SYLLABUS & COURSE INFORMATION

SCHOOL OF PUBLIC HEALTH
UNIVERSITY OF MINNESOTA

PUBH 6344

Completing the Culminating Experience: Secondary Data Analysis
Spring 2019

COURSE & CONTACT INFORMATION

Credits: 2
Meeting Day(s): Monday
Meeting Time: 9:05am-11:00am
Meeting Place: Mayo D199

Instructor:	Nancy E. Sherwood, PhD	Ryan T. Demmer, PhD
Email:	sherw005@umn.edu	demm0009@umn.edu
Office Phone:	612-625-4567	612-626-8597
Office Hours:	By Appointment	By Appointment
Office Location:	333 WBOB	474 WBOB

COURSE DESCRIPTION

The goal of the course is to provide instructions and hands-on experience for developing, conducting and defending the Culminating Experience research project involving secondary data analysis of a cross-sectional, case-control, or cohort study. The course will help meet the milestones of the research project and complete the main parts of the project in a timely manner.

COURSE PREREQUISITES

Students in the Epidemiology MPH Program take this class in the academic year in which they are planning to graduate. Most of the students will be in the second year.

COURSE GOALS & OBJECTIVES

1. Develop research question and testable hypotheses that can be answered with available data.
2. Articulate human subjects research issues of study data and research question; and design and implement research study guided by the principles of human subjects research ethics.
3. Conduct a comprehensive literature review, create evidence grid for a research project.
4. Perform statistical analysis using SAS statistical software: manage data, conduct analyses, interpret results.
5. Create journal-quality data tables, and figures (as needed), of the study results.
6. Write journal-quality paper consisting of Abstract, Introduction, Methods, Results, and Discussion sections.
7. Characterize the public health significance of your research project (included in the Discussion section).
8. Prepare PowerPoint scientific presentation and give two talks: (1) practice talk in class and (2) final talk before the committee (~15 min presentation + Q&A session).
9. Improve scientific writing skills and ability to write under deadline.
10. Critically review the research projects of peers.
11. Synthesize feedback received into current project, written and oral presentation.

METHODS OF INSTRUCTION AND WORK EXPECTATIONS

The class will be a mixture of lectures, discussions, and in-class activities, including computer work. Students will learn directly from the instructors and from one another how to solve their analysis problems and to communicate research design and findings. Most homework assignments will consist of writing sections of the paper; these written sections typically draw on other expected work, particularly literature reviews, statistical analyses, that need to be completed as well (i.e., completed analysis in order to draft results section). **Because the class is designed to help you complete your CE which is a separate requirement from the course per se, the time you spend outside of class working on your project (e.g., writing, analyzing data) will be greater than the typical class time requirement (i.e., 2 hours outside of class for every 1 hour in class).**

Students are expected to turn in assignments on time in order for peers to provide feedback during the classroom discussion time. Please pay attention to when and to whom assignments will be due. Most assignments must be submitted through email.

In addition to writing their own project, each student will be expected to review the individual sections, the statistical code, and the whole proposal of their peers and provide feedback. An important feature of being a good colleague is to learn from each other, including providing and receiving peer feedback. Throughout the course, students will be expected to provide and receive constructive criticism, i.e. a critique that aims to improve the project. It is important that everyone has respect for each other's ideas and appreciate the diversity of the classroom. Peer critiques should not be made or taken as a personal attack against a person's beliefs or ideas. Instead, comments throughout the class should be positive in tone and with the goal of improving the proposed study.

Like other work in the course, all student to student communication is covered by the Student Conduct Code (https://z.umn.edu/studentconduct).

