

Michigan State University
College of Human Medicine
Department of Epidemiology & Biostatistics

EPI 380: Applied Analytic Methods in Health Studies II

Fall 2020
3 credit hours

Tuesday, 12:40 – 2:00 p.m., Online (zoom)
Thursday, 12:40 – 2:00 p.m., Online (zoom)

Instructor: **Danielle R. Gartner, PhD, MS**
Office: B614 West Fee Hall
Email: gartnerd@msu.edu (put “Epi 380” in subject heading)
Office Hours: Tuesdays 2:00-3:30pm (zoom),
Thursdays 10:30-11:30am (zoom),
or by appointment

Teaching Assistant: Villisha Gregoire
Email: gregoir8@msu.edu; villisha.a.gregoire@gmail.com
Office Hours: **TBD**

Prerequisites

EPI 280, or approval of instructor.

Course Description

This course is the second offering in a two-part series required for the minor in Global Public Health and Epidemiology. The focus is on the biostatistics and analysis methods commonly found in public health. Students will learn to produce, interpret, and use common quantitative data analyses.

Course Learning Objectives

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

- Translate research objectives into clear, testable statistical hypotheses.
- Select from, apply, interpret, and communicate results from principal methods of statistical inference.
- Test hypotheses using SAS software and interpret results.
- Critically evaluate epidemiological results from published public health research studies.
- Begin to recognize the limits of biostatistical and epidemiologic approaches to addressing the public’s health.

Course Format

This course meets two times a week, on Tuesday and Thursday. Tuesday class sessions will primarily focus on traditional lecture format with in-class activities. Thursday class sessions will facilitate practice using SAS software. This class will be taught exclusively online using Zoom. Lectures and labs will be held at the times indicated above and recordings of lectures will be made available to students. A “Zoom Tips for Students” document can be found on D2L with more information regarding Zoom, including its functioning, logistics, etiquette, etc.

Required Course Text

Sullivan, LM. Essentials of Biostatistics in Public Health. Jones and Bartlett Learning, Sudbury, MA, 3rd Edition (ISBN: 9781284217636). Students can call the publishing company at 978-579-8197 to order this textbook at a discounted price. The MSU library has a single-user electronic version of the text available (note: only one person can view the electronic text at a time, meaning, this is not a great option if you are enrolled in this course).

Course Readings

Each lecture will require background reading of the required text and/or electronically-provided materials, available on D2L. Students are responsible for reading and being ready to discuss assigned material prior to class.

Course Assignments & Assessments

This course will include graded assignments and exams, completed individually or, for some assignments, as a member of a two- or three-person team.

Component	Individual	Team	Percentage (%) of Final Grade
Readiness Assessments (RA) (11)	X		15
Homework (6) (option to complete in 2-person group, exception: HW1)	X	X	15
Exam 1	X		15
Exam 2	X		15
Final Project (option to complete individually)		X	15
Participation (peer review, SAS labs, responses)	X		15
Article Presentation		X	10
Total	75	25	100

Readiness Assessments (RA): Prior to each Tuesday session (due at noon on Tuesdays), students are to complete an online readiness assessment regarding the assigned reading or previously discussed materials. RAs are posted on D2L. RAs are graded pass/fail, with a pass (full credit) assigned if at least 60% of questions are answered correctly and zero points (no credit) if less than 60% of questions are answered correctly. Students may use any course materials (readings, lectures, etc.), but not each other, to complete RAs. RAs will be posted by the end of the day on Thursdays, prior to the Tuesday they are due. We will review answers when class begins on Tuesday.

Homework: Homework will be assigned every other week (see course-at-a-glance) and should be submitted via the dropbox on D2L. Homework is to be submitted by 5pm on Mondays and should be completed individually or in groups of no more than 2 people. If you work in a group, you must submit the name of your partner with your homework assignment. Each teammate is responsible for submitting their own assignment (i.e., everyone must turn in an assignment, even if you worked with a partner).

Exams: Two take-home exams will be given throughout the semester, as specified in the course-at-a-glance. Exams are to be completed individually and students may use any course materials (readings, lectures, etc.).

