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## Molecular and Genetic Epidemiology MPH 520 (70) Spring Session II 2026 Syllabus

### **PROFESSOR: Dr. Tehmina S Khan**

Office Location: DH 308

Office Hours: In-Person Wed 11:00 am – 1:00pm; Thu 11:00 am -1:00pm

[meet.google.com/ovh-ibke-qzj](https://meet.google.com/ovh-ibke-qzj)

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## Carolina University Mission Statement

We are a Christ-centered university committed to student success.

## Course Information

### **Course Prerequisites**

MPH 505- Epidemiology

### **Course Description**

3 Credit hours

Molecular epidemiology is a branch of epidemiology and medical science that is utilized as a tool to understand interactions between genetic, environmental and other susceptibility factors, and to identify 'at-risk' populations and individuals and contribute to the prevention of disease across populations. This course will explore genetics at the individual, family and population level, applying the use of biomarkers to study disease causation, risk assessment, and prevention. Study design and statistical methods in data analysis including gene-environment interactions, biological sample collection, storage, and banking, and current laboratory methods for biomarker analysis will be illustrated using examples from current molecular epidemiologic research in noncommunicable diseases, neurodevelopment, childhood asthma



and related lung diseases, genetic screening, genetic counselling, risk assessment and disease prevention. Students will gain proficiency and experience in critically evaluating key papers in molecular epidemiologic studies. (Prerequisite: Two undergraduate courses in biology and MPH505 Epidemiology. A basic understanding of molecular genetics is preferred).

## Course Delivery and Methods

The course will utilize textbook reading, journal article reading, professor lectures, and student interaction through Discussions/Participation/Cornell Notes, Assignments, Quizzes, and Final capstone project paper

## Course Learning Outcomes

Upon completion of this course, students will be able to:

1. Understand genes, DNA, and genetic consideration in chronic diseases and cancers, plus theories and models used in public health.
2. Understanding of key public health framework, theories, and concepts. Understand research methods and apply various research methods.
3. Apply critical thinking and evaluate interventions. Communicate effectively and develop leadership qualities to influence diverse audiences using effective and appropriate formats and channels.
4. Demonstrate awareness of ethical and legal consideration in public health research study paper and practice.

## Course Resources

### Required Texts:

Molecular Epidemiology of Chronic Diseases, Chris Wild, Paolo Vineis, Seymour Garte, First published: 11 April 2008, Print ISBN: 9780470027431 | Online ISBN: 9780470725726 | DOI: 10.1002/9780470725726, Copyright © 2008 John Wiley & Sons, Ltd



**Required Resources:**

Additional journal articles will be provided by the professor throughout the course.

**Recommended Resources:**

Not Applicable.



## Course Requirements and Assignments

### Group Discussions

Discussion will be held in-person within the class time meeting. Students will be graded based on participation. Students will be separated in groups and prompts will be given by the professor.

### Assignments/Deliverables

Deliverables are defined as assignments which contribute to the completion of the final project. This includes project proposals, literature review, methods and design, data analysis, and abstract.

### Quizzes

Weekly quizzes will be administered via eLearning. Quizzes will cover the material covered within that specified week in the course.

### Final Capstone project

The final project will be a culmination of the material covered within this course. Students are expected to submit and present in class a PowerPoint (11-15 slides) or a poster/paper written in APA format (not necessarily but preferably).

## Course Schedule

### Quiz Schedule

Quiz 1: Mar 22  
Quiz 2: Mar 29  
Quiz 3: Apr 05  
Quiz 4: Apr 12  
Quiz 5: Apr 19

### Assignment Schedule

Project Proposal: Mar 22  
Literature Review: Mar 29  
Methodology: Apr 05  
Design/Analysis: Apr 12  
Abstract: Apr 19

### Final Exam

Capstone Project: Apr 26



## Course Assessment Mapping

Assessment	Objective(s) Met
Quizzes	1~3
Discussions	1~3
Assignments/Deliverables	1~3
Final Capstone Project	4

