SCHOOL OF
PUBLIC HEALTH
UNIVERSITY OF MINNESOTA

PUBH 6348, SECTION 002

Writing Research Grants
Fall 2018

COURSE & CONTACT INFORMATION

Credits: 2
Meeting Day(s): Monday
Meeting Time: 3:35pm-5:30pm
Meeting Place: Moos Health Sci Tower 1-430

Instructor: Nancy E. Sherwood, Associate Professor
Email: sherw005@umn.edu
Office Phone: 612-625-4567
Fax: 612-624-0315
Office Hours: By Appointment
Office Location: WBOB (West Bank Office Building, 1300 S. 2nd Street, Suite 300)

COURSE DESCRIPTION

This course provides instruction and hands-on experience in the preparation of grant applications for the National Institute of Health (NIH) or other granting agencies. This course is required for all PhD students in Epidemiology, as it helps them with hands-on grant application experience as well as preparation for the written preliminary exam (Part B). Students are strongly encouraged to use this course to write a proposal that could become their PhD dissertation topic, and to identify a funding source for their proposal so that they can submit it for funding.

COURSE PREREQUISITES

PubH 6330 or PubH 6320 or PubH 6341; Epidemiology MPH or Public Health Nutrition MPH or Epidemiology PhD student (or instructor permission

COURSE GOALS & OBJECTIVES

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

- Understand the principles used to move from an initial idea to a focused and fully developed grant application.
- Contribute to the preparation of NIH and other grant applications.
- Prepare power analysis and sample size calculations for different types of research study designs.
- Apply the principles that guide the protection of human subjects and ethical issues in research.
- Critique grant applications based on significance, innovation, methods and study design.
- Synthesize feedback received into current grant assignment.
- Implement sound ethical standards in research proposals and be able to apply for IRB/Human Subjects Committee approval for research proposals.

METHODS OF INSTRUCTION AND WORK EXPECTATIONS

Course Workload Expectations
Classroom sessions will consist of lecture and some group discussion of the grant proposals each student will be developing. New material will be presented in short classroom lectures and reading assignments. Class discussion will focus on each student's grant application ideas related to the topic discussed in class. *Students may be divided up into groups to work with the members of their groups during the semester.* Students are expected to turn in assignments on time in order for the instructor and peers to provide

feedback during the classroom discussion time. Assignments and due dates are listed in the syllabus. Please pay attention to when and where assignments will be due. Most assignments must be submitted through email or Moodle upload.

Project - Grant Proposal
The full written grant proposal should follow NIH guidelines or the guidelines of another funding source identified by the student and approved by the instructor. The recommended length of each section of the full grant proposal based on the NIH R21 mechanism is shown below. This is an *example*. Modifications to this structure based on another specified guideline from a non-NIH funding source is acceptable.

Title page	**First page**
Table of Contents	**Second page**
Project Summary / Abstract	**Third Page**
Specific Aims	**1 page limit**
Significance and Innovation*	**~1-2 pages**
Approach (methods)*	**~4-5 pages**
Human Subjects	**No limit**
References	**No limit**
Budget	**No limit**

* *Limit is 6 pages total for Significance and Innovation and Approach sections, consistent with an NIH small grant mechanism (R21). This is a good framework as a stepping stone towards submitting for an award as a graduate student, as a dissertation proposal, or a postdoctoral project.*

Per NIH-style, the grant proposal needs to be single-spaced. The font needs to be Ariel 11 point font with 0.5 inch margins. The proposals will be evaluated using the 7 criteria outlined below:
1. **Significance and Innovation** – importance to Public Health and/or Epidemiology
2. **Specific Aims and Hypotheses** - succinct, clear, and consistent throughout the proposal
3. **Plausibility and Clear Conceptual Framework** - biological, sociological, or psychological basis of the question
4. **Feasibility** – recruitment, population and size, duration of study, methods
5. **Approach** - study design, epidemiologic and analytical methods
6. **Human Subjects** - Protection and Ethics
7. **Writing** - clarity, efficiency, and overall organization

Learning Community
It is our intention that student's grants will be discussed during class period. This part of class is for everyone's benefit to clarify any concerns or questions that have arisen in the writing of the grant. In addition to discussing their own grant topic, each student will be expected to ask questions or give advice during discussion of other student's topics. We want students to understand that this part of class is for constructive criticism. Constructive criticism is a critique of someone's current work and should not be taken as a personal attack against a person's beliefs or ideas. It is important that everyone has respect for each other's perspectives and appreciate the diversity of the classroom. Participation in classroom discussion is worth 10% of the student's final grade and will be assessed based on the contribution to discussion over the entire semester.

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 text for this course (available at UMN Bookstore):
Writing Dissertation and Grant Proposals: Epidemiology, Preventive Medicine and Biostatistics, 1st Edition. Lisa Chasan-Taber. 2014, Chapman and Hall/CRC Press.
Additional recommended/optional reading: NIH grant-writing tutorials: http://grants.nih.gov/grants/grant_tips.htm.

