PhD Guidelines

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Every student should become familiar with this manual and all of the above materials. It is the responsibility of each student to make sure that all academic requirements and deadlines are met. Whenever in doubt, contact the School of Public Health Graduate Program Office for further information.
I. INTRODUCTION

A. Philosophy of the Program

The PhD program is a degree given within an academic concentration in Public Health. While each student chooses a major (Epidemiology) and two minor concentrations (Biostatistics and other), the PhD degree is granted in Public Health and not in an individual concentration. The course of study is focused on (1) the development of an advanced research-oriented competence in a major area in Public Health, (2) an understanding of the approaches and issues in a minor area, and (3) a familiarity with the principles and practices of Public Health in general.

B. Basic Requirements

Each doctoral student selects one major and two minor concentrations. Minimal expectations are 24-credit hours of course work in the major concentration, 12 credit hours in biostatistics, 12 credit hours in a second minor area, and completion of three 1-credit doctoral seminars. Each student takes a comprehensive written examination. Upon the successful completion of the qualifying examination the student undertakes an 18-credit dissertation. A proposal outlining the dissertation must be presented orally to the dissertation committee prior to the commencement of significant work on the dissertation.

C. Residency Requirement

The Statute of Limitations (SOL) for PhD study is determined by the University’s Graduate School at the time of admission. The University residence requirements states that during the SOL period the student must be registered as a full-time student (9 or more course credits) for at least two consecutive semesters.

D. PhD Advisor

After acceptance into the PhD program and prior to starting the program in September, students will be assigned an advisor. Once an advisor is assigned, it is important for the student to work closely with the advisor and other relevant faculty to develop a study plan which clearly documents how the academic program will be focused. The advisor assigned at the beginning of study may or may not be selected as the student’s dissertation chair. Students are encouraged to meet with all members of the Epidemiology faculty during their first year(s) in the program to identify faculty with common research interests and active research projects to which the student may contribute.
E. General Chronology of Progress and Expectations

The following lists the major requirements for the PhD degree in Epidemiology and a general order in which they can and should be completed. Some deviation from this chronology is allowable but should be approved by the student’s advisor and/or dissertation chair ahead of time.

- Complete course work in Epidemiology and Biostatistics required for Comprehensive Exam
- Meet with advisor to plan area for second minor concentration and relevant course work for minor
- Take Written Comprehensive Exam
- Identify dissertation chair
- Meet with dissertation chair to determine dissertation topic
- Meet with dissertation chair to determine area of focus for minor exam chapter
- Complete any outstanding minor coursework
- Meet with dissertation chair to determine dissertation committee
- Meet with dissertation chair to plan 3 dissertation papers
- Prepare 1-page dissertation prospectus summarizing 3 papers
- Prepare outline for minor exam chapter within one year of completion of minor course work
- Meet with dissertation committee for approval of 3 paper topics
- Meet with dissertation committee for approval of minor exam chapter outline (after approval, submit completed chapter within in year)
- Submit minor exam chapter to dissertation committee for grading
- Complete dissertation proposal
- Oral dissertation proposal defense
- Conduct dissertation research
- Schedule committee meetings as needed
- Final dissertation defense
- Submission of required paperwork to the Graduate School for graduation

F. Yearly status review

By May 1 of each academic year, the student will complete the student Progress Report detailing course work completed in the previous year and/or progress made towards completing the dissertation. The Progress Report should be submitted to the student’s advisor. Progress reports from all PhD students will be reviewed by the Epidemiology faculty in May, and feedback will be provided as appropriate. Students who are considered as not having made sufficient progress over the past year will be notified of the concerns of the faculty in writing. Students will then work with their advisor to address concerns in the coming year. Students who demonstrate insufficient progress repeatedly will be brought to the attention of the Graduate Program Director and Department Chair. An extended period of insufficient progress may adversely impact funding and/or the student’s ability to remain in the PhD program.
II. REQUIREMENTS FOR THE PHD AND RECOMMENDED COURSE OF STUDY

A. Public Health Core (9 credits)
Students must demonstrate mastery of introductory concepts in epidemiology, biostatistics and at least one of the other core disciplines of public health (environmental health sciences, community health education and health policy and management).

a) BIOSTATS 540: Introductory Biostatistics (or equivalent)
b) EPI 630: Principles of Epidemiology
c) One of the following:
   1. EHS 565: Environmental Health Practices
   2. HPP 601: Application of Social and Behavioral Theories in Public Health Interventions
   3. HPP 620: Introduction to the US Healthcare System

B. Epidemiology and Biostatistics Core (18 credits)
These courses provide students with a foundation in epidemiology and biostatistics. Students are required to complete these courses prior to taking the Comprehensive Exam.

a) EPI 631: Scientific Writing to Thesis, Dissertation and Grant Proposals
b) EPI 632: Applied Epidemiology
c) BIOSTATS 640: Intermediate Biostatistics (or equivalent)
d) BIOSTATS 691F: Data Management
e) EPI 700: Analysis of Epidemiology Data
f) EPI 737: Intermediate Methods in Epidemiology

