Course Information
Course Number and Section: Epidemiology 503 881
Course Title: Strategies and Uses of Epidemiology

Prerequisites
Biostatistics 503 or permission of the instructor is required.

Course Description
This three credit-hour course offers an introduction to the principles, concepts, and methods of population-based epidemiologic research. The course will provide a foundation for understanding the basic principles of epidemiology and the measures used in epidemiology, and will also include discussions of causality, study design, disease surveillance and outbreak investigations. We will briefly touch on policy implications that arise from epidemiologic research.

Course Competencies

The students that have taken this class are expected to be able to:

   C. 1. Identify key sources of data for epidemiologic purposes.
   C. 2. Identify the principles and limitations of public health screening programs.
   C. 3. Describe a public health problem in terms of magnitude, person, time and place.
   C. 4. Explain the importance of epidemiology for informing scientific, ethical, economic and political discussion of health issues.
   C. 5. Comprehend basic ethical and legal principles pertaining to the collection, maintenance, use and dissemination of epidemiologic data.
   C. 6. Apply the basic terminology and definitions of epidemiology.
   C. 7. Calculate basic epidemiology measures.
   C. 8. Draw appropriate inferences from epidemiologic data.
   C. 9. Communicate written epidemiologic information to professional audiences.
   C.10. Evaluate the strengths and limitations of epidemiologic reports.

Course Components:

  CTools
CTools [https://ctools.umich.edu] is the online course management system used for CFPH courses. CTools is a UM web-based tool that requires authentication. To access your course and many other UM computing services you need to log in with your uniqname and Kerberos password.

The syllabus, videos, narrated presentations, readings, forums and miscellaneous course materials are located in your course’s CTools site. Student orientation materials and additional resources are also located in CTools in the CFPH.StudentCenter site which can be referred to throughout your time in the program.

**To Do Lists**

Weekly To Do lists will be posted in the CTools course site which will provide you with the weekly course schedule, required readings and assignments, and links to recorded lectures and relevant resources. To Do lists are drawn from the Course Summary Schedule at the end of this document.

**Online Lecture Videos:**

Online lecture videos will provide background on each topic covered in the course. Links to the videos can be found on the “To Do” List on the appropriate tab in the CTools site. The videos can be viewed on any computer that has audio capability. You may find a software application called “MySpeed” helpful when viewing the online lecture videos. The software allows you to speed up or slow down the pace of each video. This software must be purchased on your own (a free trial as well as purchasing information can be found at enounce.com).

**Synchronous Saba Centra Meeting**

Weekly synchronous, online class meetings will be held using a web conferencing technology called Saba Centra. The topics covered in these meetings will either expand on material covered in the video lectures or cover new material that was not covered elsewhere. Participation in the online class sessions is required. The topics covered in these meetings are listed in the Course Summary Schedule at the end of this document. [This software is often referred to as simply ‘Centra’]

- The synchronous Saba Centra meetings will be recorded and posted within 48 hours of taping for those students who are unable to participate or wish to revisit lecture material. This is not a substitute for attendance as participation greatly facilitates learning the material.
- A **wired**, high-speed internet connection and USB headset with microphone are required for your full participation. Please refer to the Technical Requirements page for headset specifications [http://www.sph.umich.edu/distance/requirements.html].
**Synchronous Exercises:**

A cornerstone of this class is the synchronous exercises in **Centra Side Rooms** that will provide you with a hands-on learning opportunity to apply fundamental epidemiologic principals. These structured small team exercises are designed to integrate information from the text, online lectures, and other readings. Since synchronous participation is a key component of this course, credit will be given for your active participation (engaged learning please) rather than correct answers. You will be allowed 2 absences to accommodate illness/travel/personal issues. Any additional absences will result in a 10 point reduction from your participation grade. If you have additional absences, you will not receive credit for that synchronous exercise.

