

**Graduate School of Public Health
Department of Human Genetics
Cancer Genetic Counseling
HUGEN 2061
Wednesday and Friday 9:00 to 10:25 AM
Location: A216 Public Health
Credit Hours: 1.0
Spring 2022**

Instructors and Contact Information

Course Director:

Andrea Durst, DrPH, MS, CGC (she/her)

Office: 3129 Public Health

Phone: 412-624-3190

Email: adurst@pitt.edu

Office hours: By appointment - https://calendly.com/adurst_pitt/30min

Course Instructors:

Beth Dudley Yurkovich, MS, MPH, LCGC

Adjunct Instructor, Graduate School of Public Health, University of Pittsburgh

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Phuong Mai, MD, MS

Associate Professor, School of Medicine, University of Pittsburgh

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Darcy Thull, MS, LCGC

Adjunct Instructor, Human Genetics, Graduate School of Public Health, University of Pittsburgh

Email: thuldl@upmc.edu

Course Description

This course is designed to provide students with the knowledge and skills fundamental to the practice of cancer genetic counseling. The overall goal of the course is to allow students to apply cancer genetics knowledge to clinical situations. The course will cover hereditary cancer syndromes, cancer risk assessment models, and germline and somatic genomic testing.

Learning Objectives

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

- (1) Identify the clinical features and management of hereditary cancer syndromes;
- (2) Calculate cancer genetic risks using a variety of risk assessment models;
- (3) Describe different genetic/genomic testing modalities used in clinical cancer genetic counseling; and
- (4) Explain genetic/genomic test result interpretation and risk assessment/management.

Prerequisites

This course builds upon the knowledge and skills covered in HUGEN 2035 Principles of Genetic Counseling and HUGEN 2060 Chromosomes: Structure and Function. For this reason, these two courses are prerequisites to this course.

Requirements

Complete assigned readings
Complete class assignments
Complete weekly quizzes
Participate in class discussions
Final exam

Required Texts

None. Readings are drawn from the current literature and classic texts on the course topics.

Optional Texts

Schneider KA (2012) *Counseling About Cancer*. Hoboken: Wiley-Blackwell

Canvas Instructions

This class utilizes Canvas for class content. Notifications will be sent when course content is updated. Please make sure to set up your Canvas to receive email notifications from Canvas and please check for announcements and notifications on a regular basis.

Class Expectations/ Behavior and Ground Rules

This class will be held in-person according to University guidance. However, due to the shifting nature of the pandemic, it may be necessary to alter the delivery of the course. Any changes will be shared with students via announcements on Canvas. Given the pandemic, it is important that students abide by public health regulations and University of Pittsburgh health standards and guidelines. For the most up-to-date information and guidance, please visit <https://www.coronavirus.pitt.edu/>. If you are sick, please do not come to class in-person. Please email all course instructors, and we will determine the most appropriate make-up plan for class depending on the content.

We plan on recording synchronous classes to make them available on Canvas. We recognize that some guest lecturers may prefer to not be recorded and we will communicate this information during the semester. Recordings will only be available for the semester and should not be distributed for non-class purposes.

Student Performance Evaluation and Grading

Your grade for the course is based upon the grades you receive on the assignments and cumulative final exam as well as your participation during in-class discussions. The breakdown is as follows:

Tumor testing interpretation assignment – 50 points

Weekly Quizzes – 40 points

Class participation – 50 points

Cumulative final exam – 100 points

- Tumor testing interpretation assignment—For this project, you will be given the results from a somatic test ordered on a patient’s tumor and asked to assess the germline and treatment implications of the result for the patient. **This assignment is available on Canvas and should be emailed to Kelly Knickelbein (kelly.knickelbein@thermofisher.com) by 5pm on April 22.**
- Weekly quizzes – For each of the first four weeks, you will be asked to complete a case-based quiz. The quizzes will be online on canvas and open note. Quizzes will become available on Friday after class for a 3 day window during which you may take the quiz once. You will have 30 minutes to complete the quiz once you start it.
- Class participation—you are expected to participate in class each week, through discussion, case-based learning and review of the information from the required readings.
- Cumulative final exam—An exam will be administered the final day of class to assess your understanding of the material presented during the course.

Grading Scale

97-100%	A+
93-96%	A
90-92%	A-
87-89%	B+
83-86%	B
80-82%	B-
77-79%	C+
73-76%	C
70-72%	C-
67-69%	D+
63-66%	D
60-62%	D-
<60	F

Academic Integrity

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. The policy includes

obligations for faculty and students, procedures for adjudicating violations, and other critical information. Please take the time to read this policy.

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.

A comprehensive description of the services of that office can be obtained at www.drs.pitt.edu.