Final Project: In groups of 1 to 2 students, and using a provided dataset, students will propose an answerable research question with public health relevance and conduct the specified regression-based analysis. Students have several options for presenting their results and can choose from the following options: 1) write a standard research manuscript with a brief introduction, full methods section, full results section (including tables and/or figures, if relevant), and brief discussion; 2) give a 15-minute zoom or video presentation with visuals (e.g., PowerPoint slides); 3) create a zine (pronounced zeen) that includes visual and written information; 4) propose another option. Homework assignments 5 and 6, as well as Exam 2, will build towards this final project. More information will be provided prior to the mid-semester topic declaration assignment due date.

Article Presentation (Honors Credit): Depending on the number of students that elect this option, students will work alone or as small teams to review and briefly present (< 10 minutes) regarding an assigned conceptual/framework article. Groups may choose the format of presentation that works best for them (e.g., zoom recording, etc.) and will submit their video to D2L. All students will provide an online response to the presentation content. Further guidance for presentations is posted on the D2L site. Teams are encouraged to discuss articles and critiques with the instructor or TA during office hours.

Participation: Students are expected to attend and participate in class activities. When working in a team setting on the article presentation or the final project, students will also provide peer review of their teammates, and these will be factored into final participation grades. Those that work alone will not be held responsible for completing a project peer review. Completed SAS lab sheets will earn participation points. To receive full credit, completed worksheets will be due the day after they are assigned. For example, a SAS worksheet assigned on Thursday, September 11th, will be due by 5pm on Friday, September 12th.

Grading

Final course grades will be determined using the following scale:

Range (%)	MSU grade
90.0 – 100	4.0
85.0 – 89.9	3.5
80.0 – 84.9	3.0
75.0 – 79.9	2.5
70.0 – 74.9	2.0
60.0 – 69.9	1.0
0 – 59.9	0.0

Note: We do not round up your final grade (ex: a grade of 84.99 is a 3.5).

Requests for re-grading assignments or exams will be made once the following circumstances have been met:

1. 48 hours has passed since the assignment or exam was returned to the student.
2. No later than midnight, 5 business days after the assignment or exam was returned to the student, a clearly articulated justification for why the assignment or exam needs regrading has been submitted via email to the instructor and the TA (ex: for an assignment returned on Tuesday at 2pm, a student has until the following Tuesday at midnight to request regrading). Regrading requests received after the 5th business day at midnight will not be considered.

Note: Re-grading does not guarantee a higher grade, as mistakes previously missed during the original grading may be discovered and result in a lower grade.

Land Acknowledgement

I acknowledge that Michigan State University occupies the ancestral, traditional, and contemporary Lands of the Anishinaabeg – Three Fires Confederacy of Ojibwe, Odawa, and Potawatomi peoples. In particular, the University resides on Land ceded in the 1819 Treaty of Saginaw. I recognize, support, and advocate for the sovereignty of Michigan’s twelve federally-recognized Indian nations, for historic Indigenous communities in Michigan, for Indigenous individuals and communities who live here now, and for those who were forcibly removed from their Homelands. By offering this Land Acknowledgement, I affirm Indigenous sovereignty, that I will work to hold Michigan State University more accountable to the needs of American Indian and Indigenous peoples, and that I will apply epidemiological and biostatistical knowledge, as appropriate, in support of these affirmations. More information can be found here:

<http://aisp.msu.edu/about/land/>

Course Policies

Inclusion & Diversity in the Classroom

We are committed to ensuring that our classroom is a diverse, inclusive, civil, and welcoming place. Diversity and inclusion are central to the mission of public health, and are assets that contribute to our strength, excellence, individual, and institutional success. As a class, we (instructor, TA, and students) must strive to create an inclusive learning and work environment that promotes the dignity and respect of our diverse student body, faculty, staff, and communities and that is also responsive to the needs and contributions of all persons.

