BISC10a: The Biology of Reproductive Health

Contact Details

Professor
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Communication
Email is the best form of communication with the course instructors. You can expect a 24 hour turn around on all email requests. Please email the course staff only using your Brandeis account.

Continuity
This course is a 10-week, asynchronous course. You are expected to work at your own pace, adhering to all deadlines. If you encounter power/web outages or are planning to be away for an extended time, please email the course professors immediately.

Meeting Times/Locations

Classes
This course will take place completely online using Latte (Brandeis' learning management system) available at *http://latte.brandeis.edu* . The site contains all course materials and mechanisms for discussion, assignment submission and review of grades and feedback.

Accommodations

Brandeis seeks to create a learning environment that is welcoming and inclusive of all students, and I want to support you in your learning. Live auto transcription is available for all meetings or classes hosted on Zoom and you can turn it on or off to support your learning. Please check for Zoom updates to take advantage of this new feature. To learn more, visit the Zoom Live Transcription webpage. For questions, contact help@brandeis.edu

If you think you may require disability accommodations, you will need to work with Student Accessibility Support (SAS) (781-736-3470, access@brandeis.edu). You can find helpful student FAQs and other resources on the SAS website, including guidance on how to know whether you might be eligible for support from SAS. If you already have an accommodation letter from SAS, please provide me with a copy as soon as you can so that I can ensure effective implementation of accommodations for this class. In order to coordinate exam accommodations, ideally you should provide the accommodation letter at least 48 hours before an exam.

Course Description

Course Prerequisite(s):

No prior knowledge of Biology is required.
Supplemental information for each module will be posted on Latte. Please contact the instructors immediately if you feel you need extra background information.

*Many of the resources in this course, and in healthcare at large, still use the term "women" to describe anyone with a uterus. However, we understand that this is not an inclusive term. Our goal is to try to be as inclusive as possible, so please let us know if you have any concerns surrounding this language.

Learning Goals:

After completion of this course students should be able to:

- Articulate some of the complexities and nuances surrounding reproductive health concerns in our society
- Draw and describe the hormonal, reproductive and unique metabolic cycles.
- Draw and define the life cycle, structural characteristics, and genetic components of viruses including HPV and Zika
- Define the inheritance patterns, genetics, and genomics of genes primarily impacting women's health including BRCA.
- Describe some clinical diagnostics used in assessing women's health and articulate the complexities concerning diagnosis, treatment, vaccination and ongoing care recommendations
- Understand basics of STDs and various forms and functions of contraception
- Research and defend a policy recommendation in the area of women's health

Credit Hours:

This course will consist of 10, one-week modules. The class will consist of mini-lectures, readings, forums, hands-on activities/virtual labs, case studies, and discussions. The course is designed to require an average of 16 hours of non-synchronous course-work hours per week. You may work ahead, but to maintain a cohort among the class, you are required to participate in the forum and peer review process at the same time as your peers.

Course Requirements

Assignment Late Policy

While it is understood that as working adults with professional, academic, and personal responsibilities that you may encounter an unexpected interruption requiring you to be temporarily delayed in meeting a deadline as outlined in this syllabus, we ask that you make every attempt to meet all due dates as this course is only ten weeks in duration. Late assignments will not be accepted as they disrupt the progression of the course. Your full, timely participation not only ensures that you reap the full benefits of this experience, but that your peers benefit from your engagement and feedback as well.

Participation, Assignments and Expectations

To facilitate consistency throughout the course, we will adhere to the same weekly set-up for assignment due dates. All assignments are due at 11:59 pm EST. Our course week will start on Monday and end on Sunday.

Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Suggested work	• Watch Week's introductory lecture • Course content	• Course content • Reading • Assignment for final project	• Course content • Complete Reading • Assignment for final project	• Complete Assignment for final project • Course content	• Course content	• Course content	• Complete course content
Assignment Due			• Post to forum	• Final project exercise due	• Respond to forum posts from at least two other students	• Peer review of another student's final project exercise	• Final assignment or case study due • Reading reflections due

Each week, you are expected to:

- Watch weekly introductory course video (~30 minutes, not graded)
- Watch, read and explore the background course content (~3 hours, not graded)
- Complete a lab report or case study based on course content (~4 hours, graded)
- Read 1 or more chapters of the assigned course supplementary text and post weekly reflections (~2 hours, graded)
- Read a paper based on the weekly course content (~1 hour, non-graded)
- Post answers, questions and reflections to the course forum based on the reading (~1 hour, graded)
- Respond to a minimum of 2 forum posts provided by classmates per week (~1 hour, graded)
- Read, research, and complete an exercise relating to your final research project (~5 hours, graded)
- Review another student's final project exercise (~1 hour, graded)

Course Plan

DATE/ Week	Topic	Learning Outcome	Assignment 1. Weekly Lab/Case study/Assignment 2. Reading/Forum post 3. Final Project Assignment
Week 1 June 3-June 9	**Introduction to course and scientific literacy** 1. Digital and informational literacy	• Define criteria to assess the validity of scientific sources • Navigate and access information from GALE Global Issues In Context • List and evaluate at least 4 different types of information sources accessible from the internet • Articulate and defend an opinion on women's rights and gender equality	*Introduction of yourself 1. Digital literacy Project 2. Reading on Coronavirus 3. Read chapters 1-2 of *Birth of the Pill,* post reflections 4. Policy Selection