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>

Diversity Statement:

Pitt Public Health Diversity Statement | Effective Academic Year 2021-22

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)

Copyright Notice

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Schedule of Sessions

March 30, 2022	Emily Callahan	<p>Hereditary Breast, Ovarian and Prostate Cancer</p> <p>Required Readings:</p> <ul style="list-style-type: none"> National Comprehensive Cancer Network (NCCN) v.2.2022 Genetic/Familial High-Risk Assessment: Breast, Ovarian and Pancreatic (focus on breast/ovary/prostate)
April 1, 2022	Dr. Emilia Diego/Dr. Phuong Mai	<p>Breast Cancer Surgery/Breast Cancer Risk Management Screening guidelines:</p> <p>Required Readings</p> <ul style="list-style-type: none"> Saslow D. American Cancer Society guidelines for breast screening with MRI as an adjunct to mammography. <i>CA Cancer J Clin.</i> 2007;57(2):75-89. PMID: 17392385 Kala Visvanathan, MHS et al. Use of Endocrine Therapy for Breast Cancer Risk Reduction: ASCO Clinical Practice Guideline Update J Clin Oncol. 2019 Sep 3;JCO1901472. doi: 10.1200/JCO.19.01472. <p>Supplemental Readings:</p> <ul style="list-style-type: none"> Peters ML. Managing hereditary breast cancer risk in women with and without ovarian cancer. <i>Gynecol Oncol.</i> 2017 Jul;146(1):205-214. PMID: 28454658 Nelson HD, Fu R, Zakher B, Pappas M, McDonagh M. Medication use for the risk reduction of primary breast cancer in women: updated evidence report and systematic review for the US Preventive Services Task Force <i>JAMA.</i> 2019;322(9):868-886. doi:10.1001/jama.2019.5780
April 4, 2022 12:00PM	Quiz 1 Due	
April 6, 2022	Andrea Durst/ Darcy Thull	<p>Risk Assessment/ Risk Models</p> <p>Required Readings:</p> <ul style="list-style-type: none"> NCI Cancer Genetics PDQs (http://www.cancer.gov/cancertopics/pdq/genetics) NCCN Breast Cancer Risk Reduction v.1.2022 p.17-21 www.nccn.org <p>Supplemental Readings:</p> <ul style="list-style-type: none"> Berliner JL et al. Risk assessment and genetic counseling for hereditary breast and ovarian cancer syndromes-Practice resource of the NSGC. <i>J Genet Couns.</i> 2021;00:1-19. Hampel H. A practice guideline from the American College of Medical Genetics and Genomics and the National Society of Genetic Counselors: referral indications for cancer predisposition assessment. <i>Genet Med.</i> 2015;17(1):70-87. PMID: 25394175

		<ul style="list-style-type: none"> • Gail MH and Mai PL. Comparing breast cancer risk assessment models. <i>J Natl Cancer Inst.</i> 2010;102(10):665-8. • Lee AJ. BOADICEA: a comprehensive breast cancer risk prediction model incorporating genetic and nongenetic risk factors. <i>Genet Med</i> 2019;0(0):1-11. PMID:30643217 • Antoniou A, Hardy R, Walker L et al. Predicting the likelihood of carrying a BRCA1 or BRCA2 mutation: validation of BOADICEA, BRCAPRO, IBIS, Myriad and the Manchester scoring system using data from UK genetics clinics. <i>J Med Genet</i> 2008;45:425-431.
April 8, 2022	Dr. Meade/ Elena Kessler	<p>Bone Marrow Failure Hematologic Syndromes</p> <p>Required Reading:</p> <ul style="list-style-type: none"> • Furutani E et al. Germline Genetic Predisposition to Hematologic Malignancy <i>JCO</i> 2017;35(9): 1018-1028. <p>Pediatric Cancer Syndromes</p> <p>Required Reading:</p> <ul style="list-style-type: none"> • Fiala EM, Jayakumaran G, Mauguen A, et al. Prospective pan-cancer germline testing using MSK-IMPACT informs clinical translation in 751 patients with pediatric solid tumors. <i>Nat Cancer.</i> 2021;2:357-365. doi:10.1038/s43018-021-00172-1 <p>Supplemental Readings:</p> <ul style="list-style-type: none"> • Ripperger T. et al. Childhood cancer predisposition syndromes—A concise review and recommendations by the Cancer Predisposition Working Group of the Society for Pediatric Oncology and Hematology. <i>Am J Med Genet.</i> 2017;173:1017–1037. • Diets IJ et al. High Yield of Pathogenic Germline Mutations Causative or Likely Causative of the Cancer Phenotype in Selected Children with Cancer. <i>Clin Cancer Res</i>; 24(7) April 1, 2018
April 11, 2022 12:00PM	Quiz 2 Due	
April 13, 2022	Kelly Knickelbein	<p>Somatic Tumor Testing</p> <p>Required Readings:</p> <ul style="list-style-type: none"> • Clark DF, et al. Identification and Confirmation of Potentially Actionable Germline Mutations in Tumor-Only Genomic Sequencing. <i>JCO Precis Oncol.</i> 2019;3:PO.19.00076. doi: 10.1200/PO.19.00076. Epub 2019 Aug 19. PMID: 31511844; PMCID: PMC6738953. • Mandelker D, et al. Germline-focussed analysis of tumour-only sequencing: recommendations from the ESMO Precision Medicine Working Group. <i>Ann Oncol.</i> 2019 Aug 1;30(8):1221-1231. doi:

		<p>10.1093/annonc/mdz136. Erratum in: Ann Oncol. 2021 Aug;32(8):1069-1071. PMID: 31050713; PMCID: PMC6683854.</p> <p>Supplemental Readings:</p> <ul style="list-style-type: none"> • Jain R et al. The Relevance of Hereditary Cancer Risks to Precision Oncology: What Should Providers Consider When Conducting Tumor Genomic Profiling. <i>JNCCN Jun;14(6):795-806</i> • Raymond V et al. Germline Findings in Tumor-Only Sequencing: Points to Consider for Clinicians and Laboratories. <i>JNCI 2016;108(4).</i> • Dumbrava EL et al. Expanded Analysis of Secondary Germline Findings From Matched Tumor/Normal Sequencing Identifies Additional Clinically Significant Mutations. <i>JCO Precis Oncol. 2019;3. doi: 10.1200/PO.18.00143. Epub 2019 Apr 11</i> • Meric-Bernstam F. et al. Incidental germline variants in 1000 advanced cancers on a prospective somatic genomic profiling protocol <i>Annals of Oncology 27: 795–800, 2016</i> • Forman A. and Sotelo J. Tumor Based Genetic Testing and Familial Cancer Risk. <i>Cold Spring Harb Perspect Med. 2019 Sep 30. doi: 10.1101/cshperspect.a036590. [Epub ahead of print]</i>
April 15, 2022	Dr. Helena Levitt/Amy Kunz	<p>Endocrine syndromes</p> <p>Required Reading:</p> <ul style="list-style-type: none"> • Deng AT & Izatt L. Inherited Endocrine Neoplasia— A Comprehensive Review from Gland to Gene. <i>Curr Genet Med Rep (2019) 7:102–115</i> <p>Renal (supplemental reading):</p> <ul style="list-style-type: none"> • Shuch B Genetic Predisposition to RCC implications for counseling and management <i>J Clin Oncol 2018; 36:3560-3566.</i> • Carlo et al., Prevalence of Germline Mutations in Cancer Susceptibility Genes in Patients With Advanced RCC. <i>JAMA Oncol. 2018;4(9):1228–1235</i>
April 18, 2022 12:00 PM	Quiz 3 Due	
April 20, 2022	Beth Dudley Yurkovich	<p>Hereditary GI Syndromes</p> <p>Required Reading:</p> <ul style="list-style-type: none"> • National Comprehensive Cancer Network (NCCN) v.1.2021 Genetic/Familial High-Risk Assessment: Colorectal <p>Supplemental Reading:</p>

		<ul style="list-style-type: none"> • Blair VR et al. Hereditary diffuse gastric cancer: updated clinical practice guidelines. <i>Lancet Oncol</i> 2020; 21(8): e386-e397. • Rustgi SD et al. Familial predisposition and genetic risk factors associated with pancreatic cancer. <i>Gastrointest Endosc Clin N Am</i> 2022; 32(1): 1-12.
April 22, 2022	Dr. Randall Brand	Hereditary GI Cancer Management Required Reading: <ul style="list-style-type: none"> • Dudley B and Brand RE. Pancreatic cancer surveillance and novel strategies for screening. <i>Gastrointest Endosc Clin N Am</i> 2022; 32(1): 13-25. Supplemental Reading: <ul style="list-style-type: none"> • Syngal S. ACG clinical guideline: Genetic testing and management of hereditary gastrointestinal cancer syndromes. <i>Am J Gastroenterol</i>. 2015; 110(2): 223-62. PMID: 25645574
April 22, 2022 5:00PM	Somatic Tumor Testing Interpretation Assignment Due	
April 25, 2022 12:00PM	Quiz 4 Due	
April 27, 2022	Christina Bittner/ Rachelle Huziak/ Kyla Morphy/ Jackie Hoover	Results interpretation/Challenging Cases
April 29, 2022		Final Exam