

PubH 6348 Section 2

Writing Research Grants

Fall 2016

Credits:	2
Meeting Days:	Monday
Meeting Time:	3:35-5:30 pm
Meeting Place:	Moos Tower 2-120
Instructor:	Mark A. Pereira
Office Address:	Room 326 WBOB
Office Phone:	612-624-4173
Fax:	612-624-0315
E-mail:	map@umn.edu
Office Hours:	By appointment or walk-in
Teaching Assist:	None
Office Hours:	Email map@umn.edu to schedule a meeting.

I. 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).

II. Course Prerequisites

Students must be enrolled in the Epidemiology PhD Program or have permission of the instructor. In order to be able to understand the concepts of grant writing, prior scientific writing experience, knowledge of basic study design and statistical methods are also required for this course.

III. Course Goals and 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, methods and study design.
- Synthesize feedback received into current grant assignment.

IV. Methods of Instruction and Work Expectations

Classroom sessions will consist of lecture and some group discussion of current projects. 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 will be divided up into groups and will 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.

Class Participation

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.

Project - Grant Proposal

The first part will be the full written grant proposal, following 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. However, 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.

Evaluation of Grant Proposal

All students will be required to critique two or three other students' grant proposals and participate in formal peer-review discussion panels for each of these proposals. The critique of the proposals will be based on the 8 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

Peer-reviewers will give copies of their written critiques to the instructor. Forms for these critiques, and examples, will be distributed to students in advance.

Grant revisions:

Based on feedback during the review process students will be expected to revise their grants and submit a final grant to the instructor in order to receive the final grade for the class. This final submission must include a one-page explanation for how the major comments from the review critiques were handled in the final revision.

V. Course Text and 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

<http://www.niaid.nih.gov/researchfunding/grant/Pages/aag.aspx>

VI. Course Outline/Weekly Schedule [Submit assignments as Word docs to map@umn.edu]

DATE	TOPIC	Required Reading From Chasan-Taber Text	IN-CLASS DISCUSSION
Assignment #1 – be prepared to discuss your potential grant topic idea(s) in the first class on Sept 12th. Upload your idea(s) to the Moodle site.			
Class 1 Sept. 12	Introduction/Overview NIH Overview, funding mechanisms Specific Aims and 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 #2 – Refine grant topic idea – Early draft of Specific Aims (1 page single spaced max, but shorter is ok) due via upload to Moodle site by 9/18 (1 day before class)			
Class 2 Sept. 19	More about ‘Specific Aims’ Begin discussing ‘Significance and Innovation’ /	Review Chapters 3 and 6 as needed Chapter 4 (Conducting the literature search)	Student’s hypotheses and specific aims ideas for grant Student’s work in groups on Specific Aims