Week 2 June 10-June 16	**Introduction to Biology** 1. Biomolecules 2. Central Dogma 2. The cell 3. Organelles	• List the types, building blocks and functions of biomacromolecules • Describe the relationship that biomacromolecules have with one another • Summarize the role of the cell as the basic unit of life • Define and describe the organelles within a cell	1. Case Study A: Biomolecule and Central Dogma 2. Reading on Mito DIsease 3. Read chapters 3-5 of *Birth of the Pill*, post reflections 4. Annotated Bibliography
Week 3 June 17-June 23	**Introduction to Human Physiology** 1. Cell communication 2. Hormone feedback loops	• Explain the way cells communicate with each other • Describe and define the parts of the endocrine system • Understand the basics of hormone feedback loops and the importance in the human body	1. Case Study: Barbara's Thyroid 2. Reading 3 3. Read chapters 6-10 of *Birth of the Pill*, post reflections 4. Abstract
Week 4 June 24-June 30	**Female Physiology** 1. Human Body systems 2. Female anatomy 3. Female Physiology and endocrinology	• Explain the purpose of the reproductive system • Draw and identify the structures specific to female anatomy • Describe the hormones unique to females and their purpose • Draw and explain the ovarian cycle and luteal and follicular phases of the female reproductive system	1. Case Study: And Baby Makes Four 2. Reading 3. Read chapters 11-15 of *Birth of the Pill*, post reflections 4. Scientific Context of Policy
Week 5 July 1-July 7	**Genetics and Inheritance** 1. DNA and chromosomes 2. Karyotypes 3. Mechanisms of inheritance	• Describe DNA and chromosomal structures and features • Draw and interpret a Karyotype • Apply the principles of Mendelian inheritance in humans to a disease	1. DeafBlind Case Study 2. Reading on the Discovery of DNA 3. Read chapters 15-18, post reflections 4. Public Opinion of Policy
Week 6 July 8-July 14	**Breast and Ovarian Cancer** 1. DNA and genetic control of disease 2. BRAC-1 gene 3. Diagnosis and treatment 4. Genetic counselling	• Describe the underlying principles behind cancer and cancer development • Define the origin and mutations associated with BRCA-1 and its link to breast/ovarian cancer • Discuss treatment and diagnosis of breast and ovarian cancer • Elucidate the role of a genetic counselor in BRCA testing • Defend an argument concerning the ethics of genetic testing	1. Case Study 2. Ted Talk 3. Read chapters 19-22, post reflections 4. Ongoing research of policy
Week 7 July 15-July 21	**Reproduction** 1. Pregnancy 2. Physiological changes 3. Antenatal testing	• Explain the changes in physiology that occur during pregnancy • Demonstrate the stages of labor and what physiological changes that happen to allow for this • Identify the various tests performed during pregnancy and their importance	1. Case Study: Uretero What 2. Reading 3. Read chapters 23-26, post reflections 4. Policy recommendation
Week 8 July 22- July 28	**Postpartum and Lactation**		1. Breastfeeding Project 2. Reading

	1. Postpartum changes 2. Lactation 3. Postpartum depression	• Describe the hormonal, physiological, and anatomical changes that occur postpartum in lactating moms • Summarize the benefits of breastfeeding • Identify the warning signs of postpartum depression and general treatments	3. Read chapters 27-30, post reflections 4. Aggregate report
Week 9 July 29-August 4	**HPV** 1. Virus Assembly and Structure 2. HPV biology 3. Diagnosis and impact	• Classify various STIs based on their transmission, treatments, managements, and complications. • Compare and contrast various forms of birth control methods • Draw and label the parts of a virus and the virus reproductive cycle • Describe the structure and infection mechanism of HPV • List epidemiological statistics concerning HPV infection • Understand the mechanism of action and efficacy of the HPV vaccine	1. Case study 2. Reading 3. Read chapters 31-33, post reflections
Week 10 August 5-August 9	**STIs and Contraception** 1. STIs 2. Contraception	• Classify various STIs based on their transmission, treatments, managements, and complications. • Compare and contrast various forms of birth control methods This is our last week of class. Please complete you case study by 11:59 pm on August 11.	1. Case study: Bad Blood 2. Reading

Evaluation and Grading

Your grade for the course will be determined by your scores on participation in the course forum, a weekly lab or case study assignment, a weekly written assignment leading toward your final project and a final written project which you must present virtually to your classmates.

Final Letter Grade Cut-offs

A+: 99-100
A: 94-98.9
A-: 90-93.9
B+: 86.6-89.9
B: 83.3-86.5
B-: 80-83.2
C+: 76.6-79.9
C: 73.3-76.5
C-: 70-73.2
D+: 66.6-69.9
D: 63.3-66.5
D-: 60-63.2

E: <60

1. *Weekly lab, assignment or case study:* Your weekly assignments will constitute 40% of your grade.

