

## PM 559: Cancer Epidemiology

4 Units

Spring 2024 - Wednesdays 1 pm to 4:50 pm, SSB 103-E

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**Course Description:** This course is a snapshot of the vast and diverse field of cancer epidemiology that will introduce advanced graduate students to an array of cancer types as well as topics in cancer etiology and control including genetic susceptibility, oncogenic viruses, and risk associated with lifestyle and environmental exposures. Over 15 weeks, we will explore the fundamental concepts of cancer including the current understanding of the molecular basis of carcinogenesis; using descriptive epidemiology to identify trends in cancer occurrence and outcomes, define disparities, refine hypotheses; and both historical and groundbreaking analytic studies that have impacted the field. We will work together on a research project that will develop your cancer epidemiological skills, with the goal of submitting a manuscript that describes your work. Each week the lecture will typically cover a different cancer site and be followed by an interactive discussion of biological understanding as well as specific examples of current research topics. We will discuss cancer health disparities, in terms of both incidence and patient outcomes, and what are the potential causes and how to address them. Through interactive lectures, self-study, critical review of scholarly reports, and implementation of an original research project, students will be exposed to (i) the major study designs used in cancer epidemiology; (ii) research into lifestyle “risk” and “protective” factors for various cancer sites; (iii) the role of genetic factors and gene-environment interactions in cancer etiology; (iv) racial/ethnic disparities in cancer incidence and mortality; (v) behavioral research and community-based intervention programs designed to reduce lifestyle behaviors associated with cancer risk; (vi) international studies of diverse populations addressing cancer in the global health setting.

**Learning Objectives:** This course is intended to introduce PhD students to the application of epidemiological methods to the study of the determinants of cancer and cancer outcomes, and to provide fundamental skills for both independent research and interdisciplinary team

science. Specifically, the course focuses on: 1) Understanding the general field of cancer epidemiologic research in relation to various cancer sites; and 2) Developing practical skills for critical review of published reports, research presentation, and scientific writing.

**Recommended:** Epidemiology PM512 and PM517A or equivalent

**Course Notes:** Weekly classes will be structured in three parts: (i) Critical appraisal of published research (~60 minutes); (ii) Lecture and discussion (~90 minutes); (iii) Research Project (~60 minutes). There will be ~15 minute breaks between each part. The first part will be dedicated to the research project, reviewing and interpreting the previous week's work and discussing the next steps; these efforts will constitute a real-world tutorial strengthening practical skill sets for presenting research findings and manuscript writing, and will culminate in preparation of a manuscript suitable for publication. The second part will be an interactive lecture providing students with an overview of the field in a particular type of cancer and related examples of epidemiological approaches and study design used to achieve current understanding of the cancer together with discussion of open questions and future research directions. The third part will be discussion of specific examples of active research, with a focus on cancer epidemiology methods (study design), using examples from the recent literature.

**Description and Assessment of Assignments and Exam:** Students will be required to participate in class and interact with the instructor and their colleagues. Papers and other readings, or recordings of virtual seminars of interest, will be given to students to facilitate the discussion topics each week. Students are required to lead some and participate in all discussions during the three parts of each class. Homework assignments will be a 1-page maximum critique of each of the two presented articles. Each week, two students will be assigned to lead a critical discussion of the assigned articles. The final exam will focus on key concepts of cancer epidemiology.

### Recommended Textbook

The main reference Textbook will be:

Adami H, Hunter DJ, Laggiou P, Mucci L. Textbook of Cancer Epidemiology (3<sup>rd</sup> edition).

<https://doi.org/10.1093/oso/9780190676827.001.0001>

PDF copies of the book chapters will be provided by the instructor.

### Grades and Evaluations

Assignment	Summary	Percentage of Grade
Journal article review/Discussion	A written one-page maximum critical appraisal and interpretation for each of the two instructor-assigned articles will be due at the beginning of class. Two students will be asked to lead each discussion.	55% (Week 3-13: 5% for each homework)*

Class participation	Participation in project-related group work	10%
	Participation in lecture discussion	5%
Final Exam	Cumulative, querying practical and methodologic topics using multiple choice, short answer, and similar format questions.	30%

\* Week 2 homework is to be submitted and graded but will not be counted towards final grade.