COURSE TEXT & READINGS

Required Readings

von Elm E, Altman DG, Egger M, Pocock SJ, Gøtzsche PC, Vandenbroucke JP; STROBE Initiative. The Strengthening the Reporting of Observational Studies in Epidemiology (**STROBE**) statement: guidelines for reporting observational studies. Ann Intern Med 2007 Oct 16;147(8):573-7. PMID: 17938396

Vandenbroucke JP, von Elm E, Altman DG, Gøtzsche PC, Mulrow CD, Pocock SJ, Poole C, Schlesselman JJ, Egger M; STROBE initiative. Strengthening the Reporting of Observational Studies in Epidemiology (**STROBE**): explanation and elaboration. Ann Intern Med 2007 Oct 16;147(8):W163-94. PMID: 17938389

Mensh B, Kording K. Ten simple rules for structuring papers. PLoS Comput Biol 2017 Sep 28;13(9):e1005619. doi: 10.1371/journal.pcbi.1005619. eCollection 2017 Sep. PMID: 28957311

Recommended Readings

Joshua Schimel. Writing science: how to write papers that get cited and proposals that get funded. OUP USA; 2012

Textbooks that help with data analysis (consult as needed)

1. The Little SAS Book: A Primer, Fifth Edition: A Primer, Fifth Edition. By L. Delwiche, S. Slaughter. (electronic version is available through U of MN library)
2. Applied Statistics and the SAS Programming Language, 5th Edition by RP Cody and JK Smith, Pearson Education Inc., 2006
3. SAS Programming by Example by RP Cody and R Pass, SAS Publishing, 1995 (electronic version is available through U of MN library)
4. Applied Logistic Regression, 3rd edition by DW Hosmer and S Lemeshow, John Wiley & Sons, Inc., 2013 (electronic version is available through U of MN library)
5. Survival Analysis: a self-learning text, 2nd edition by D. Kleinbaum and M Klein Springer, 2005. (electronic version is available through U of MN library)
6. Survival Analysis: a self-learning text, 2nd edition by David G. Kleinbaum, Mitchel Klein, Springer, 2005. http://link.springer.com/book/10.1007/978-1-4419-6646-9

Equipment and Software

Students are required to install SAS on their laptop and bring their laptop to each class. The student license fee is $45 and additional information on ordering the software is available at http://it.umn.edu/sas-sas-inc. If students need help installing SAS on their laptops (for instance, if they have MAC laptops), talk to the instructors. We can help!

If needed, below is a list of student labs that have computers with installed SAS software.

1. A150 Mayo
2. WBOB (student lounge, room 466)
3. Bio-Medical Library, Diehl Hall
4. B060 Coffman Union
5. Hubert H. Humphrey Center 50
6. Classroom Office Building 135 on St. Paul campus

We strongly recommend that students use these additional resources early and often

University of Minnesota Libraries: www.lib.umn.edu (check out workshops on search engines, Mendeley, Endnote, etc.)

- *How to conduct research:* https://hsl.lib.umn.edu/biomed/help/research
- *How to do literature review:* https://hsl.lib.umn.edu/biomed/help/systematic-review
- *Library workshops: Introduction to Mendeley, Introduction to Citation Managers and others:* http://umn.libcal.com/calendar/workshops/?cid=3064&t=d&d=0000-00-00&cal%5B%5D=3064

The Center for Writing http://writing.umn.edu/index.html

- Student Writing Support (SWS) http://writing.umn.edu/sws offers free writing instruction for all University of Minnesota students—graduate and undergraduate—at all stages of the writing process. In face-to-face and online collaborative consultations, SWS consultants help students develop productive writing habits and revision strategies.
- Consulting is available by appointment **online** and in Nicholson Hall, and on a walk-in basis in Appleby Hall. For more information, go to writing.umn.edu/sws or call 612.625.1893.

Potential resources for getting help with statistical analysis

- PubH 7465 Biostatistics Consulting (a course which meets in Spring Semester) offers statistical consulting for AHC projects. Contact one of the instructors (Kyle Rudser or Ann Brearley) to discuss a consult.