   Your weekly assignment will consist of completed pre and post lab assignments or case studies due each Monday of the course. Completed, uploaded PDF answers to these assessments will each be equally weighted. You should expect each of these assignments to take you approximately 3-5 hours to complete.

2. *Final Project:* Your final project will be 40% of your grade.

Your final project is broken into several smaller assignments. You will receive feedback from the course instructor and your peers on each of these seven assignments and each will be worth 2% for a total of 14% of your final grade. The feedback you provide to your peers will constitute an additional 6% of your final grade. You will have an opportunity to rework these assignments before incorporating them into your final project.

Your final project will have both a written component and oral presentation component. The oral presentation is worth 10% while the written document is worth 10% of your score.

3. *Book reflection:* Weekly reflections about *The Birth of the Pill* will be worth 10% of your grade.

   Each week, you will be asked to read 1 to 2 chapters of our class non-fiction book. You will be asked to reflect on the week's reading and submit your reflection to Latte.

4. *Forum Posts and Responses*: The forum posts and responses will be worth 10% of your final grade.

   Because part of your grade is based on participation, you are required to watch and participate in all lectures, labs and discussions. Failure to complete labs, case study, paper discussions, etc. on time will result in a loss of credit for that assignment.

Class Element	**Grade Percentage**
Weekly assignment, Lab or Case Study	40%
Final Projects	40%
Forum Posts and Responses	10%
Book Reflection	10%

Important Policies

Academic Integrity

Every member of the University community is expected to maintain the highest standards of academic integrity. A student shall not submit work that is falsified or is not the result of the student's own effort. Infringement of academic integrity by a student subjects that student to serious penalties, which may include failure on the assignment, failure in the course, suspension from the University or other sanctions. Please consult Brandeis University Rights and Responsibilities for all policies and procedures related to academic integrity. Students may be required to submit work via TurnItIn.com or similar software to verify originality. A student who is in doubt regarding standards of academic integrity as they apply to a specific course or assignment should consult the faculty member responsible for that course or assignment before submitting the work. Allegations of alleged academic dishonesty will be forwarded to the Department of Student Rights and Community Standards. Citation and research assistance can be found at Brandeis Library Guides - Citing Sources.

Confidentiality Statement

We can draw on the wealth of examples from our professional and/or teaching experiences during weekly discussions and in our written work. However, it is imperative that we not share information that is confidential, personal, sensitive, privileged, or proprietary in nature. In addition, we should respect our peers and work under the assumption that what is discussed here stays within the confines of the online classroom.

For your awareness, members of the University's technical staff have access to all course sites to aid in course setup and technical troubleshooting. Rabb School administrative staff have access to all courses for oversight purposes. Participants enrolled in these training courses can expect that individuals other than their fellow classmates and the facilitator(s) may visit their course for various purposes. Their intentions are to aid in technical troubleshooting and to ensure that quality course delivery standards are met. Strict confidentiality of student information is maintained.

Classroom Health and Safety

- Register for the Brandeis Emergency Notification System.

Important Resources

Course Materials/Books/Apps/Equipment

If you are having difficulty purchasing course materials, please make an appointment with your Student Financial Services or Academic Services advisor to discuss possible funding options, including vouchers for purchases made at the Brandeis Bookstore.

Textbook: There is no required textbook for this course. Required course material and reading will be posted on the course website. It may be beneficial to have any introductory biology textbook available as a background reference text if needed. Supplementary reading will be assigned from OpenStax Biology.

Other Books: *The Birth of the Pill* by Jonathan Eig

Required Software: Google docs and/or Microsoft office, a microscope app for your phone/computer/tablet (i.e. ioLight Microscope), a device capable of taking digital pictures (tablet/phone/camera)

Recommended supplies: A headset or headphones with microphone

LATTE

LATTE is the Brandeis learning management system. Login using your UNET ID and password. For LATTE help, contact Library@brandeis.edu.

Library

The Brandeis Library collections and staff offer resources and services to support Brandeis students, faculty and staff. Librarians and Specialists from Research & Instructional Services, Public Services, Archives & Special Collections, Sound & Image Media Studios, MakerLab, AutomationLab, and Digital Scholarship Lab are available to help you through consultations and workshops.

Privacy

To protect your privacy in any case where this course involves online student work outside of Brandeis password-protected spaces, you may choose to use a pseudonym/alias. You must share the pseudonym/ alias with me and any teaching assistants as needed. Alternatively, with prior consultation, you may submit such work directly to me.

Student Support

Brandeis University is committed to supporting all our students so they can thrive. If a student, faculty, or staff member wants to learn more about support resources, the Support at Brandeis webpage offers a comprehensive list that includes these staff colleagues you can consult, along with other support resources:

- The Care Team
- Academic Services (undergraduate)
- Graduate Student Affairs
- Directors of Graduate Studies in each department, School of Arts & Sciences
- Program Administrators for the Heller School and International Business School
- University Ombuds
- Office of Equal Opportunity.