### **Grading Scale**

Course final grades will be determined using the following scale

A	95-100
A-	90-94
B+	87-89
B	83-86
B-	80-82
C+	77-79
C	73-76
C-	70-72
D+	67-69
D	63-66
D-	60-62
F	59 and below

### **Assignment Submission Policy**

Each assignment should be submitted via Blackboard before class begins on the day it is due. Late assignments will not be accepted, as the work will be discussed in detail during each class session. If a student is unable to attend class on a given day, the assignment should nonetheless be submitted via Blackboard by 9 am.

### **Course Schedule**

The following table outlines the general topic area for each week including a lecture, article review and tutorial. Some lectures will be taught by other professors in the department who are experts in particular research areas. The instructors reserve the right to update the readings and rearrange some lectures as needed, but you will still get to experience the great world of cancer epidemiology!

The lecture topics address 3 general themes:

*#1 Concepts and Approaches in Cancer Epidemiology*

*#2 Established Risk Factors and Carcinogenesis*

*#3 Innovative Research in Cancer Epidemiology*

Week	Theme	Date	Topic	Recommended reading
1	#1	10-Jan	<b>Introduction on Cancer Epidemiology</b> (Dr. Adam de Smith)	Textbook of Cancer Epidemiology, Chapters 1-3 & 5
2	#1	17-Jan	<b>Lung Cancer Epidemiology</b> (Dr. Adam de Smith)	Textbook of Cancer Epidemiology, Chapters 6 & 14
3	#1	24-Jan	<b>AYA and cancer survivorship</b> (Dr. Amie Hwang)	
4	#1	31-Jan	<b>Cancer Health Disparities</b> (Dr. Adam de Smith)	Zavala et al. <i>Br J Cancer</i> . 2021. (PMID:32901135)
5	#2	7-Feb	<b>Smoking, Alcohol, and Cancer Risk</b> (Dr. Adam de Smith)	Textbook of Cancer Epidemiology, Chapters 7-9 & 22
6	#2	14-Feb	<b>Colorectal Cancer epi + disparities</b> (Dr. Mariana Stern)	Textbook of Cancer Epidemiology, Chapter 11
7	#1	21-Feb	<b>Cancer Prevention: Cervical Cancer case study</b> (Dr. Victoria Cortessis)	Textbook of Cancer Epidemiology, Chapter 17
8	#2	28-Feb	<b>Prostate Cancer: Genetic Epidemiology</b> (Dr. Christopher Haiman)	Textbook of Cancer Epidemiology, Chapters 4 & 20
9	#2	6-Mar	<b>Liver and Pancreatic Cancer</b> (Dr. Brian Huang)	Textbook of Cancer Epidemiology, Chapters 12 & 13
		13-Mar	SPRING BREAK	
10	#2	20-Mar	<b>Breast cancer epidemiology + disparities</b> (Dr. Ugonna Ihenacho)	Textbook of Cancer Epidemiology, Chapter 16
11	#3	27-Mar	<b>Familial cancer predisposition</b> (Dr. Joseph Wiemels)	
12	Spotlight Topic	3-Apr	<b>Childhood cancers</b> (Dr. Adam de Smith)	Textbook of Cancer Epidemiology, Chapter 27
13	#3	10-Apr	<b>Melanoma</b> (Dr. Myles Cockburn)	Textbook of Cancer Epidemiology, Chapter 15
14	#3	17-Apr	<b>Mutational Signatures in Cancer</b> (Dr. Adam de Smith)	
15		24-Apr	<i>No lecture (Study Week); final review</i>	
16		1-May	<b>FINAL EXAM</b> (9am, SSB115)	

## **Other Course Policies**

### **Academic Integrity**

The University of Southern California is a learning community committed to developing successful scholars and researchers dedicated to the pursuit of knowledge and the dissemination of ideas. Academic misconduct, which includes any act of dishonesty in the production or submission of academic work, comprises the integrity of the person who commits the act and can impugn the perceived integrity of the entire university community. It stands in opposition to the university's mission to research, educate, and contribute productively to our community and the world.