Expectations for virtual synchronous participation:

- You will be assigned to a different side room during the course (i.e., we’ll swap membership after the second exam). Because public health is a profession that works across disciplines, the teams will be diverse with respect to student background.
- Using Announcements tool in CTools, the exercise for the Centra side room will be “shared” with each member of each team prior to the meeting date.
- The Instructor will be available during the Centra Meeting to help Side Room teams with key questions but ultimately it is the responsibility of the team to complete the exercise.
- The instructor will monitor the virtual team meetings and documentation throughout the class period to check progress and to see if there are collective misconceptions.
- Teams will be expected to contribute to the discussion of the exercise in the main room Centra meeting.
- Attendance will be taken for each synchronous exercise.
- Progress will be assessed by effort and completion of the exercise.

**Online Quizzes:**

Thirteen online quizzes will be administered via Test Center through the CTools site. Completion of quizzes is expected by the date posted on the syllabus, the Wednesday prior to Centra, at 5 pm ET. Quizzes can be retaken three times with the final score being counted towards your grade. (For technical instructions, see detailed instructions posted on CTools.)

**Asynchronous Forum Discussions**

You will have an opportunity to post your thoughts and opinions about various topics in the course and react to those of your classmates in Forum. You are encouraged to read and react to all items.

- Forums are hosted on the course’s CTools website. These written, “asynchronous” discussions provide an opportunity for you to engage site resources, other students, and me! They allow for the free expression of convergent and divergent ideas. They also allow time for reflective thinking and the development of ideas over time.
Forums are accessed using the Forums Tool in the left-hand menu bar of the CTools course site. I sometimes moderate discussions, but if you have a personal question or comment please feel free to email me directly.

Expectations:

This is a graduate level course, and so we rely on certain expectations to create a professional learning environment.

- Bring all of what you know to bear on the subjects we cover.
- Think deeply about the big picture of public health while simultaneously mastering the specific details of epidemiological strategies and methods.
- Do the background reading and review the online videos ahead of time.
- Write at a professional level. This includes using complete sentences, appropriate referencing, and acknowledging important contexts of salient details such as when, where, and how a study was performed. It also includes being precise with epidemiological terms, units of measure, labeling, historical figures in the field, authorship and principal investigators of the studies we cover.

Policy on Collaboration:

All exercises will be conducted in groups of approximately four - five students. Groups will be changed during the semester. For the online quizzes, concepts may be discussed with your peers but answers may not be shared. All exams are to be completed independently.

Time Commitment

Plan to participate in the course each day, following the course schedule. It’s difficult to predict how much time you will need to spend in this course each day. Some of you will be more comfortable working online than others. This course is not designed as an independent study course. Interaction with fellow students and instructional faculty and staff is an important component of this collaborative learning environment.

This distance learning program is based on a shared learning community, which encourages you to share in the learning process with your colleagues. Some of the CFPH program is based on group work where you will be expected to contribute your own knowledge, experience and effort to the group. It takes some practice and skill with technology to be successful working in a ‘virtual group’. As you go through the semester, be alert for announcements and email messages that prompt you on what to do next.

Accommodations and Conflicts:

If you think you need an accommodation for different abilities or a disability, please let us know at your earliest convenience. Some aspects of this course, such as the assignments, in-class activities, or the way we teach may be modified to facilitate your participation and progress. As soon as you make us aware of your needs we can work with you, the Office of Services for Students with Disabilities, or the Adaptive
Technologies Computing Site to help determine appropriate accommodations. We will treat any information about your disability confidentially and with discretion.

Persons who have religious or cultural observations or personal needs that conflict with class, assignments or exams should let the instructor know.

**Readings**

**Required Textbook:**
- Readings will supplement lectures and other course work. Exams will contain questions based on the readings that may not be covered by lectures. Please note that the lecture material is sometimes presented in a different order than the book material.

**Evaluation/Grading**

<table>
<thead>
<tr>
<th>Synchronous Participation and Exercises</th>
<th>180 points (30%)</th>
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<tbody>
<tr>
<td>13 Online Quizzes</td>
<td>120 points (20%)</td>
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<tr>
<td>3 Exams @ 100 Points Each</td>
<td>300 points (50%)</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>600 points (100%)</strong></td>
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**Exams**

Three examinations will be given. Each exam will be 2 hours in length. Content of the examinations will come from class lectures, discussion sessions and reading assignments. Exams are closed book. A formula sheet for each exam will be provided part way through the period each exam covers, so that you may become familiar solving problems with the formulas that will be provided for use with each exam.