## Course Grading

Assignment Type	Weight
Group Discussions/Participation	10%
Quizzes	25%
Assignments/Deliverables	25%
Final Capstone Project	35%
Cornell Notes	5%



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Total	100%
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## University Grading Scale

Grade	Point Value	Range	
		Undergraduate	Graduate
<b>A</b>	4	94-100	96-100
<b>A-</b>	3.7	90-93	93-95
<b>B+</b>	3.3	87-89	90-92
<b>B</b>	3	83-86	87-89
<b>B-</b>	2.7	80-82	85-86
<b>C+</b>	2.3	77-79	82-84
<b>C</b>	2	73-76	79-81
<b>C-</b>	1.7	70-72	77-78
<b>D+</b>	1.3	67-69	74-76
<b>D</b>	1	60-66	70-73
<b>F</b>	0	<60	<70

Grading of assignments and substantive feedback is to be done within 3 days of the due date for regular assignments and 7 days for larger assignments.

Some assignments may require additional time to grade due to the length of the project and the directive to provide substantive feedback that will assist you throughout the learning process.



In cases where the assignment is not returned with feedback within the stated period, refer to communication from your professor to facilitate expectations on subsequent assignments. Students are not expected to apply adjustments on subsequent assignments in advance of returned grading and feedback.



## Professional Interaction & Communication

- Please use email whenever possible. Only university email and related systems should be used for institutional communications. Do not use personal email or video conferencing accounts.
- You should check email regularly, especially when enrolled in an active course.
  - Use subject lines appropriately. It is helpful to include the name of the course (including sections) whenever possible. Avoid using the subject line as the body of the email—include full details in the message itself to ensure clear communication.
  - Refer to professors and CU employees by their last names with appropriate honorifics (e.g., “Dr.” or “Professor”).
  - University communications (including emails and discussion board posts, etc.) should not resemble text message, chat, or social media posts. Use complete sentences with correct capitalization, spelling, punctuation, and grammar.
- Throughout an active course, faculty should respond to all emails and voicemail messages within 24 hours. Faculty and staff are not obligated to respond to communications where these guidelines are not followed.
- When participating in classes or meetings, be on-time and mentally present. Dress according to the Student Handbook or classroom standards and conduct yourself in a professional manner. Do not introduce distractions into the class and be prepared to stay for the duration of the session per normal classroom behavior.

## Course Attendance and Participation

All courses follow specific attendance policies found in the [Academic Catalog](#) for that course level and format. It is the student’s responsibility to be familiar with these policies and to keep track of their own attendance. Per the university attendance policy, accrued absences may contribute negatively toward a student’s final grade. Attendance and participation may be used by instructors to determine a portion of a student’s grade for a particular course. Whereas attendance is typically defined by statuses identifying a student’s presence in a class, participation typically includes the assessment of activity within that course. In some cases, the methodology, subject matter, learning environment, or other factors may require attendance.

Physical, in-person class attendance will be recorded for hybrid courses, whereas attendance for online courses will be gauged by regular academic engagement. Students should refer to the course syllabus for the course’s grade weighting table and course-specific policies regarding the grade percentages attributable to each component in a course, which may include attendance and participation. It is the student’s responsibility to be familiar with these policies and to keep track of their own attendance and comply with the rules.

Hybrid course attendance must be entered weekly (daily for modules) and be accurate.



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## Course Specific Policies

Important Note: Students are required to submit a scanned copy of handwritten “Cornell Note” of lectures each week to acquire 5 points. It is located under the Resources/“Handout” tab in the student portal or LMS.

Any absence or late assignment work must be reported earlier to the professor via email.

### Use of Artificial Intelligence

The use of generative AI tools is permitted in this class for the following activities:

- Brainstorming and refining ideas
- Fine-tuning research questions
- Finding information on a topic
- Drafting an outline
- Checking grammar and style
- AI-specific assignments (per the provided instructions)

The use of generative AI tools is not permitted for the following activities:

- Impersonation in classroom context (e.g. composing discussion board posts)
- Completing group work
- Writing a draft of a writing assignment
- Writing entire sentences, paragraphs, or papers to complete class assignments

## Disability Assistance

Carolina University welcomes students, faculty, staff and visitors with disabilities to our campus and to our programs. Our goal at CU is to ensure an accessible, inclusive welcoming learning and working environment for individuals with disabilities while complying with federal and state regulations.

