

**Course Syllabus**  
**Introduction Public Health Genetics**  
**HUMAN GENETICS 2049**  
**Fall Semester 2022**  
**Tuesday & Thursday, 4:00-5:15 PM**  
**A522 Public Health**

*The instructors reserve the right to change the course schedule if necessary  
Please check the Canvas site.*

**Instructors:**

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**Course Description:**

This graduate level course focuses on public health genetics. The goal of this course is to educate the student about the basic principles of genetics and their application to public health practice and research. Public health genetics is the application of advances in genetics and molecular biotechnology to improve public health and prevent disease. This course will provide the knowledge necessary to apply genetic concepts to public health practice.

**Learning Objectives:**

After completion of this course, the student will be able to:

- Describe the history of genetics and public health
- Describe the public health genetic systems and policies
- Apply knowledge of inheritance and risk factors for disease to understand a variety of rare and common health conditions
- Identify interactions among genes, environmental factors & behaviors, and their effects on public health
- Assess the ethics of the application of genetic technologies to public health

**Purpose:**

We define Public Health Genetics as the application of advances in genetics and molecular biotechnology to improve public health and prevent disease. Our mission is to provide broad training and encourage research in this emerging, multidisciplinary field.

The purpose of this course is to provide you with the knowledge necessary to apply genetic concepts to public health practice. For those enrolled in the Public Health Genetics MPH Program, prior to entering your Practicum you must learn and understand the genetic information commonly addressed in public health settings. This course provides you with this information.

This course introduces students to frameworks for understanding genetic principles, concepts and their application in public health genetics. This approach allows for detailed examination and discussion of social and ethical issues in genetics that arise in research, practice and policy affecting both individuals and populations. We will explore the application of this framework in the context of public health genetics. The potential for tension between individual and societal perspectives is considered throughout the course. Of particular focus will be issues that arise in thinking about how advances in genetic technology can benefit or pose a threat to public health, particularly in the areas of health promotion and disease prevention.

### **Teaching Philosophy:**

This course emphasizes active participation, critical thinking, and continued learning. To maximize learning, our class environment will be inclusive and respectful of all individuals. Every member of our community is expected to be respectful of the individual perspectives, experiences, behaviors, worldviews, and backgrounds of others.

Because we all know different things and have different experiences, all questions and viewpoints are encouraged and respected in the classroom and within groups.

### **Health and Safety Statement:**

In the midst of this pandemic, it is extremely important that you abide by public health regulations and University of Pittsburgh health standards and guidelines. These rules have been developed to protect the health and safety of all community members. For the most up-to-date information and guidance, please visit [www.coronavirus.pitt.edu](http://www.coronavirus.pitt.edu) and check your Pitt email for updates.

### **Texts:**

No textbook required.

Class articles and handouts will be posted on Canvas.

### **Class Expectations/ Behavior and Ground Rules:**

Use of laptops or other device will be necessary.

### **Recordings:**

Students are not allowed to record or make copies of the lectures without prior approval of the instructor. All synchronous lectures will be recorded to facilitate learning. Students are not required to participate in the recorded conversation and may ask questions off-line.

**NOTE:** the recorded synchronous lecture may ONLY be viewed by the faculty member and the registered students for internal class purposes.

### **Copyright Notice:**

These materials may be protected by copyright. United States copyright law, 17 USC section 101, et seq., in addition to University policy and procedures, prohibit unauthorized duplication or retransmission of course materials. See [Library of Congress Copyright Office](#) and the [University Copyright Policy](#).

### **Grading:**

The grading for this course is based on quizzes, multiple homework exercises (and in-class activities), six projects, and two exams.

**Except for the exams and quizzes,** students may help each other to achieve the best work you are capable of producing. Working with one another to achieve mastery will help you learn the material with greater ease and enjoyment.

Grading scale:

94- 100% = A  
90-93% = A-  
87-89% = B+  
84-86% = B  
80-83% = B-  
77-79% = C+  
74-76% = C  
70-73% = C-  
67-69% = D+  
64-66% = D  
60-63% = D-  
Below 60% = F

**Projects (138 points total):**

The due dates for the project are listed in the table below.

However, please check Canvas for details and updates regarding the assignments.

You will select one group (3-4 students) to work with for all projects that have a group component for the duration of the semester.

**Project #1- Public Health Genetics Book Club (Total: 20 points).**

We will discuss the following two books in a book club setting. Each student must read one book in its entirety. Students must submit a substantive response to the prompt on the appropriate Discussion Board. A grading rubric for discussion posts will be provided.

Book #1

***The Immortal Life of Henrietta Lacks, Rebecca Skloot, Crown, 2010. – Non-fiction***

“From a single, abbreviated life grew a seemingly immortal line of cells that made some of the most crucial innovations in modern science possible. And from that same life, and those cells, Rebecca Skloot has fashioned in *The Immortal Life of Henrietta Lacks* a fascinating and moving story of medicine and family, of how life is sustained in laboratories and in memory.”