Question types include: short answer, multiple choice, and problems requiring calculations that are very similar to those in the in-class exercises. We will also draw from information covered in online lectures. Bring a working calculator to all exams (NOT YOUR PHONE).

**Exam 1** will cover information presented in weeks 1-4: introduction to epidemiology, Infectious Diseases and Outbreak Investigation, Measuring Disease, Measuring Death, Age Standardization and Screening, Validity and Reliability.

**Exam 2** will cover information presented in weeks 6-9 on Randomized Trials, Cohort Studies, Case-Control Studies, Cross-Sectional Studies, and Risk Estimates.

**Exam 3** will cover material in weeks 11-14 on Selection Bias, Information Bias, Confounding and
Strategies to Address Confounding, Effect Modification and Causality.

A range of dates will be given during which the exams may be taken with a remote proctor. This will allow you to take the test at a convenient time. Exams will be proctored on campus for those wishing and able to travel to campus.

Remote Proctored Exam Information

Students who are unable to travel to the UM Ann Arbor campus for testing must designate an appropriate remote proctor and testing site.

Who can be approved to serve as a proctor? An acceptable proctor is someone with no conflict of interest in upholding UM’s Academic Integrity Policy. Relatives, friends, spouses, neighbors, and co-workers are not acceptable proctors. Examples of acceptable proctors are:

- Human Resources Department staff in the company where the student is currently employed
- Direct supervisor at the place of employment, providing the setting is suitable for academic testing.
- An employee in an educational administrator's office or community college library, university, or high school
- Librarian or staff member at a public library
- An employee at a recognized professional learning center
- An officer of higher rank than the student, if in the military
- An employee at a college, university, or private testing center (in this case, the testing center director should be listed as your proctor)

It is your responsibility to identify an acceptable proctor and confirm arrangements regarding the scheduling and administration of the exam directly with the proctor. If an appropriate proctor cannot be arranged with the necessary internet access for student testing, a paper-based exam may be provided.

The proctor must meet the School of Public Health staff approval. A copy of the Academic Integrity Policy will be included with the testing materials. Both the student and the proctor must review, sign and return the policy with the examination and a copy of the proctor’s photo ID. A student in violation of the Academic Integrity Policy is subject to disciplinary action.

Exam Registration Database:

Whether you plan to take your exams on campus or with a remote proctor, you must register your plans and proctor information in the CFPH Program’s Exam Registration Database. [https://www.sph.umich.edu/iscr/cfph-exams/]. Plans must be registered at least two weeks before each exam to allow the CFPH Program adequate time to communicate with your proctor if needed.

Academic Conduct

It is expected that your conduct will be consistent with that of any public health professional, which includes respect for the instructor, GSI, and fellow students in all communications. Student academic misconduct refers to behavior that may include plagiarism, cheating, fabrication, falsification of records
or official documents, and aiding and abetting the perpetration of such acts. While homework problem solving may be done jointly, the final preparation of homework and exam review sheets must represent each student’s own effort. Preparation of the midterm, final exam and paper must represent each student’s own effort. The use of assistance from other students is a violation of the standard of academic conduct. All incidences of academic misconduct will be referred to the Office of Academic Affairs.

Academic Well-being

Physical, psychological, and emotional well-being is vital for effective learning. Students are encouraged to contact the University’s office for Services for Students with Disabilities (SSWD; http://www.umich.edu/~sswd) or the office for Counseling and Psychological Services (CAPS; http://www.umich.edu/~caps). Any student who feels that he/she may need special accommodation for any sort of disability or wishes to discuss any relevant and/or confidential information is encouraged to make an appointment with the Instructor.