We (instructors, TA, and students) are expected to understand and uphold the following MSU policies:

- Anti-discrimination: https://hr.msu.edu/policies-procedures/university-wide/ADP_policy.html
- Tolerance and civility: https://hr.msu.edu/policies-procedures/university-wide/tolerance_civility.html

Time Commitment

A 3-hour, 300-level undergraduate course is expected to require 3 hours of instructor-to-student contact time each week, with approximately 6-9 hours of outside preparation time. While these time commitments may change from week-to-week and student-to-student, the time commitment for this course is significant.

Accessibility

MSU is committed to providing equal opportunity for participation in all programs, services, and activities. Requests for accommodations by persons with disabilities can be made by contacting the Resource Center for Persons with Disabilities at 517-884-RCPD or online at <https://www.rcpd.msu.edu/>. Upon determination of your eligibility, you will be issued a “VISA” (Verified Individual Services Accommodation) form. Please present this form to the instructor at the start of the term and/or at least two weeks prior to the accommodation data (exam, project, etc.).

Spartan Code of Honor

Michigan State University affirms the principle that all individuals associated with the academic community have a responsibility for establishing, maintaining, and fostering an understanding

and appreciation for academic integrity. Academic integrity is the foundation for university success. Learning how to express original ideas, cite works, work independently, and report results accurately and honestly are skills that carry students beyond their academic career.

The Spartan Code of Honor Academic Pledge embodies the principles of academic integrity through a personal commitment to ethical behavior in a student's studies and research. All undergraduate students are expected to uphold the academic pledge throughout their enrollment at MSU. Student conduct that is inconsistent with the academic pledge is addressed through existing policies, regulations, and ordinances governing academic honesty and integrity.

The Spartan Code of Honor Academic Pledge: "As a Spartan, I will strive to uphold values of the highest ethical standard. I will practice honesty in my work, foster honesty in my peers, and take pride in knowing that honor in ownership is worth more than grades. I will carry these values beyond my time as a student at Michigan State University, continuing the endeavor to build personal integrity in all that I do."

Unless authorized by the instructor, you are expected to complete all course assignments, including homework, lab work, quizzes, tests and exams, without assistance from any source. You are expected to develop original work for this course; therefore, you may not submit course work you completed for another course to satisfy the requirements for this course. Also, you are not authorized to use www.allmsu.com to complete any course work in this course. Students who violate MSU academic integrity rules may receive a penalty grade, including a failing grade on the assignment or in the course. Contact the instructor if you are unsure about the appropriateness of your course work.

Academic honesty is essential for maintaining a high standard of academic excellence and integrity. There are many different forms of academic dishonesty. These include plagiarism, such as inadequately recognizing the source of short phrases or ideas or an author in written work submitted for a grade, cheating on exams (e.g. during the exam, looking at someone else's exam or using electronic communication), submitting another's work as one's own, among others.

Copyright

The materials on this course website are only for the use of students enrolled in this course for purposes associated with this course and may not be retained or further disseminated. The materials on this course website may be protected by copyright; any further use of this material may be in violation of federal copyright law.

Expectations of Instructor

Email: All emails will be responded to within 2 days (excluding weekends). The instructor will provide advance notice, if possible, when responses will be limited.

Feedback: Graded assignments will receive feedback in alignment with the assessment rubrics, made available on D2L (final project or article presentation rubrics only).

Grading: All graded assignments will be graded and returned to the student no more than two weeks after the due date. Assignments that build on the next assignment will be returned within one week of the final due date. Early submissions will not be graded earlier than on-time submissions.

Office Hours: If you have questions about any aspect of the course material, please contact the instructor or TA and attend office hours. We are committed to your learning and are here to support you.

Expectations of Students

Email: Please include “EPI 380” in the subject line of an email pertaining to course content.

Attendance & Participation: Your attendance and attention during class is an integral part of your learning experience for this course. If you anticipate being unavoidably absent for a class session, please notify the course instructor prior to the class session. Students who need an alternate due date for an assignment or who must miss an exam in order to observe a holy day for their religion must send the instructor an email request for accommodation by the end of the first week of classes to make appropriate arrangements.