	background section of the proposals	Chapter 7 (Background & Significance)	Background and Conceptual models
Assignment #3 – Second draft of Specific Aims due via upload to Moodle site by Sept 24th			
Class 3 Sep. 26	More on ‘Significance and Innovation’	Review Chapter 7 as needed Chapter 5 (Scientific Writing)	Feedback on 2 nd draft of Specific Aims Background literature and any question on lit searches, interpreting the literature and conveying it around your idea and as time allows share ideas on study designs and methods
Assignment #4 – Submit first draft/outline of Significance and Innovation / Background due via upload to Moodle site by Oct 1st			
Class 4 Oct. 3	Guest lecture by <u>Shanda Hunt</u> Lit searching for grant applications Grant database alerts NIH/NSF compliance Interdisciplinary research networking		Discussion and Q&A with Ms. Hunt. Feedback on proposal drafts as time allows.
Class 5 Oct. 10	‘Approach’ – research plan, study design, methodology	Chapter 8 (Preliminary Studies) Chapter 9 (Study Design and Methods)	What study design is ideal? Pros and cons of study designs, feasibility, methodology, preliminary studies, etc...
Assignment #5 – Submit the current draft of the entire proposal including the first draft of the Approach section by Saturday 10/15			
Class 6 Oct. 17	More on the Approach section	Review Chapters 8, 9, 10, 11 as needed Chapter 12 (Bias and confounding) 13 (Limitations and Alternative Approaches) 14 if applicable (Reproducibility and Validity Studies)	Review status of the proposal to date, including feedback on Approach section drafts
Class 7 Oct. 24	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 first draft of the Approach section by Saturday 10/29			
Class 8 Oct. 31	Statistical analysis and power, examples <u>Guest:</u> Darin Erickson, PhD, Assoc. Prof., Div. of EpiCH	Chapter 10 (Data Analysis) Chapter 11 (Power)	Students discuss their analysis and power ideas with Dr. Erickson
Class 9 Nov. 7			
Human Subjects / Ethics Conflicts of Interest <u>Guest:</u> Michael Oakes, PhD, Assoc. Prof., Div. of EpiCH	Refer to the NIH and any other tutorial website links found on the course Moodle site	Discussion, Q&A with Dr. Oakes Students should prepare a brief description of their study with respect to human subjects risks, for review with Dr. Oakes	
**Assignment #7 – Current draft including revised Approach section and statistical analysis and power due Nov. 10th Thursday			
Class 10 Nov. 14	Developing an NIH proposal from a pilot study <u>Guest:</u> Daheia Barr-Anderson, PhD		Discussion, Q&A with Dr. Barr-Anderson
Class 11 Nov. 21			
Project Summary (abstract)– selling your idea Review of Human Subjects section of the proposal Overall organization and structure of the application	Chapter 15 (Abstracts and Titles) Chapter 18 (Submission) Refer to the NIH tutorial and any other website links on the course Moodle site	Feedback on revised draft of 'Approach' section	
**Assignment #8 – 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 11/24			
Class 12 Nov. 28	Polishing and troubleshooting Peer Review Presenting your idea Revising the proposal based on peer review	Chapter 16 (Presenting your Proposal) Chapter 19 (Review Process) Chapter 20 (Resubmission)	Feedback on 'Project Summary' and Human Subjects sections of proposal, strengths and limitations, and revised statistical analysis and power sections

	feedback		
Class 13 Dec 5	Mock Peer Review Practice		Mock peer review panels to review grant proposals
Class 14 Dec. 12	Mock Peer Review Practice		Mock peer review panels to review grant proposals

Final grant proposal due-date December 19th via Moodle upload.

All Readings and detailed description of each assignment will be posted on WebCT.

Please check the class folders for additional readings we may add throughout the semester.

VII. Evaluation and 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 20% (20 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 60% (60 points)
 - Followed guidelines set forth in syllabus
 - Revisions of grant based on feedback from instructor and peers
3. Oral presentation of grant proposal 10% (10 points)
4. Discussion 10% (10 points)
 - Participation in class and group discussion

Grading is A-F, as follows:

- | | |
|-------------------|-------------------|
| A = 92-100 points | C- = 70-71 points |
| A- = 90-91 points | D = 60-69 points |
| B+ = 88-89 points | F = < 60 points |
| B = 82-87 points | |
| B- = 80-81 points | |
| C+ = 78-79 points | |
| C = 72-77 points | |

The University utilizes plus and minus grading on a 4.000 cumulative grade point scale in accordance with the following:

- A 4.000 - Represents achievement that is outstanding relative to the level necessary to meet course requirements
- A- 3.667
- B+ 3.333
- B 3.000 - Represents achievement that is significantly above the level necessary to meet course requirements
- B- 2.667
- C+ 2.333
- C 2.000 - Represents achievement that meets the course requirements in every respect
- C- 1.667
- D+ 1.333
- D 1.000 - Represents achievement that is worthy of credit even though it fails to meet fully the course requirements
- S Represents achievement that is satisfactory, which is equivalent to a C- or better.

For additional information, please refer to: <http://policy.umn.edu/Policies/Education/Education/GRADINGTRANSCRIPTS.html>.

Course Evaluation

The SPH will collect student course evaluations electronically using a software system called CourseEval: www.sph.umn.edu/courseeval. The system will send email notifications to students when they can access and complete their course evaluations. Students who complete their course evaluations promptly will be able to access their final grades just as soon as the faculty member renders the grade in SPHGrades: www.sph.umn.edu/grades. All students will have access to their final grades through OneStop two weeks after the last day of the semester regardless of whether they completed their course evaluation or not. Student feedback on course content and faculty teaching skills are an important means for improving our work. Please take the time to complete a course evaluation for each of the courses for which you are registered.

