn’t science supposed to be “objective”?

Oct. 23: Gender and science: shifting motives, values, and objectivity.

Keller, E.F. (1985) Introduction. *Reflections on gender and science*. New Haven: Yale University Press. (pp. 3-13)

Longino (1990) Good Science and Bad Science. *Science as Social Knowledge*. Princeton, NJ: Princeton University Press. (pp 3-15)

Oct. 25: Objectivity and gender trouble in science

Keller, E.F. (1985) Gender and Science. *Reflections on gender and science*. New Haven: Yale University Press. (pp 75-94)

Week 9. Coming out of the dark: Feminist views of objectivity, values and science

Oct. 30: “Value-laden” science and objectivity

Douglas, H.E. (2009) Objectivity in Science. *Science, policy, and the value-free ideal*. Pittsburgh, PA: University of Pittsburgh Press. (pp 115-132)

Nov. 1: What are the stakes? Science as social knowledge

Longino (1990) Science and Society. *Science as Social Knowledge*. Princeton, NJ: Princeton University Press. (pp 162-186)

Week 10. The science of gender evolves: The dynamic brain

Nov. 6: Gender, adaptation and performance, and similarities.

Lewis NA, Sekaquaptewa D. (2016) Beyond test performance: A broader view of stereotype threat. *Current Opinion in Psychology 11*: 40-43.

Hyde, J.S. 2005. The gender similarities hypothesis. *American Psychologist 60*: 581-592.

Nov. 8: Experiences shape our brains and bodies

Fine, C., Jordan-Young, R., Kaiser, A., Rippon, G. (2013) Plasticity, plasticity, plasticity... and the rigid problem of sex. *Trends in Cognitive Sciences* 17(11): 550-551.

Chapters 9 and 10 of Fausto-Sterling, A. (2012) *Sex/Gender: Biology in a Social World*. New York, NY: Routledge. (pp 112-123)

PART 3: Sex and gender and the (future) performance of biological sciences

Week 11. Gender, queerness, and the making of science (Exam 2).

Nov. 13: Exam 2

Nov. 15: Who gets to do science?

Barres, B. 2006. Does gender matter? *Nature* 442: 133-136.

Schiebinger, L. L. (1993). Who should do science? In *Nature's Body: Gender in the Making of Modern Science*. Boston, MA: Beacon Press. (pp 184-200)

Week 12. Gender bias, discrimination and performativity in the sciences.

****Preliminary paper-outline. A physical copy of your paper must be delivered by hand on Nov 20****

Nov. 20: Gender-based discrimination and harassment: two recent studies

Clancy KBH., Nelson RG, Rutherford JN, and Hinde K. (2014) Survey of Academic Field Experiences (SAFE): Trainees Report Harassment and Assault. *PLoS ONE* 9(7): e102172. doi:10.1371/journal.pone.0102172

Moss-Racusin CA., Dovidio JF, Brescoll VL, Graham MJ, and Handelsman J. (2012) Science faculty's subtle biases favor male students. *Proceedings of the National Academies of Science* 109(41): 16474-16479.

****Preliminary outline for paper due**

Nov. 22: Gender schemas, academic performance, and solutions

Valian, V. (1998) Schemas that explain behavior. In: *Why so slow? The advancement of women*. Cambridge: MIT Press. (pp 103-123)

Moss-Racusin, C.A., J. van der Toorn, J.F. Dovidio, et al. 2014. Scientific Diversity Interventions. *Science* 343(6171): 615-616.

Week 13. Sex/gender and complexity in biomedical research

**** Final paper due. A physical copy of your paper must be delivered by hand on Nov 29****

Nov. 27: Sex/gender confounds research in multiple ways.

Sorge RE, et al. (2014) Olfactory exposure to males, including men, causes stress and related analgesia in rodents. *Nat Methods*. 11(6):629-32.

Massa LJ, Mayer RE, and Bohon LM (2005) Individual differences in gender role beliefs influence spatial ability test performance. *Learning and Individual Differences* 15(2): 99-111.

Nov. 29: Health and gender: the biopsychosocial view on medicine.

“Sex/gender, race/ethnicity, and health”: pp90-108. In: Institute of Medicine. *Genes, Behavior, and the Social Environment: Moving Beyond the Nature/Nurture Debate*. Washington, DC: The National Academies Press, 2006. doi:10.17226/11693.

Week 14. The future of sex and gender in human biology and medicine

Dec. 4: How should we shape future research involving sex, gender and biology?

Douglas, HE. (2009) The Moral Responsibilities of Scientists. In: *Science, Policy and the Value-Free Ideal* (pp 66-86). Pittsburgh, PA: University of Pittsburgh Press.

Clayton, JA and Collins FS. (2014) NIH to balance sex in cell and animal studies. *Nature* 509: 282-283.

Dec. 6: Different takes on “Sex as a Biological Variable”

Pollitzer, E. 2013. Cell sex matters. *Nature* 500: 23-24.

Ritz, S.A., D.M. Antle, J. Cote, et al. 2014. First steps for integrating sex and gender considerations into basic experimental biomedical research. *The FASEB Journal* 28: 4-13.

Richardson SS, Reiches M, Shattuck-Heidorn H, LaBonte ML, Consoli, T. (2015) Focus on preclinical sex differences will not address women’s and men’s health disparities. *PNAS* 112(44): 13419-13420.

Week 15. Student panels – gender, biology and health

Dec. 11– Dec. 13

Week 16. – Final Exams Week (Exam 3 on Dec. 20, 12:25-2:25)