Course Outline/Weekly Schedule

Week	Topic	Readings	Activities/Assignments
Week 1 September 10th	• Introduction/Overview • NIH Overview, funding mechanism • Specific Aims & Hypotheses	• Chapter 1 (Ten Top Tips) • Chapter 3 (Hypotheses) • Chapter 6 (Specific Aims) • Chapter 17 (Funding Source)	• Navigating NIH and identifying funding sources • Discussion of grant topic ideas • How to formulate specific aims and hypotheses • Assignment #1 (10 points): Upload 1-page description and summary of your study idea to Moodle prior to class. Please be prepared to discuss your potential grant ideas during class
Week 2 September 17th	• Guest lecture by Shanda Hunt, MPH, Public Health Librarian and Data Curation Specialist • Literature searching for grant applications • Grant database alerts • NIH/NSF compliance • Interdisciplinary research networking	• Chapter 4 (Conducting the Literature Search)	• Discussion and Q & A with Ms. Hunt. • Feedback on proposal drafts as time allows • Assignment #2 (10 points): Draft of Specific Aims due via upload to Moodle site by Friday September 21st
Week 3 September 24th	• More about Specific Aims • Begin discussion Significance & Innovation/Background section of proposal	• Review Chapters 3, 4 & 6 as needed • Chapter 7 (Background & Significance)	• Student's hypotheses and specific aims – feedback • Students work in groups on Specific Aims • Background & Conceptual Models • Assignment #3 (10 points): Revised Aims and first draft/ detailed outline of Significance & Innovation/Background Section due via upload to Moodle site by Friday September 28th

Week 4 October 1st	• More on Significance & Innovation	• Review Chapter 7 as needed • Chapter 5 (Scientific Writing)	• Feedback on 2nd draft of Specific Aims and draft of Significance & Innovation • Background literature and any question interpreting the literature and conveying it around your idea and as time allows share ideas on study designs and methods • Assignment #4 (10 points) – Submit revised Aims and second draft Significance and Innovation / Background due via upload to Moodle site by <u>Friday October 5th</u>
Week 5 October 8th	• Approach Section: Research plan, study design, methodology	• Chapter 8 (Preliminary Studies) • Chapter 9 (Study Design & Methods)	• What study design is ideal? Pros and cons of study designs, feasibility, methodology, preliminary studies, etc. • Assignment #5 (10 points) – Submit the current draft of the proposal including an *outline draft* of the Approach section by <u>Friday October 12th</u>
Week 6 October 15th	• More on the Approach Section	• Review Chapters 8-11 as needed • Chapter 12 (Bias & Confounding) • Chapter 13 (Limitations & Alternative Approaches • Chapter 14 (Reproducibility & Validity Studies)	• Review status of the proposal to date, including feedback on Approach section drafts
Week 7 October 22nd	• Budgets • Biosketches • Description of PI, Co-PIs, Co-Is	• Refer to the NIH and any other tutorial website links found on the course Moodle site	• Budget components and strategies • Crafting the biosketch • Putting together a strong research team • Assignment #6 – Submit the next draft of the entire proposal including the next more complete draft of the Approach section by <u>Friday October 26th</u>

Week 8 October 29th	• **Guest lecture by Darin Erickson, PhD, Associate Professor, EpiCH** • **Statistical analysis and power, examples**	• **Chapter 10 (Data Analysis)** • **Chapter 11 (Power)**	• **Students discuss their analysis and power ideas with Dr. Erickson**
Week 9 November 5th	• **Developing an NIH proposal from a pilot study**	• **Dr. Sherwood's summary statement from R01 submission**	• **Group work** • **Feedback** • **Assignment #7 (10 points) – Current draft including revised Approach section and statistical analysis and power due <u>Friday, November 8th</u>**
Week 10 November 12th	• **Guest lecture by Michael Oakes, PhD, Professor, EpiCH** • **Human Subjects/Ethics** • **Conflicts of Interest**	• **Refer to the NIH and any other tutorial website links found on the course Moodle site**	• **Discussion, Q & A with Dr. Oaks** • **Students should prepare a brief description of their study with respect to human subjects risks for review with Dr. Oakes.**
Week 11 November 19th	• **Obtaining approval for human subjects research & navigating ETHOS**	• None	• **ETHOS IRB example** • **Discuss status of proposal drafts with instructor and peers**
Week 12 November 26	• **Project Summary (abstract): Selling your idea** • **Review of Human Subjects section of proposal** • **Overall organization & structure of the application** • **Peer review**	• **Chapter 15 (Abstracts & Titles)** • **Chapter 18 (Submission)** • **Refer to the NIH tutorial and any other website links on the course Moodle site** • **Chapter 16 (Presenting your Proposal)** • **Chapter 19 (Review Process)**	• **Assignment #8 (10 points) – This is the final draft submission prior to the final product and should include all required sections, including 'Project Summary' and Human Subjects sections, alternative approaches, strengths and limitations, and revised statistical analysis and power sections as part of entire proposal draft due <u>Wednesday Nov 28</u>**

Week 13 December 3	• **Polishing and troubleshooting** • **Mock peer review**	• **Chapter 20 (Resubmission)**	• **Mock peer review panels to review grant proposals Feedback on presentations**
Week 14 December 10th	• **Mock peer review**	**None**	• **Mock peer review panels to review grant proposals**
Monday December 17th	• **Final grant proposal due via Moodle upload**		

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

Grades will be based on the quality of the student's participation in the classroom discussions and on the quality of the written proposal. Evaluation of the proposal will be based on its clarity, completeness, and scientific merit. Point values for determining the final course grade are assigned as follows:

1. Assignments   25% (80 points)
   - Turned in on time (check syllabus for dates)
   - Points will be subtracted for late assignments (1 point per day)
   - Completeness of each assignment
2. Completed written grant proposal   50% (160 points)
   - Followed guidelines set forth in syllabus
   - Revisions of grant based on feedback from instructor and peers
3. Oral presentation of grant proposal   10% (32 points)
4. Class participation/discussion/peer review   <u>15% (48 points)</u>
                                                                               Total Points = 320

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	Points will be subtracted for late assignments (1 point per day)
Attendance Requirements	Attendance in class is required
Extra Credit	NA