Incomplete Contracts

A grade of incomplete "I" shall be assigned at the discretion of the instructor when, due to extraordinary circumstances (e.g., documented illness or hospitalization, death in family, etc.), the student was prevented from completing the work of the course on time. The assignment of an "I" requires that a contract be initiated and completed by the student before the last official day of class, and signed by both the student and instructor. If an incomplete is deemed appropriate by the instructor, the student in consultation with the instructor, will specify the time and manner in which the student will complete course requirements. Extension for completion of the work will not exceed one year (or earlier if designated by the student's college). For more information and to initiate an incomplete contract, students should go to SPHGrades at: www.sph.umn.edu/grades.

University of Minnesota Uniform Grading and Transcript Policy

A link to the policy can be found at onestop.umn.edu.

VIII. Other Course Information and Policies

Grade Option Change (if applicable):

For full-semester courses, students may change their grade option, if applicable, through the second week of the semester. Grade option change deadlines for other terms (i.e. summer and half-semester courses) can be found at onestop.umn.edu.

Course Withdrawal:

Students should refer to the Refund and Drop/Add Deadlines for the particular term at onestop.umn.edu for information and deadlines for withdrawing from a course. As a courtesy, students should notify their instructor and, if applicable, advisor of their intent to withdraw.

Students wishing to withdraw from a course after the noted final deadline for a particular term must contact the School of Public Health Office of Admissions and Student Resources at sph-ssc@umn.edu for further information.

Student Conduct Code:

The University seeks an environment that promotes academic achievement and integrity, that is protective of free inquiry, and that serves the educational mission of the University. Similarly, the University seeks a community that is free from violence, threats, and intimidation; that is respectful of the rights, opportunities, and welfare of students, faculty, staff, and guests of the University; and that does not threaten the physical or mental health or safety of members of the University community.

As a student at the University you are expected adhere to Board of Regents Policy: *Student Conduct Code*. To review the Student Conduct Code, please see: http://regents.umn.edu/sites/default/files/policies/Student_Conduct_Code.pdf.

Note that the conduct code specifically addresses disruptive classroom conduct, which means "engaging in behavior that substantially or repeatedly interrupts either the instructor's ability to teach or student learning. The classroom extends to any setting where a student is engaged in work toward academic credit or satisfaction of program-based requirements or related activities."

Use of Personal Electronic Devices in the Classroom:

Using personal electronic devices in the classroom setting can hinder instruction and learning, not only for the student using the device but also for other students in the class. To this end, the University establishes the right of each faculty member to determine if and how personal electronic devices are allowed to be used in the classroom. For complete information, please reference: <http://policy.umn.edu/Policies/Education/Education/STUDENTRESP.html>.

Scholastic Dishonesty:

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. (Student Conduct Code: http://regents.umn.edu/sites/default/files/policies/Student_Conduct_Code.pdf) If it is determined that a student has cheated, he or she may be given an "F" or an "N" for the course, and may face additional sanctions from the University. For additional information, please see: <http://policy.umn.edu/Policies/Education/Education/INSTRUCTORRESP.html>.

The Office for Student Conduct and Academic Integrity has compiled a useful list of Frequently Asked Questions pertaining to scholastic dishonesty: <http://www1.umn.edu/oscai/integrity/student/index.html>. If you have additional questions, please clarify with your instructor for the course. 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.

Makeup Work for Legitimate Absences:

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>.

Appropriate Student Use of Class Notes and Course Materials:

Taking notes is a means of recording information but more importantly of personally absorbing and integrating the educational experience. However, broadly disseminating class notes beyond the classroom community or accepting compensation for taking and distributing classroom notes undermines instructor interests in their intellectual work product while not substantially furthering instructor and student interests in effective learning. Such actions violate shared norms and standards of the academic community. For additional information, please see: <http://policy.umn.edu/Policies/Education/Education/STUDENTRESP.html>.

Sexual Harassment:

"Sexual harassment" means unwelcome sexual advances, requests for sexual favors, and/or other verbal or physical conduct of a sexual nature. Such conduct has the purpose or effect of unreasonably interfering with an individual's work or academic performance or creating an intimidating, hostile, or offensive working or academic environment in any University activity or program. Such behavior is not acceptable in the University setting. For additional information, please consult Board of Regents Policy: <http://regents.umn.edu/sites/default/files/policies/SexHarassment.pdf>

Equity, Diversity, Equal Opportunity, and Affirmative Action:

The University will provide equal access to and opportunity in its programs and facilities, without regard to race, color, creed, religion, national origin, gender, age, marital status, disability, public assistance status, veteran status, sexual orientation, gender identity, or gender expression. For more information, please consult Board of Regents Policy: http://regents.umn.edu/sites/default/files/policies/Equity_Diversity_EO_AA.pdf.