All students are expected to submit assignments that represent their own original work, and that have been prepared specifically for the course or section for which they have been submitted. You may not submit work written by others or "recycle" work prepared for other courses without obtaining written permission from the instructor(s).

Other violations of academic integrity include, but are not limited to, cheating, plagiarism, fabrication (e.g., falsifying data), collusion, knowingly assisting others in acts of academic dishonesty, and any act that gains or is intended to gain an unfair academic advantage.

The impact of academic dishonesty is far-reaching and is considered a serious offense against the university. All incidences of academic misconduct will be reported to the Office of Academic Integrity and could result in outcomes such as failure on the assignment, failure in the course, suspension, or even expulsion from the university.

For more information about academic integrity see [the student handbook](#) or the [Office of Academic Integrity's website](#), and university policies on [Research and Scholarship Misconduct](#).

Please ask your instructor if you are unsure what constitutes unauthorized assistance on an exam or assignment, or what information requires citation and/or attribution.

Academic honesty is required in all examinations, papers, and academic exercises. Academic misconduct can be identified as any action or attempted action resulting in an unfair academic advantage for oneself or any other member of the academic community. If a student is found responsible for academic misconduct, they will be assigned a grade of zero for the exam or assignment in question.

Plagiarism – presenting someone else's ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in *SCampus* in Part B, Section 11, "Behavior Violating University Standards" <https://policy.usc.edu/student/scampus-part-b>. Other forms of academic dishonesty are equally unacceptable. See additional information in *SCampus* and university policies on scientific misconduct, <https://policy.usc.edu/research-and-scholarship-misconduct/>.

Discrimination, sexual assault, intimate partner violence, stalking, and harassment are prohibited by the university. You are encouraged to report all incidents to the *Office of Equity and Diversity/Title IX Office* <http://equity.usc.edu> and/or to the *Department of Public Safety* <http://dps.usc.edu>. This is important for the health and safety of the whole USC community. Faculty and staff must report any information regarding an incident to the Title IX Coordinator who will provide outreach and information to the affected party.

### **Use of AI generators – not permitted**

Since creating, analytical, and critical thinking skills are part of the learning outcomes of this course, all assignments should be prepared by the student working individually or in groups. Students may not have another person or entity complete any substantive portion of the assignment. Developing strong competencies in these areas will prepare you for a competitive workplace. Therefore, using AI-generated tools is prohibited in this course, will be identified as plagiarism, and will be reported to the Office of Academic Integrity.

### **Course Content Distribution and Synchronous Session Recordings Policies**

USC has policies that prohibit recording and distribution of any synchronous and asynchronous course content outside of the learning environment.

Recording a university class without the express permission of the instructor and announcement to the class, or unless conducted pursuant to an Office of Student Accessibility Services (OSAS) accommodation. Recording can inhibit free discussion in the future, and thus infringe on the academic freedom of other students as well as the instructor. ([Living our Unifying Values: The USC Student Handbook](#), page 13).

Distribution or use of notes, recordings, exams, or other intellectual property, based on university classes or lectures without the express permission of the instructor for purposes other than individual or group study. This includes but is not limited to providing materials for distribution by services publishing course materials. This restriction on unauthorized use also applies to all information, which had been distributed to students or in any way had been displayed for use in relationship to the class, whether obtained in class, via email, on the internet, or via any other media. ([Living our Unifying Values: The USC Student Handbook](#), page 13).

