

Biology/Gender Studies 255 (Bio-255/Gen-255):

The Biology of Gender and Sexuality

Instructor: Mechthild Prinz, Ph.D.

Room: 5.66.20 NB (Office) Tel: (212) 621-3751
Office hours: Tuesday, Wednesday, Thursday 1:30pm-2:30pm

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Lecture: 8th Period Monday/Wednesday (7:05pm – 8:20pm)

Room: 1.90 NB

Course description: This course approaches the issues of gender and sexuality from the perspective of the biological sciences. By exploring the evolutionary origins of sexual reproduction, students will gain new insights into how and why sex and gender differences in animals, including humans, came to be. By gaining a solid grounding in basic sex-specific anatomy, physiology, and endocrinology, students will have a framework to consider several further topics, such as: gender-based medicine and the masculinized state of priorities in the biomedical industry; hermaphroditism, transexualism, and sexual reassignment; and reproductive biology and medicine. Finally, the course will examine sexual orientation and the study of its biological nature and origin, both in humans and in the animal world.

Learning Objectives of Gen-255:

- Students will consider the evolutionary emergence of sexual reproduction, sexual dimorphism, genders, sexual selection, and sex- and gender-based physiology and behavior, and students will analyze and reflect on what this natural history can tell us about our present understanding of human gender and sexuality.
- Students will explore several historical scientific understandings of sex and gender and compare these with more modern biological research into sex and gender differences.
- Students will master basic sex-specific physiology, anatomy, endocrinology, development/ embryology, and will apply this knowledge to the dissection of current issues in gender-based medicine. Students will then use the context of this knowledge as they consider the biology of hermaphroditism, transexualism, gender identity, and sexual reassignment
- Students will learn about important women in science, past and present, and consider the issues of fairness and justice that face women scientists today.
- Students will compare and contrast historical vs. modern scientific understanding and research of sexual orientation and sexual behaviors throughout the animal kingdom and in humans specifically.
- Students will gain further understanding of the scientific method and the real practice and nature of scientific research, especially, but not limited to, the study of gender and sexuality.

Required Texts:

- Roughgarden, Joan. Evolution's Rainbow: Diversity, Gender, and Sexuality in Nature and People. ©2004, University of California Press.
- Judson, Olivia. Dr. Tatiana's Sex Advice to All Creation. ©2002, Metropolitan Books.
- Fausto-Sterling, Anne. Sexing the Body. ©2000, Basic Books.

Statement of the College Policy on Plagiarism:

- Plagiarism is the presentation of someone else's ideas, words, or artistic, scientific, or technical work as one's own creation. Using the ideas or work of another is permissible only when the original author is identified. Paraphrasing and summarizing, as well as direct quotations, require citations to the original source. Plagiarism may be intentional or unintentional. Lack of dishonest intent does not necessarily absolve a student of responsibility for plagiarism.
- It is the student's responsibility to recognize the difference between statements that are common knowledge (which do not require documentations) and restatements of the ideas of others. Paraphrase, summary, and direct quotation are acceptable forms of restatement, as long as the source is cited.
- Students who are unsure how and when to provide documentation are advised to consult with their instructors. The library has free guides designed to help students with problems of documentation.
- This course will use turnitin.com for all written assignments. Plagiarism will result in an automatic "zero" for the assignment, and the instructor reserves the right to report the academic dishonesty to the college disciplinary mechanisms.

Blackboard: Important course announcements, reading assignments, lecture notes, review questions, a discussion forum for Q and A, and other resources will be posted to the course on Blackboard. Please check regularly. Furthermore, **students are responsible** for checking their **John Jay e-mail account** regularly for important announcements. Contact DoIT, **not** your Bio instructor, for help with e-mail or Blackboard.

Grades: The grade for Gen255 is a composite of two in-class exams, worth 20% each; six in-class reading quizzes, worth a combined total of 20%; six summary-reflection papers, worth a combined total of 20%; and a research paper, worth 20%. In addition, the instructor will assign points, from 0-5, for each student based on the quality and quantity of their in-class participation. As bonus points, these are not guaranteed to any student, and purely at the discretion of the instructor. The chart here (→) shows the breakdown of the composition of the course grade.