Disability Accommodations:

The University of Minnesota is committed to providing equitable access to learning opportunities for all students. The Disability Resource Center Student Services is the campus office that collaborates with students who have disabilities to provide and/or arrange reasonable accommodations.

If you have, or think you may have, a disability (e.g., mental health, attentional, learning, chronic health, sensory, or physical), please contact DRC at 612-626-1333 or drc@umn.edu to arrange a confidential discussion regarding equitable access and reasonable accommodations.

If you are registered with DS and have a current letter requesting reasonable accommodations, please contact your instructor as early in the semester as possible to discuss how the accommodations will be applied in the course.

For more information, please see the DS website, <https://diversity.umn.edu/disability/>.

Mental Health and Stress Management:

As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance and may reduce your ability to participate in daily activities. University of Minnesota services are available to assist you. You can learn more about the broad range of confidential mental health services available on campus via the Student Mental Health Website: <http://www.mentalhealth.umn.edu>.

The Office of Student Affairs at the University of Minnesota:

The Office for Student Affairs provides services, programs, and facilities that advance student success, inspire students to make life-long positive contributions to society, promote an inclusive environment, and enrich the University of Minnesota community.

Units within the Office for Student Affairs include, the Aurora Center for Advocacy & Education, Boynton Health Service, Central Career Initiatives (CCE, CDes, CFANS), Leadership Education and Development – Undergraduate Programs (LEAD-UP), the Office for Fraternity and Sorority Life, the Office for Student Conduct and Academic Integrity, the Office for Student Engagement, the Parent Program, Recreational Sports, Student and Community Relations, the Student Conflict Resolution Center, the Student Parent HELP

Center, Student Unions & Activities, University Counseling & Consulting Services, and University Student Legal Service.

For more information, please see the Office of Student Affairs at <http://www.osa.umn.edu/index.html>.

Academic Freedom and Responsibility: *for courses that do not involve students in research:*

Academic freedom is a cornerstone of the University. Within the scope and content of the course as defined by the instructor, it includes the freedom to discuss relevant matters in the classroom. Along with this freedom comes responsibility. Students are encouraged to develop the capacity for critical judgment and to engage in a sustained and independent search for truth. Students are free to take reasoned exception to the views offered in any course of study and to reserve judgment about matters of opinion, but they are responsible for learning the content of any course of study for which they are enrolled.*

Reports of concerns about academic freedom are taken seriously, and there are individuals and offices available for help. Contact the instructor, the Department Chair, your adviser, the associate dean of the college, or the Vice Provost for Faculty and Academic Affairs in the Office of the Provost. *[Customize with names and contact information as appropriate for the course/college/campus.]*

OR:

Academic Freedom and Responsibility, *for courses that involve students in research:*

Academic freedom is a cornerstone of the University. Within the scope and content of the course as defined by the instructor, it includes the freedom to discuss relevant matters in the classroom and conduct relevant research. Along with this freedom comes responsibility. Students are encouraged to develop the capacity for critical judgment and to engage in a sustained and independent search for truth. Students are free to take reasoned exception to the views offered in any course of study and to reserve judgment about matters of opinion, but they are responsible for learning the content of any course of study for which they are enrolled.* When conducting research, pertinent institutional approvals must be obtained and the research must be consistent with University policies.

Reports of concerns about academic freedom are taken seriously, and there are individuals and offices available for help. Contact the instructor, the Department Chair, your adviser, the associate dean of the college (Dr Kristin Anderson, SPH Dean of Student Affairs), or the Vice Provost for Faculty and Academic Affairs in the Office of the Provost.

** Language adapted from the American Association of University Professors "Joint Statement on Rights and Freedoms of Students".*

Student Academic Success Services (SASS): <http://www.sass.umn.edu>:

Students who wish to improve their academic performance may find assistance from Student Academic Support Services. While tutoring and advising are not offered, SASS provides resources such as individual consultations, workshops, and self-help materials.