Book #2

***The Philadelphia Chromosome: A Genetic Mystery, a Lethal Cancer, and the Improbable Invention of a Lifesaving Treatment***

“Science journalist Jessica Wapner reconstructs more than forty years of crucial breakthroughs, clearly explains the science behind them, and pays tribute—with extensive original reporting, including more than thirty-five interviews—to the dozens of researchers, doctors, and patients with a direct role in this inspirational story. Their curiosity and determination would ultimately lead to a lifesaving treatment unlike anything before it.”

**Project #2 – Family History form /Family Portrait (Total: 10 points).**

Understanding one’s family health history is an important message to the public from the field of public health genetics. This assignment will give you first-hand experience collecting and recording this information for your own family. You will also complete a small assessment of the My Family Health Portrait tool.

**Project #3 – Ethics report and debate (Total: 33 pts).**

Using ethical principles, you will assess the ethical issues involved in one of the four current topics in public health genetics outlined below.

***\*\*The instructors will assign you to a specific topic and post it on Canvas Assignments. \*\****

You first will write a report stating your personal assessment and conclusions (15 pts). You will also be part of a group and debate one of four pre-assigned positions in class (18 pts). Please check Canvas Assignments for your topic and assignment.

**Project #4- Newborn Screening State Statutes (Total: 35 points).**

- Part 1: After reviewing Public Health Genetics Policy in class, each student will be assigned several states to research and gather information on regarding state newborn screening policies. Students will enter their information into a universal spreadsheet that will be available through OneDrive (located on your My Pitt page). (20 points)
- Part 2: Students will be assigned to groups for the second part of this project. Each group will assess the data collected in Part 1 to identify trends of interest and report out statistics in a PowerPoint presentation. Each group will **upload** an annotated PowerPoint presentation of analyses and results. (15 points)

**Project #5 – Public Health Case Study – (20 points).**

You will represent a member of a Blue Ribbon Commission on Ethics and Human Genetic Technologies to study and report on genetics issues in state health policy. As a representative of your constituency, you will write a short position statement (including ethical and other concerns) and post this document on Canvas in the designated discussion board for your fellow students and the instructors to read. (15 points)  
Then, you will meet as a group during the 60-70 minutes during class time, to devise a report that you will make to the “state legislature” (represented by the instructors). (5 points)

**Project #6- Infographic (Total: 20 points)**

Each group will select a focused topic in public health genetics for which they need to develop an infographic (15 points) that explains the topic, conveys its relevance, and describes what the target audience should do with the information. At the end of the semester, each group will have a chance to share their infographic with the class in an informal presentation (5 points).

**Homework (30 points) and Quizzes (30 points)**

Throughout the semester, three short homework assignments (10 points each) will be given based on the material covered in class. Each homework assignment will include instructions and due date.

In addition, four online quizzes will also be assigned throughout the semester. Each quiz will comprise 5-10 questions. If you are unable to attend class for any reason the day of a quiz, you may make arrangements to take the quiz either online and/or at a later time as agreed upon with the instructors. You will also have the option to drop your lowest quiz grade at the end of the semester.

**Exams (150 points):**

You will have 1 mid-term (50 points) and 1 final exam (100 points) for the semester.

## Class Schedule

**\*\*The instructors reserve the right to make changes to the Due Dates and Class Schedule\*\***

<b>Class</b>	<b>Date</b>	<b>Topic</b>	<b>Instructor(s)</b>
	8/29/22	Fall Term Begins	
Class 1	8/30/22	Syllabus review; Introduction Public Health and Genetics, Newborn Screening	Samantha Manna & Andrea Durst
Class 2	9/1/22	Eugenics	Andrea Durst
Class 3	9/6/22	Genetics & Law	Andrea Durst
Class 4	9/8/22	Ethics	Michael Deem
	<b>9/12/22</b>	<b>Project groups must be decided</b>	
Class 5	9/13/22	Diversity/Genetic Research and Indigenous Populations <b>QUIZ 1</b>	Samantha Manna
Class 6	9/15/22	GATTACA – movie night	Samantha Manna & Andrea Durst
Class 7	9/20/22	GATTACA – movie night	Samantha Manna & Andrea Durst
<b>Ethics Report Due, 9/20/2022, 11:59 p.m.</b>			
Class 8	9/22/22	Discussion of GATTACA and Havasupai case	Samantha Manna & Andrea Durst
Class 9	9/27/22	Overview of the Public Health System <b>QUIZ 2</b>	Andrea Durst
Class 10	9/29/22	Overview of the Public Health Genetics System	Andrea Durst
Class 11	10/4/22	CDC Tier 1 Genomics Applications <b>QUIZ 3</b>	Andrea Durst
Class 12	10/6/22	Public Health Genetics Policy/Statutes	Andrea Durst
<b>Family Portrait Due, 10/6/2022, 11:59 p.m.</b>			
Class 13	<b>10/11/22</b>	<b>Ethics Debates 1&amp;2</b>	Samantha Manna & Andrea Durst
Class 14	<b>10/13/22</b>	<b>Ethics Debates 3&amp;4</b>	Samantha Manna & Andrea Durst
	<b>10/15/22</b>	<b>Fall Break for Students</b>	
<b>Class 15</b>	<b>10/18/22</b>	<b>MID-TERM EXAM</b>	Samantha Manna & Andrea Durst
Class 16	10/20/22	Literacy	Andrea Durst
Class 17	10/25/22	Advocacy Lecture	Ruth Modzelewski
<b>NBS by states, spreadsheet completion due 10/25/2022, 11:59 p.m.</b>			
Class 18	10/27/22	FORCE Media Literacy Training	Sue Friedman