<i>Midterm Exam</i>	<i>20 points</i>
<i>Final Exam</i>	<i>20 points</i>
<i>Reading Quizzes</i>	<i>20 points (5 x 4pts each)</i>
<i>Reflection Papers</i>	<i>20 points (5 x 4pts each)</i>
<i>Research Paper</i>	<i>20 points total</i>
<i>Participation Bonus</i>	<i>(up to five points)</i>
<i>Total</i>	<i>100 points</i>

93.0 and above	A
90.0 - 92.9	A-
87.0 - 89.9	B+
83.0 - 86.9	B
80.0 - 82.9	B-
77.0 - 79.9	C+
73.0 - 76.9	C
70.0 - 72.9	C-
67.0 - 69.9	D+
63.0 - 66.9	D
60.0 - 62.9	D-
below 60.0	F

Grading Scale: The grading scale here (←) is the official grading scale for this course. There will be no exceptions to this scale and grades will not be rounded, except as explained here: following all computations, the grade will be rounded to the nearest tenth of a point in Microsoft Excel (one decimal place, e.g., 97.2%). This is the final grade and no further manipulations will be made. The scale here (←) will then be strictly used. This means that a 72.949% is a "C-" and a 72.950% is a "C." These calculations are done by the computer so there are no judgment calls or "leniency."

You must check Blackboard and your John Jay E-mail account regularly.

You are responsible for any and all course information, assignments, announcements, and communication that occurs through blackboard and/or your email account.

Important Policies

Course Attendance: You are *required* to attend the lectures. An attendance sheet will be circulated during class. It is your responsibility to sign the sheet *during* class. You will not be permitted to sign the attendance sheet after the class has been dismissed. You will be allowed three absences with no required documentation. However, beginning with the fourth undocumented absence, your final course grade will be penalized by two points (2%) for each undocumented absence. Arrivals later than five minutes after the start of class will count as a one-half absence. A participation grade will also be assigned, as described above.

Exams: There will be two in-class exams: a midterm, and a final. The midterm will cover the first half of the course and occur as scheduled in the syllabus. The final exam will cover the second half of the course and take place during the time allotted by the College-wide final exam schedule. These exams will be a combination of multiple-choice and essay questions covering the assigned readings and the lecture material. The two exams will each form 20 points of the possible 100 points for the course grade.

Reading Quizzes: There will be six (6) in-class multiple-choice quizzes covering specific reading assignments. These quizzes will be announced at least one class period ahead of time. The lowest quiz grade (or any missed during an absence, excused or otherwise) will be dropped and the remaining five quizzes will be combined to form 20 points of the possible 100 points for the course grade.

Reflection Papers: There will be six (6) reflection papers covering specific reading assignments. More detail will be given in class, but the expectation of these papers is two-fold: 1) The paper should spend 300-450 words summarizing in your own words the main points of the assigned reading, and another 100-250 words reflecting on the relevance of these readings to your own life experience. These papers will be graded and checked for plagiarism through turnitin.com – thus digital copies **MUST** be provided by email or Blackboard. The lowest reflection paper grade (or one that is not completed) will be dropped and the remaining five papers will be combined to form 20 points of the possible 100 points for the course grade.

Research Paper: This course requires an original research paper of 1200-1800 words in proper MLA or APA style. This paper shall be a report of recent research findings relevant to a topic covered in this course: gender and/or sexuality, as understood and studied within the biological sciences. The research paper should focus on a specific research report or group of related reports in the area of biological sciences, with the major findings of these reports analyzed against the background of prior work in that specific area. The paper should provide a critical analysis of the study(ies), place the findings in context with previous results, and speculate about future research that could specifically verify, refute, and/or build upon the findings.

The research paper will be turned in and graded in five phases, as shown in the chart below. The instructor must first approve the topic (no points). Then, at each due date, the student will have the opportunity to get feedback from the instructor and subsequently revise their submission to earn a higher grade. The required four sources are those that will serve as key references for the background section of the paper (worth three points). Next, the students will submit an intended outline of the research paper (worth 3 points). Third, the students will turn in 2-3 paragraphs of the introduction/background, and 2-3 paragraphs of the main body of the research paper. Finally, the full research paper is due. The paper and bibliography must conform to MLA or APA style.

Assignment	Due Date	Revision Due	Points
Topic	September 30	October 7	none
> 4 key sources	October 9	October 21	3 points
Outline	October 30	November 11	3 points
Four paragraphs	November 11	November 20	3 points
Final Paper	December 2	Final Exam	11 points
		total	20 points

Course Reading List

Required Texts (student purchase, unless library has e-book):

- Roughgarden, Joan. Evolution's Rainbow: Diversity, Gender, and Sexuality in Nature and People. ©2004, University of California Press.
- Judson, Olivia. Dr. Tatiana's Sex Advice to All Creation. ©2002, Metropolitan Books.
- Fausto-Sterling, Anne. Sexing the Body. ©2000, Basic Books.