Assignments: Unless otherwise indicated, submit all assignments through the course D2L dropbox. Emailing assignments to the instructor or TA is not acceptable unless prior arrangements have been made. Please aim to use Calibri or Arial fonts, size 12. Please submit your assignments as word documents and use the following file naming convention:

- Course #_First name_Last name_Assignment name
 - Ex: EPI380_Danielle_Gartner_Homework1

Late Work: Late submissions of assignments and projects will receive a 10%-point reduction for every day they are late, unless prior arrangements with the instructor have been made. After 5 business days, late submissions will receive zero points. One exception to this is the readiness assessments, which will receive zero points upon late submission, regardless of the amount of lateness. You are expected to inform the instructor during the first week of class, or as soon as possible during the semester, if you anticipate not being able to attend an exam or presentation due to extenuating circumstances (e.g., medical procedure, major illness, family emergency). Should an emergency that impacts submission of your work arise during the course, inform the instructor as soon as possible so that arrangements can be made. Make-up examinations will not be provided unless there is documented evidence of an emergency.

Communication: You are expected to follow common courtesy in all communication, including email, team discussions, and face-to-face or online sessions.

Computing: In the course, we use statistical software as a tool to help you understand how epidemiologic and biostatistical concepts and measures are connected with data analysis. The focus of this course is on concepts, measures, and the statistical software itself. We will be referencing and providing resources for using SAS (statistical analysis system) software.

Technical Support: You are not required to purchase SAS software for your personal computer. All work requiring the use of SAS software can be completed during lab sessions (Thursdays). Technical support for installing and accessing course software is available by contacting Linda Walters (Department IT) at lwalters@msu.edu.

COURSE AT A GLANCE*

Date	Week	Course Topic	Reading	Assignment Due
9/3	1	Introductions, Review	Syllabus	--
9/8	2	ANOVA	Chapter 7.8	RA1 + HW1 (Mon)
9/10	2	SAS Lab 1	FHS codebook	Lab 1 (Fri)
9/15	3	Power & Sample Size	Chapter 8.1, 8.2	RA2 + HW2 (Mon)
9/17	3	SAS Lab 2	Article Review & Project Guidelines	Lab 2 (Fri)
9/22	4	Confounding & Effect Measure Modification (part I)	Chapter 9.1, 9.2	RA3
9/24	4	SAS Lab 3	Schramm et al. (2018)	Lab 3 (Fri)
9/29	5	Confounding & Effect Measure Modification (part II) + Risk Communication	Chapter 9.2	RA4 + HW3 (Mon)
10/1	5	SAS Lab 4	Wing (1998)	Lab 4 (Fri)
10/6	6	Correlation	Chapter 9.3 (through pg 207)	RA5
10/8	6	SAS Lab 5	Walter & Andersen (2013)	Lab 5 (Fri)
10/13	7	Exam 1 Review		HW4 (Mon)
10/15	7	Exam 1		Exam 1
10/20	8	Intro to Regression	Chapter 9.3	RA6
10/22	8	SAS Lab 6	Prussing (2018)	Lab 6 (Fri)
10/27	9	NO CLASS		
10/29	9	Open Lab (for projects)		Final Project Topic & Team Charter
11/3	10	Regression 2	Chapter 9.3	RA7 + HW5 (Mon)
11/5	10	SAS Lab 7	Noble (2018)	Lab 7 (Fri)
11/10	11	Multiple Regression	Chapter 9.4	RA8
11/12	11	SAS Lab 8	Zuberi & Bonilla-Silva (2008)	Lab 8 (Fri)
11/17	12	Logistic Regression	Chapter 9.5	RA9 + HW6 (Mon)
11/19	12	Exam 2 Review		
11/24	13	Exam 2		Exam 2
11/26	13	NO CLASS – THANKSGIVING BREAK		
12/1	14	Topic TBD	Chapter 11	RA10
12/3	14	TBD	Ford & Airhihenbuwa (2010)	
12/8	15	Topic TBD	Chapter 10	RA11
12/10	15	Open Lab (for projects)		
		Final Projects	--	Final Projects

*As necessary and with notice (within Faculty/University regulations), the instructor may make changes to the syllabus, course schedule, readings, assignments, and due dates.

Unless otherwise specified,

- Homework assignments are due on Mondays by 5pm.
- RAs are due on Tuesdays by 12pm (noon).