COURSE OUTLINE/WEEKLY SCHEDULE

Week	Topic	In-class Activity	Assignments
Week 1 1/28-2/3	• Introduction to the Course • NHANES • Culminating Experience Form • ETHOS/IRB Application	• Discuss research topics • Begin CE form	• Pre-class Survey due Thursday 1/24/19
Week 2 2/4-2/10	• Literature Searches & Reference Management (Guest: Shanda Hunt) • Creating Evidence Grid • Directed Acyclic Graphs	• Begin literature search • Start Mendeley library • Start evidence grid	• **Monday 2/4**: 1-Draft CE Form • **Monday 2/4:** 2-IRB
Week 3 2/11-2/17	• Standards of Research Study Papers (STROBE) • Critical Review of Paper	• Paper critique • Evidence grid	• **Monday 2/11**: 1-Final CE Form • **Monday 2/11**: 3-Paper Critique
Week 4 2/18-2/24	• Writing Introductions	• Working on Introduction Drafts	• **Monday 2/18**: 4-Literature Review & Evidence Grid • **Monday 2/18**: Dataset Ready • **Friday 2/22**: 5A-Introduction
Week 5 2/25-3/3	• Methods Section: Study Design, Measurement, Analysis Plan	• Peer feedback: introduction • Descriptive data: continuous and categorical variables, handling missing data, etc.	• **Friday 3/1**: 6A-Methods with Table Shells
Week 6 3/4-3/10	• Analyses/Results: Tables, Figures, Graphs	• Peer feedback: methods with table shells • Work on table 1 draft	• **Monday 3/4**: 5B-Introduction
Week 7 3/11-3/17	• NHANES Analysis/Examples	• Discuss analysis plan implementation with peers and instructors	• **Monday 3/11**: 6B-Methods with Table Shells
Week 8 3/18-3/24	**SPRING BREAK**		

Week 9 3/25-3/31	• Discussion-Public Health Significance, Strengths, Limitations	• Peer feedback: results	• **Monday 3/25**: 5C-Introduction • **Monday 3/25:** 7A-Results with Tables
Week 10 4/1-4/7	• Common Issues/Themes	• Open writing & analysis time • Instructor consults	• **Monday 4/1**: 6C-Methods • **Monday 4/1:** 7B-Results with Tables • **Friday 4/5**: 8A-Discussion
Week 11 4/8-4/14	• Abstracts • Reference Formatting	• Peer feedback: discussion • Open writing & analysis time • Instructor consults	• **Friday 4/12**: 9A-Abstract
Week 12 4/15-4/21	• Common Issues/Themes	• Peer feedback: abstract • Open writing & analysis time • Instructor consults	• **Monday 4/15:** 7C-Results • **Monday 4/15:** 8B-Discussion • **Friday 4/19**: 10A-Full Manuscript (Including 9B-Abstract, 8C-Discussion)
Week 13 4/22-4/28	• Creating PowerPoint Presentations	• Peer feedback: full manuscript • Open writing & analysis time • Instructor consults	• **Friday 4/26**: 10B-Full Manuscript, SAS Codes and Outputs to Instructors
Week 14 4/29-5/5	• Work Session	• Peer feedback: PowerPoint slides • Open writing & analysis time • Instructor consults	• **Monday 4/29**: 11A-Powerpoint Slides • **Friday 5/3**: 10C-Final Manuscript to Instructors & Advisors
Week 15 5/6-5/12	• Practice Presentations	• Peer & Instructor Feedback	• **Monday 5/6**: 11B-Powerpoint Slides for Practice Presentation
FINAL EXAM WEEK: 5/13 Presentation Day			

SPH AND UNIVERSITY POLICIES & RESOURCES

The School of Public Health maintains up-to-date information about resources available to students, as well as formal course policies, on our website at www.sph.umn.edu/student-policies/. Students are expected to read and understand all policy information available at this link and are encouraged to make use of the resources available.