Students with disabilities are encouraged to reach out to University Accessibility Services (UAS) as soon as possible to explore possible accommodations. UAS serves as a central resource on disability-related information, procedures and services for the university community and partners will work with the student and any other campus partners to identify barriers and implement plans for access. More information about UAS can be found at <https://carolinau.edu/university-accessibility-services>



## Academic Integrity and Misconduct

The Student Handbook has a detailed list of different ways students show a lack of academic integrity, including academic technology misuse, cheating, complicity, fabrication or invention, falsification, forgery, multiple submissions, plagiarism, and sabotage.

Academic integrity is the honest and responsible conduct of studies, scholarship, research, information collection, and presentation. The university expects students to submit assignments that are original to them and to properly cite and reference other peoples' ideas using the prescribed style guide. The very foundation of a good university education is academic integrity. Learning how to express original ideas, cite sources, work independently, and report results accurately and honestly are skills that carry students beyond their academic careers. If a student is uncertain about an issue of academic honesty, they should consult the faculty member to resolve questions in any situation prior to the submission of the academic exercise.

Maintaining your academic integrity involves:

- Creating and expressing your own ideas in course work.
- Acknowledging all sources of information including verbal, written, digital, and graphic.
- Completing assignments independently or acknowledging collaboration.
- Attending classes, exams, and required academic events.
- Accurately reporting results when conducting your own research.
- Honesty during examinations.
- Not tampering with or misusing technology.
- Not aiding or abetting other students in violating any academic rules or policies.

Courses at Carolina University will utilize proctoring for select exams to ensure exam integrity. Per Carolina University directives, all exams that represent 25% or more of a course grade are required to be proctored. Instances of cheating or inappropriate behavior will be considered violations of the Academic Integrity policy and will result in disciplinary action.

Plagiarism is the use of another person's distinctive ideas or words without acknowledgment. All researchers are expected to acknowledge the use of another author's words by the use of quotation marks around those words in the text of a paper and by appropriate citations. Plagiarism can occur in an oral, written, or media project submitted for academic credit or for some other benefit. Examples of plagiarism include (but are not limited to), the following:

- Word-for-word copying of another person's ideas or words;
- Mosaic (interspersing of one's own words here and there while, in essence, copying another's work);
- Paraphrasing without citation (the rewriting of another's work, yet still using their fundamental idea or theory);
- Submission of another's work as one's own;
- Having another person write a paper;
- Buying or procuring a ready-made paper from a research paper "service" on the Internet or from another such service;
- Neglecting quotation marks on material that is otherwise acknowledged;



- Fabrication of references (inventing or counterfeiting sources).
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## Appeals & Complaints

### Informal Resolution

Carolina University seeks to provide an excellent educational experience for all students. If a student wishes to make a complaint of an academic nature, in the first instance, they should seek to resolve the matter by informal discussion with the faculty member.

If the discussion is in person, it is recommended that the student follow up with an email summarizing the discussion (complaint and resolution if one is reached).

If the discussion with the faculty member does not resolve the issue, the student may also contact your school dean. If your professor is the dean, the next step is to begin the formal resolution process.

### Formal Resolution

If informal discussions do not resolve the matter, students have the right to file a formal complaint. The university's academic catalog includes a detailed description of processes for submitting [grade appeals](#) or [academic complaints](#) that range from teaching, learning, assessment, grading, or student performance in a course. While these processes differ, both are time-sensitive and begin with timely communication with the faculty member.

Grade appeals must be initiated with the faculty member within 5 days of the awarding of the grade or status. Both grade appeals and academic complaints must be filed within 7 days of the awarding of grade or status or after the events that are alleged to have caused the complaint. In either case, supporting evidence will be required. The processes are fully outlined in [the academic catalog](#) and include links to the appropriate forms.



## **BIBLIOGRAPHY**

Not Applicable.