Class 19	11/1/22	Topics in Public Health	Certificate Students
Class 20	11/3/22	Common Disease – Personalized Medicine	Samantha Manna
Class 21	11/8/22	Precision Medicine 1	Mylynda Massart
Class 22	11/10/22	Precision Public Health/Medicine vs Public Health	Samantha Manna
<b>The Public Health Genetics Book Club Discussion Board Questions due, 11/10/2022, 11:59 p.m.</b>			
Class 23	11/15/22	<b>The Public Health Genetics Book Club In Class Discussion QUIZ 4</b>	Students
Class 24	11/17/22	Negotiation Skills	Ryan Minster
<b>NBS slides due, 11/17/2022, 11:59 p.m</b>			
	<b>11/20/22-11/27/22</b>	<b>Thanksgiving Recess for students</b>	
Class 25	11/29/22	One Health	Samantha Manna
Class 26	12/1/22	Current Topics—infographic work	Students
<b>Blue Ribbon Panel Document due, 12/1/2022, 11:59 p.m.</b>			
Class 27	<b>12/6/22</b>	<b>Infographic show and tell</b>	Students
Class 28	<b>12/8/22</b>	<b>Blue Ribbon Panel</b>	Students
	<b>12/12/22</b>	<b>Final exam available</b>	
	<b>12/13/22</b>	<b>No class</b>	
	<b>12/15/22</b>	<b>FINAL EXAM DUE</b>	

### **Pitt Public Health Diversity Statement (Effective Academic Year 2022-23)**

The University of Pittsburgh Graduate School of Public Health considers the diversity of its students, faculty, and staff to be a strength and critical to its educational mission. Pitt Public Health is committed to creating and fostering inclusive learning environments that value human dignity and equity and promote social justice. Every member of our community is expected to be respectful of the individual perspectives, experiences, behaviors, worldviews, and backgrounds of others. While intellectual disagreement may be constructive, no derogatory statements, or demeaning or discriminatory behavior will be permitted.

If you feel uncomfortable or would like to discuss a situation, please contact any of the following: the course director or course instructor;

- the Pitt Public Health Associate Dean responsible for diversity and inclusion;
- the University’s Office of Diversity and Inclusion at 412-648-7860 or
- <https://www.diversity.pitt.edu/civil-rights-title-ix/make-report/report-form> (anonymous reporting form)

**Accommodation for Students with Disabilities:**

If you have a disability for which you are or may be requesting an accommodation, you are encouraged to contact both your instructor and [Disability Resources and Services](#), 140 William Pitt Union, 412-648-7890 as early as possible in the term.

**Academic Integrity (Approved by EPCC on 7/31/18):**

All students are expected to adhere to the school's standards of academic honesty. Cheating/plagiarism will not be tolerated. The Graduate School of Public Health's policy on academic integrity, which is based on the University policy, is available online in the Pitt Public Health Academic Handbook [www.publichealth.pitt.edu/home/academics/academic-requirements](http://www.publichealth.pitt.edu/home/academics/academic-requirements). The policy includes obligations for faculty and students, procedures for adjudicating violations, and other critical information. Please take the time to read this policy.

**Sexual Misconduct, Required Reporting and Title IX Statement:**

The University is committed to combatting sexual misconduct. As a result, you should know that University faculty and staff members are required to report any instances of sexual misconduct, including harassment and sexual violence, to the University's Title IX office so that the victim may be provided appropriate resources and support options. What this means is that as your professor, I am required to report any incidents of sexual misconduct that are directly reported to me, or of which I am somehow made aware.

There are two important exceptions to this requirement about which you should be aware:

A list of the designated University employees who, as counselors and medical professionals, do not have this reporting responsibility and can maintain confidentiality, can be found here:

<https://www.diversity.pitt.edu/civil-rights-title-ix/make-report/report-form>

An important exception to the reporting requirement exists for academic work. Disclosures about sexual misconduct that are shared as part of an academic project, classroom discussion, or course assignment, are not required to be disclosed to the University's Title IX office.

If you are the victim of sexual misconduct, Pitt encourages you to reach out to these resources:

Title IX Office: 412-648-7860

SHARE @ the University Counseling Center: 412-648-7930 (8:30 A.M. TO 5 P.M. M-F) and 412-648-7856 (AFTER BUSINESS HOURS)

If you have a safety concern, please contact the University of Pittsburgh Police, 412-624-2121.

Other reporting information is available here: <https://www.diversity.pitt.edu/civil-rights-title-ix-compliance/make-report>