Course Withdrawal

Late registration and withdrawal deadlines are posted on the University’s Academic Calendar [http://www.ro.umich.edu/calendar/]. Students are advised to check for late registration fees or tuition penalties before making a change to course registration. Should you need to withdraw from the course or the term, please email a request to CFPHinquiries@umich.edu and a CFPH Program staff member will assist you.

Course Communication

To ensure that your questions are answered as promptly as possible, please follow the communications guidelines below:

- **CTools Forum**: A special section of the discussion board has been set up for questions/answers about the course. This area will not be monitored daily. You are strongly encouraged to respond to your peers if you have an answer or can provide guidance.
- **Personal email to the instructor**: Email should be used only for messages that are private in nature. Please allow 48 hours for response time. (skardia@umich.edu)
- **Technical Support**: Do not contact the Instructor regarding technical issues. Questions regarding technical support should be sent to cfph-help@umich.edu.
- **CTools Announcements**: I will mainly communicate with the class via announcements in CTools that will be delivered to your UM Email account as well as displayed in the CTools course site Announcements section.
- **University of Michigan Email**: To ensure security and the privacy of each student, please use your UM email to communicate with your instructor and classmates. UM Email is accessed via http://email.umich.edu. To have your UM email forwarded to another account, please see http://www.itcs.umich.edu/itcsdocs/s4384/.
Technical Support

If you encounter any technical difficulties regarding the course content or accessing University resources, please send an email to cfph-help@umich.edu. This account is monitored prior to and during all synchronous Saba Centra session as well as during regular business hours.

Technical Requirements

In addition to meeting the recommended system requirements, students must understand basic computer and Internet usage to ensure a successful learning experience. Please review the requirements at http://www.sph.umich.edu/distance/requirements.html

General Guidelines and Suggestions

Assignment Deadlines: Assignments are due at 11:59 PM Eastern Standard/Daylight Time unless otherwise stated by your instructor and/or the course syllabus and schedule.

Late assignments: To benefit the most from this course, you should complete assignments by the due date. Instructors may reduce points or not accept assignments posted after the deadline.

Backing up work: Technology is not 100% reliable. Plan ahead for unexpected interruptions. We recommend the following:

- Compose assignment and discussion responses in Word or another text editor, save them, then copy and paste them into the appropriate area.
- Keep a backup copy of all assignments, forum discussions or questions you post to the course site. Always check the forum areas after you have posted to make sure that your message is displayed. (Sometimes there is a short delay before messages are displayed by CTools)
- Download and/or print out assignments before you plan to work on them. That way, if your Internet connection is slow, or if you temporarily cannot reach the course site, you will have the assignments in hard copy or on your hard drive and can continue to work. Online readings should also be downloaded and saved or printed out ahead of time so you have them at your disposal when you are ready to read them.
- If you can’t reach the course site, don’t panic. Wait a few minutes and try again. Notices of planned maintenance are posted to the CTools gateway home page, so be sure to make a note of these announcements.
- Before contacting central UM ITS Help, it is best to first send an email to cfph-help@umich.edu. If the CFPH staff can resolve an issue for you directly it will be faster.

Frequently Asked Questions (FAQ's)

A list of FAQs is located at http://www.sph.umich.edu/distance/faqs.html.

Course Evaluations
I am open to comments and suggestions throughout the course. Electronic final course evaluations will be available through CTools towards the end of the semester.

We strongly encourage you to submit all evaluations as requested. Your opinion helps us to make necessary changes throughout the semester, and to plan better for future cohorts in the CFPH program.