The University of Minnesota has official policies, including but not limited to the following:

- Grade definitions
- Scholastic dishonesty
- Makeup work for legitimate absences

- Student conduct code
- Sexual harassment, sexual assault, stalking and relationship violence
- Equity, diversity, equal employment opportunity, and affirmative action
- Disability services
- Academic freedom and responsibility

Resources available for students include:

- Confidential mental health services
- Disability accommodations
- Housing and financial instability resources
- Technology help
- Academic support

EVALUATION & GRADING

Assignments	Description	Due Date (*=Fri before class to peer)	Points
0. Pre-Class Survey	Online survey of project topic	1/24	1 bonus point
1. Culminating Experience Form			**10 total**
A. Draft for Instructors	Draft required Epi MPH Form with outline of proposed project	Monday 2/4	5 points
B. Final Version for Instructors	Final required Epi MPH Form with outline of proposed project	Monday 2/11	5 points
2. IRB Forms	Completed IRB forms for study review	Monday 2/4	**5 total**
3. Paper Critique	1 page written critique of empirical paper – content and presentation (writing, etc.)	Monday 2/11	**10 total**
4. Literature Review & Evidence Grid	Evidence Grid	Monday 2/18	**10 total**
5. Introduction			**20 total**
A. Draft for Peer Review	Critical Introduction (about 500 words): explaining what is already known, articulating gaps in literature and rationale for the proposed study / hypotheses	Friday 2/22	
B. Revised Draft to Instructors	Revised introduction, including revisions based on peer's comments and evidence grids	Monday 3/4	10 points
C. Final Draft to Instructors	Revised introduction, including revisions based on instructors' comments	Monday 3/25	10 points
6. Methods			**20 total**
A. Draft for Peer Review	Methods Section (750-1000 words) –Study Design, Population, Sampling, Data Collection, Results, Tables shells	Friday 3/1	
B. Revised Draft to Instructors	Revised Methods Section – including revisions based on peer's comments	Monday 3/11	10 points
C. Final Draft to Instructors	Revised Methods Section – including revisions based on instructor's comments	Monday 4/1	10 points

7.	**Results, Tables/ Figures**			**20 total**
	A. Draft For Peer Review	Results section (750-1000 words), including: study findings, interpreting coefficients and results; Table 1 and 2	Monday 3/25	
	B. Revised Draft to Instructors	Revised Results section, including revisions based on peer's comments and all Tables & Figures	Monday 4/1	10 points
	C. Final Draft to Instructors	Revised Results section, including revisions based on instructor's comments (incorporated in Draft Full Manuscript)	Monday 4/15	10 points
8.	**Discussion**			**20 total**
	A. Draft for Peer Review	Discussion section (1000-1500 words), including: summary of key findings; strengths and weaknesses; comparisons of findings to prior literature; public health and clinical implications; conclusions	Friday 4/5	
	B. Revised Draft to Instructors	Revised Discussion section, including revisions based on peer's comments	Monday 4/15	10 points
	C. Final Draft to Instructors	Revised Discussion section, including revisions based on instructor's comments (incorporated in Draft Full Manuscript)	Friday 4/19	10 points
9.	**Abstract**			**10 total**
	A. Draft for Peers & Instructors	Abstract (250 words) with the following sub-headings: Background, Methods, Results, Discussion	Friday 4/12	5 points
	B. Revised Draft to Instructors	Revised Abstract, including revisions based on peer's comments (incorporated in Draft of Full Manuscript)	Friday 4/19	5 points
10.	**Full Manuscript**			**70 total**
	A. Draft for Peers and Instructors	Full draft with the Abstract, Introduction, Methods, Results (Tables/Figures), Discussion, Formatted references: 4000 words (excluding abstract, references, tables); ≤5 tables and figures total; 20-50 references	Friday 4/19	
	B. Revised Draft to Instructors	Revised Full Paper based on peer's and instructors' comments; Statistical code and outputs	Friday 4/26	
	C. Final Draft to Instructors	Final draft based on instructor and peer feedback from presentations and previous drafts	Friday 5/3	
11.	**PowerPoint Presentation**			**10 total**
	A. Draft for Peers	10-12 formatted slides for 10-minute presentation	Monday 4/29	
	B. Revised Draft to Instructors	Revised PowerPoint slides for practice presentation	Monday 5/6	
Final Presentation/Defense - submit final slides to instructors			Monday 5/13	**30 total**
Class Attendance		Class attendance is expected. Absences may result in lower grades.		**10 total**
Participation (includes peer review)		Participation is expected		**25 total**
Total Points				**270 total**

Classroom Participation and attendance: 13% of the grade (35 points total). Students are expected to attend class and participate in lecture discussions; work on the research project in class; and assist fellow students by providing constructive feedback on drafts, and, where possible, help with analysis.