Book Chapters (provided on e-reserve, in the order they are used in class):

- Reece and Campbell, Biology, 8th ed. (Pearson Publishers), *ch46.1-2: Animal Reproduction* (pp997-1003).
- Schiebinger, Londa. *The Philosopher's Beard: Women and Gender in Science*. (chapter 8: pp184-210)
Appears in: The Cambridge History of Science, vol4: Eighteenth Century Science. Ed. Roy Porter
- McCabe, Linda. DNA: promise and peril. (Univ. of California Press), *ch6: Gender as a Spectrum, Not a Dichotomy*. (pp93-108)
- Hyde, Janet; DeLamater, John. Understanding Human Sexuality, 11th Ed. (©2011, McGraw-Hill)
Ch5: Sex Hormones, Sexual Differentiation, and the Menstrual Cycle (pp 84-100)
Ch7: Contraception and Abortion. (pp155-189)
- Sherwood, Lauralee. Fundamentals of Human Physiology, 4th ed. (Thompson Books), *ch18: The Reproductive System* (pp545-590)
- Rathus, Spencer A., et al. Human Sexuality in a World of Diversity, 7th Ed. (©2008, Pearson) *ch4: Male Sexual Anatomy and Physiology*. (pp102-129)
- Herrn, Rainer. *On the History of Biological Theories of Homosexuality*. Appears in Sex, cells, and Same-sex desire: The Biology of Sexual Preference. (©1995, The Hawthorn Press)

Articles (provided on e-reserve, in the order they are used in class):

- Meinert, Curtis L. *The Inclusion of Women in Clinical Trials*. (1995) Science. 269:5225.
- Doyal, Lesley. *Sex, Gender, and Health: The Need for a New Approach*. (2001) British Medical Journal. v323:pp1061-1063.
- Bird, Chloe E. and Riekerb, Patricia P. *Gender matters: an integrated model for understanding men's and women's health*. (1999) Social Science & Medicine. v48:6, pp745-755
- Hamilton, Gina. *Innovators and Interpreters: The Historic Role of Women in Science*. (2000) arXiv:physics/0001026v1.
- Kass, Lee B. *Records and Recollections: A New Look at Barbara McClintock...* Genetics. Aug 2003, v164: p1251-1260.
- Weir, Kristen. *Old Problem, Old Solutions*. (2006) The Scientist. v20:11, ps16
- Leboy, Phoebe. *Fixing the Leaky Pipeline*. (2008) The Scientist. v22:1, p67
- Wennerås, Christine and Wold, Agnus. *Nepotism and sexism in peer-review*. (1997) Nature. **387**:341-343.
- Savin-Williams, Ritch C. *Who's Gay? Does It Matter?* (2005) Current Directions in Psychological Science. v15:1, pp40-44
- Bogaert, Anthony F. *Biological versus nonbiological older brothers and men's sexual orientation*. (2006) Proceedings of the National Academy of Science. v103:28, pp10771-74.
- Wickelgren, I. *Discovery of 'gay gene' questioned*. (1999) Science. v284(5414):p571.
- Iemmola, Francesca and Ciani, Andrea Camperio. *New Evidence of Genetic Factors Influencing Sexual Orientation in Men: Female Fecundity Increase in the Maternal Line*. (2009) Archives of Sexual Behavior. v38:3. pp393-399.

Articles for further reading (provided on e-reserve):

- Peplau, Letitia Anne and Garnets, Linda D. *A New Paradigm for Understanding Women's Sexuality and Sexual Orientation*. (2002) Journal of Social Issues. v56:2, pp330 – 350.
- Mustanski, Brian S.; Chivers, Meredith L.; Bailey, J. Michael. *A critical review of recent biological research on human sexual orientation*. (2002) Annual Review of Sex Research. v13, pp89-140.
- Diamond, Lisa M. *What Does Sexual Orientation Orient? A Biobehavioral Model Distinguishing Romantic Love and Sexual Desire*. (2003) Psychological Review. v110:1, pp173-192.

Lecture Schedule (28 class sessions + final exam)

Wed Aug 28 **Evolution of sexual reproduction (genetic recombination)**
Reading: Chapter: *ch46.1-2: Animal Reproduction* in *Biology* (Campbell and Reece)

September 3 - Labor Day; September 4-6 - Rosh Hashanah

Mon Sept 09 **Evolution of sexual dimorphism in the animal world**
Reading: *Evolution's Rainbow* (Roughgarden), ch1: pp13-21: *Sex and Diversity*

Wed Sept 11 **Biological sex: behaviors and roles in animals**
Readings: *Dr. Tatiana's Guide* (Judson), ch1-3: pp1-59
Evolution's Rainbow (Roughgarden) ch2: pp22-41: *Sex vs. Gender*

Mon Sept 16 **Biological sex: behaviors and roles in animals, continued**
Readings: *Dr. Tatiana's Guide* (Judson), ch1-3: pp1-59
Evolution's Rainbow (Roughgarden) ch3: pp30-42: *Sex within Bodies*

Wed Sept 18 **The Age of Enlightenment: early scientific thought regarding the human sexes**
Reading: Chapter by Londa Schiebinger, *The Philosopher's Beard: Women and Gender in...*

Mon Sept 23 **Introduction to Modern Scientific thought regarding human sexes**
Readings: *Sexing the Body* (Fausto-Sterling), chapter 5: p115-145
Article by McCabe, *Gender as a Spectrum, Not a Dichotomy*