Course Summary Schedule

COURSE SCHEDULE-Epid 503 881 Winter 14

<table>
<thead>
<tr>
<th>WEEK</th>
<th>TOPIC</th>
<th>VIEW ONLINE LECTURES BEFORE CENTRA</th>
<th>READINGS SHOULD BE COMPLETED BEFORE CENTRA</th>
<th>COMPETENCIES</th>
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</table>
| 1    | Strategies and uses of Epidemiology | Introduction (parts 1-2)  
(Kardia)  
Health 2.0  
This is Public Health | Gordis - Chapter 1 | C.3, C.4, C.6 |
| 1    | Infectious Diseases and Outbreak Investigation | Infectious Diseases:  
- Modes of Transmission  
- Consequences of Transmission  
- Endemic vs. Epidemic  
- Outbreak Investigations  
- Attack Rates and Ratios  
(Kardia) | Gordis - Chapter 2 | C.1, C.3, C.4, C.6, C.7, C.9, C.10 |
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<tr>
<th>WEEK</th>
<th>TOPIC</th>
<th>VIEW ONLINE LECTURES BEFORE CENTRA</th>
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<th>COMPE TENCIES</th>
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<tr>
<td>3</td>
<td>Age Standardization</td>
<td>Standardization (Tomey)</td>
<td>Gordis - Chapters 4</td>
<td>C.1, C.3, C.4, C.6, C.7, C.9, C.10</td>
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<tr>
<td>4</td>
<td>Screening, Validity and Reliability</td>
<td>Screening, Validity and Reliability (Karvonen-Guitierrez)</td>
<td>Gordis – Chapter 5 Chapter 18 pages 311-321</td>
<td>C.1, C.2, C.3, C.4, C.6, C.7, C.9</td>
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<tr>
<td>5</td>
<td>EXAM 1 Review EXAM 1 Practice Problems</td>
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<td>Weeks 1 - 4</td>
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<td>6</td>
<td>EXAM 1</td>
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<td>WEEK</td>
<td>TOPIC</td>
<td>VIEW ONLINE LECTURES BEFORE CENTRA</td>
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<td>7</td>
<td>Case-Control and Cross-Sectional Studies</td>
<td>- Measures of Association for Case Control Studies (Tomey)&lt;br&gt;- Measures of Association for Cross-Sectional Studies (Karvonen-Guitierrez)</td>
<td>Gordis - Chapter 10</td>
<td>C.1, C.3, C.4, C.6, C.7, C.9, C.10</td>
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<tr>
<td>8</td>
<td>NO Centra - WINTER RECESS</td>
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<tr>
<td>9</td>
<td>Risk Estimates</td>
<td>Risk Estimates (Kardia)</td>
<td>Gordis - Chapters 11-12</td>
<td>C.1, C.3, C.4, C.6, C.7, C.9, C.10</td>
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<td>10</td>
<td>EXAM 2 Review&lt;br&gt;EXAM 2 Practice Problems</td>
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<td>Week 6, 7, 9</td>
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<tr>
<td>11</td>
<td>EXAM 2</td>
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<td>WEEK</td>
<td>TOPIC</td>
<td>VIEW ONLINE LECTURES BEFORE CENTRA</td>
<td>READINGS SHOULD BE COMPLETED BEFORE CENTRA</td>
<td>COMPETENCIES</td>
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<td>11</td>
<td>Selection and Information Bias</td>
<td>Selection Bias Information Bias</td>
<td>Gordis - Chapter 15</td>
<td>C.6, C.9,</td>
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<td></td>
<td></td>
<td>(Adar)</td>
<td></td>
<td>C.10</td>
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<tr>
<td>12</td>
<td>Confounding and Strategies to Address</td>
<td>Confounding (parts 1-3)</td>
<td>Gordis - Chapter 15, pages 251-256;</td>
<td>C.6, C.9,</td>
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<td></td>
<td>Confounding</td>
<td>(Karvonen-Guitierrez)</td>
<td>Chapter 14, pages 231-234</td>
<td>C.10</td>
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<td>13</td>
<td>Effect Modification and Causality</td>
<td>- Effect Modification - Causality</td>
<td>Gordis - Chapter 15 and 14</td>
<td>C.3, C.6,</td>
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<td>(Adar)</td>
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<td>C.9, C.10</td>
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<tr>
<td>14</td>
<td>Review for FINAL EXAM</td>
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<td>Weeks 11, 12, 13</td>
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<td>Practice Problems for FINAL EXAM</td>
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<td>15</td>
<td>Review Week</td>
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<tr>
<td>16</td>
<td>Final Exam</td>
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