Homework Assignments: 50% of the grade (135 points). Credit for assignments is based on on-time receipt of the assignment, quality, and addressing the comments of peer reviewers (based on the rubric below). These versions are due by email (to both instructors) before the start of the specified class period. The practice presentation is also included in this total.

Final Manuscript and Final Presentation/Defense 37% (100 points). Faculty review of complete final product (faculty review paper, statistical code, and final presentation).

Grading Scale
The University uses plus and minus grading on a 4.000 cumulative grade point scale in accordance with the following, and you can expect the grade lines to be drawn as follows:

% In Class	Grade	GPA
93 - 100%	A	4.000
90 - 92%	A-	3.667
87 - 89%	B+	3.333
83 - 86%	B	3.000
80 - 82%	B-	2.667
77 - 79%	C+	2.333
73 - 76%	C	2.000
70 - 72%	C-	1.667
67 - 69%	D+	1.333
63 - 66%	D	1.000
< 62%	F	

- A = achievement that is outstanding relative to the level necessary to meet course requirements.
- B = achievement that is significantly above the level necessary to meet course requirements.
- C = achievement that meets the course requirements in every respect.
- D = achievement that is worthy of credit even though it fails to meet fully the course requirements.
- F = failure because work was either (1) completed but at a level of achievement that is not worthy of credit or (2) was not completed and there was no agreement between the instructor and the student that the student would be awarded an I (Incomplete).
- S = achievement that is satisfactory, which is equivalent to a C- or better
- N = achievement that is not satisfactory and signifies that the work was either 1) completed but at a level that is not worthy of credit, or 2) not completed and there was no agreement between the instructor and student that the student would receive an I (Incomplete).

Evaluation/Grading Policy	Evaluation/Grading Policy Description
Scholastic Dishonesty, Plagiarism, Cheating, etc.	You are expected to do your own academic work and cite sources as necessary. Failing to do so is scholastic dishonesty. Scholastic dishonesty means plagiarizing; cheating on assignments or examinations; engaging in unauthorized collaboration on academic work; taking, acquiring, or using test materials without faculty permission; submitting false or incomplete records of academic achievement; acting alone or in cooperation with another to falsify records or to obtain dishonestly grades, honors, awards, or professional endorsement; altering, forging, or misusing a University academic record; or fabricating or falsifying data, research procedures, or data analysis (As defined in the Student Conduct Code). For additional information, please see https://z.umn.edu/dishonesty The Office for Student Conduct and Academic Integrity has compiled a useful list of Frequently Asked Questions pertaining to scholastic dishonesty: https://z.umn.edu/integrity. If you have additional questions, please clarify with your instructor. Your instructor can respond to your specific questions regarding what would constitute scholastic dishonesty in the context of a particular class-e.g., whether collaboration on assignments is permitted, requirements and methods for citing sources, if electronic aids are permitted or prohibited during an exam. Indiana University offers a clear description of plagiarism and an online quiz to check your understanding (http://z.umn.edu/iuplagiarism).
Late Assignments	Late work is considered incomplete and is subject to points off the grade. Exceptions may be granted by the instructors on a case-by-case basis. The student must contact the instructors in advance of the deadline, and the instructors must agree that the student's circumstances warrant a new deadline for the student. Make every effort to turn assignments in on time. For each day an assignment is late, a 1 point grade reduction will be taken.
Attendance Requirements	Class attendance is expected. Students will not be penalized for absence during the semester due to unavoidable or legitimate circumstances. Such circumstances include verified illness, participation in intercollegiate athletic events, subpoenas, jury duty, military service, bereavement, and religious observances. Such circumstances do not include voting in local, state, or national elections. For complete information, please see: http://policy.umn.edu/Policies/Education/Education/MAKEUPWORK.html.
Extra Credit	No extra credit points will be given.