### **Students and Disability Accommodations:**

USC welcomes students with disabilities into all of the University's educational programs. The Office of Student Accessibility Services (OSAS) is responsible for the determination of appropriate accommodations for students who encounter disability-related barriers. Once a student has completed the OSAS process (registration, initial appointment, and submitted documentation) and accommodations are determined to be reasonable and appropriate, a Letter of Accommodation (LOA) will be available to generate for each course. The LOA must be given to each course instructor by the student and followed up with a discussion. This should be done as early in the semester as possible as accommodations are not retroactive. More information can be found at [osas.usc.edu](https://osas.usc.edu). You may contact OSAS at (213) 740-0776 or via email at [osasfrontdesk@usc.edu](mailto:osasfrontdesk@usc.edu).

## **Support Systems**

A number of USC's schools provide support for students who need help with scholarly writing. Check with your advisor or program staff to find out more. Students whose primary language is not English should check with the *American Language Institute* <http://ali.usc.edu>, which sponsors courses and workshops specifically for international graduate students. *The Office of Disability Services and Programs* <http://dsp.usc.edu> provides certification for students with disabilities and helps arrange the relevant accommodations. If an officially declared emergency makes travel to campus infeasible, *USC Emergency Information* <http://emergency.usc.edu> will provide safety and other updates, including ways in which instruction will be continued by means of Blackboard, teleconferencing, and other technology.

### [Counseling and Mental Health](#) - (213) 740-9355 – 24/7 on call

Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.

### [988 Suicide and Crisis Lifeline](#) - 988 for both calls and text messages – 24/7 on call

The 988 Suicide and Crisis Lifeline (formerly known as the National Suicide Prevention Lifeline) provides free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week, across the United States. The Lifeline is comprised of a national network of over 200 local crisis centers, combining custom local care and resources with national standards and best practices. The new, shorter phone number makes it easier for people to remember and access mental health crisis services (though the previous 1 (800) 273-8255 number will continue to function indefinitely) and represents a continued commitment to those in crisis.

### [Relationship and Sexual Violence Prevention Services \(RSVP\)](#) - (213) 740-9355(WELL) – 24/7 on call

Free and confidential therapy services, workshops, and training for situations related to gender- and power-based harm (including sexual assault, intimate partner violence, and stalking).

### [Office for Equity, Equal Opportunity, and Title IX \(EEO-TIX\)](#) - (213) 740-5086

Information about how to get help or help someone affected by harassment or discrimination, rights of protected classes, reporting options, and additional resources for students, faculty, staff, visitors, and applicants.

### [Reporting Incidents of Bias or Harassment](#) - (213) 740-5086 or (213) 821-8298

Avenue to report incidents of bias, hate crimes, and microaggressions to the Office for Equity, Equal Opportunity, and Title for appropriate investigation, supportive measures, and response.

### [The Office of Student Accessibility Services \(OSAS\)](#) - (213) 740-0776

OSAS ensures equal access for students with disabilities through providing academic accommodations and auxiliary aids in accordance with federal laws and university policy.

[USC Campus Support and Intervention](#) - (213) 740-0411

Assists students and families in resolving complex personal, financial, and academic issues adversely affecting their success as a student.

[Diversity, Equity and Inclusion](#) - (213) 740-2101

Information on events, programs and training, the Provost's Diversity and Inclusion Council, Diversity Liaisons for each academic school, chronology, participation, and various resources for students.

[USC Emergency](#) - UPC: (213) 740-4321, HSC: (323) 442-1000 – 24/7 on call

Emergency assistance and avenue to report a crime. Latest updates regarding safety, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible.

[USC Department of Public Safety](#) - UPC: (213) 740-6000, HSC: (323) 442-1200 – 24/7 on call

Non-emergency assistance or information.

[Office of the Ombuds](#) - (213) 821-9556 (UPC) / (323-442-0382 (HSC)

A safe and confidential place to share your USC-related issues with a University Ombuds who will work with you to explore options or paths to manage your concern.

[Occupational Therapy Faculty Practice](#) - (323) 442-2850 or [otfp@med.usc.edu](mailto:otfp@med.usc.edu)

Confidential Lifestyle Redesign services for USC students to support health promoting habits and routines that enhance quality of life and academic performance.