Wed Sept 25 **Embryonic development of gender and external reproductive anatomy**
Reading: Chapter: *ch5: Sex Hormones, Differentiation...* in *Understand. Human Sex.* (Hyde)

Mon Sept 30 **Internal human reproductive anatomy**
Readings: Ch46.3 (pp1003-1006): *Animal Reproduction* in *Biology* (Reece)
Ch18 (pp545-551): *The Reproductive System* in *Human Physiology...* (Sherwood)

Topic of research paper due

Wed Oct 02 **Meiosis and Gametogenesis**
Readings: Ch46.4 (pp1007-1009): *Animal Reproduction* in *Biology* (Reece)
Ch18 (pp551-555): *The Reproductive System* in *Human Physiology...* (Sherwood)

Mon Oct 07 **The female menstrual cycle: puberty, menarche, and menopause**
Reading: Ch18 (pp563-575): *The Reproductive System, Human Physiology* (Sherwood)

Wed Oct 09 **The female menstrual cycle: hormones, fertility, contraception**
Reading: Chapter: *ch7: Contraception and Abortion* in *Understanding Human Sexuality* (Hyde...)

Sources of research paper due

October 14 - Columbus Day; class will be held on Tuesday

Tue Oct 15 **Human pregnancy, embryonic development, miscarriage, and abortion**
Reading: (Continued reading from above, *ch7: Contraception and Abortion*)

Wed Oct 16 **Male puberty, fertility, and the biology of testosterone**
Reading: *Human Sexuality in a World of Diversity.* (Rathus, et al) *ch4: Male Sexual Anatomy...*

Mon Oct 21 Catch-up day, review for the midterm exam, students announce paper topics

Wed Oct 23 MIDTERM EXAM!!

Mon Oct 28 **Current scientific research into gender differences: biology and health**
Reading: Article by C. Meinert, *The Inclusion of Women in Clinical Trials*.
Reading: Article by Lesley Doyal, *Sex, Gender, and Health: The Need for a New Approach*.

Wed Oct 30 **Current scientific research into gender differences: biology and health, continued**
Reading: Article by Bird and Rieker: *Gender matters: an integrated model for understanding...*

Outline of research paper due

Mon Nov 4 **Women in science: trailblazers in history**
Reading: Article by Gina Hamilton, *Innovators and Interpreters: The Historic Role...*
Article by Kass, *Records and Recollections: A New Look at Barbara McClintock*

Wed Nov 6 **Women in science: current leaders, persistence of injustice, the glass ceiling**
Reading: Article by Kristen Weir: *Old Problem, Old Solutions*
Article by Wennerås and Wold: *Nepotism and Sexism in Peer-review*.
Article by Phoebe Leboy: *Fixing the Leaky Pipeline*.

Friday, November 8 – Last day to drop courses without academic penalty

Mon Nov 11 **Gonochorism, hermaphroditism, and gender switching in the animal world**
Reading: Dr. Tatiana's Guide (Judson), ch12-13: pp187-225
Evolution's Rainbow (Roughgarden) *ch2: Gender vs. Sex; and ch4: Sex Roles*

Four paragraphs of research paper due

Wed Nov 13 **Intersex: the third gender; the five gender model**
Reading: Sexing the Body (Fausto-Sterling), chapter 1: p1-29

Mon Nov 18 **Gender identity, transgender, and sexual reassignment**
Reading: Sexing the Body (Fausto-Sterling), chapters 2-3: p30-77

Wed Nov 20 **Historical scientific understanding of homosexuality**
Reading: Article by Herrn: *On the History of Biological Theories of Homosexuality*

Mon Nov 25 **Evidence of homosexuality throughout the animal world**
Readings: Evolution's Rainbow (Roughgarden), ch8: pp127-158: *Same Sex Sexuality*
Dr. Tatiana's Guide (Judson), ch11: pp167-186

November 27 - classes follow Friday schedule - Thanksgiving

Mon Dec 2 **Evolution of scientific understanding of sexual orientation**
Reading: Sexing the Body (Fausto-Sterling), chapter 5: p115-145

Research paper due

Wed Dec 4 **Biological/medical research on sexual orientation**
Readings: Article by Ritch Savin-Williams, *Who's Gay? Does It Matter?*
Article by Anthony F. Bogaert. *Biological versus nonbiological older brothers...*

Mon Dec 9 **Biological/medical research on sexual orientation, continued**
Readings: Article by I. Wickelgren, *Discovery of 'gay gene' questioned*.
Article by Iemmola and Ciani, *New Evidence of Genetic Factors Influencing Sexual...*

Wed Dec 11 Catch-up day, review for the final exam, students reflect on their research papers

Mon December 16 FINAL EXAM!!