C. Epidemiology Electives (12 credits)
At least 12 credits of elective courses in epidemiology must be completed. Independent Studies supervised by Epidemiology faculty may be counted as epidemiology electives. However, no more than 6 credits of independent study are allowed. Students must complete 12 credits of epidemiology electives prior to taking the Comprehensive Exam. As discussed below, up to 6 credits may be waived due to prior equivalent coursework. Examples of courses considered Epidemiology Electives are as follows:

- EPI 591L: Reproductive Epidemiology
- EHS 600: Molecular Epidemiology
- EPI 633: Communicable Disease Epidemiology
- EPI 634: Nutritional Epidemiology
- EPI 635: Psychosocial Epidemiology
- EPI 636: Epidemiological Assessment
- EPI 639: Cancer Epidemiology
- EPI 690ew: Epidemiology of Women’s Health
- EPI 691p: Physical Activity Epidemiology

D. Research Seminar (3 credits)
At least 3 credits of doctoral seminar must be completed (EPI 892; 1 credit per semester). This upper level seminar explores advanced research methods and current research issues in public health. Given that (a) public health professionals often work in interdisciplinary teams and (b) that knowledge of a broad range of methodological approaches is necessary to address evolving and changing research priorities, the doctoral seminar offers a unique
opportunity for the advanced study of research issues and methods. At least one (1) credits of doctoral seminar must be completed prior to taking the Comprehensive Exam.

E. Biostatistics Minor Courses (6 credits)
A Minor concentration in Biostatistics is required for the PhD in Epidemiology. The biostatistics courses taken as part of the Epidemiology and Biostatistics Core (BIOSTATS 640 and EPI 700) must be completed prior to taking the Comprehensive Exam. In addition to BIOSTATS 640 and EPI 700, 6 additional credits in biostatistics must be taken. These credits do not need to be completed prior to taking the Comprehensive Exam. Examples of courses considered appropriate for the Biostatistics minor are as follows:

- BIOSTATS 697G: Bayesian Computation in Biostatistics
- BIOSTATS 690JG: Modern Applied Statistical Methods
- BIOSTATS 740: Analysis of Mixed Models and Longitudinal Data
- BIOSTATS 690T: Applied Statistical Genetics

The student’s mastery of the material in the biostatistics minor is evaluated as a component of the comprehensive exam, integrated within the four sections of the exam but primarily in the Data Analysis Section.

F. Second Minor Concentration (12 credits)
A second minor in an area relevant to the student’s area of research must be completed. These courses should fit within a unifying theme, and be relevant to the dissertation topic. No more than 6 credits of the coursework for the second minor may be from Independent Studies. The specific courses must be approved by the student’s advisor. As discussed below, up to 6 credits may be waived due to prior equivalent coursework completed at the graduate level. These credits do not need to be completed prior to taking the Comprehensive Exam. Examples of minor concentrations completed by recent students include: Nutrition and Women’s Health; Genetics; Human Reproduction. Additional information regarding courses appropriate for selected minors are also provided in the appendix:

G. Other elective (3 credits)
An additional 3 credits of graduate coursework must be completed prior to completion of the degree. These credits may be taken in any field relevant to the student’s research interests and do not need to be completed prior to the Comprehensive Exam.

H. Dissertation Research (18 credits)
Students are required to register for 18 credits of dissertation research, upon successful completion of the Comprehensive Exam.

I. Waiver of Courses Due to Previous Training in Epidemiology
Students with a previous Masters degree in Epidemiology may petition the faculty to waive required courses and their accompanying credits, given the requirement will have already been met. Courses that may be waived due to previous equivalent course completion include the Public Health Core, Epidemiology and Biostatistics Core, up to 6 credits of Epidemiology Electives and up to 6 credits in the second minor concentration. To be considered for waiver, previous coursework must have been completed within 10 years of the student’s request and must not have been already applied to towards completing another requirement for the PhD in Epidemiology.
To petition for a waiver of a specific course, the student must submit a written request to have the course and credits waived, along with the syllabus for the prior course, to the faculty for consideration. Since this coursework is an essential part of the doctoral plan of study, students waiving course requirements will still be responsible for this material on the comprehensive exam.

**J. Grading**
Students must take all required coursework, except for the Doctoral Seminar (PubHlth 892), for a letter-grade. To earn credit for a course, students must earn a B- or better.
III. STUDENT RESOURCES

A. Financial Aid

Financial aid may be available through either the University or through individual Departments. There are several possibilities for obtaining financial support, including graduate assistantships (i.e., research or teaching assistantships), the Dean’s PhD Fellowship program, or other scholarships (e.g., the Corinne A. Johnson Memorial Scholarship). A good place to find information about financial aid opportunities at SPHHS is at the following website:


Below is the link to the University Financial Aid website, which has detailed information on these and other financial aid opportunities (e.g., federal loan programs): http://www.umass.edu/umfa/

Students who obtain a graduate assistantship usually work 10-20 hours per week and are paid according to a union negotiated pay scale. Further, graduate assistantships that are at least 10 hours per week include a benefit of tuition and fee waivers for at least one semester. Whether the fee waiver is for one or two semesters depends upon the number of hours worked (e.g., as of 2014, students working 20 hours/week for a full semester qualify for a full year tuition waiver). Students are usually limited to one graduate assistantship at a time (from any department on campus), so that these relatively limited opportunities can be offered to as many students as possible. Depending upon the student’s background and skill set, they may qualify for assistantships in other departments/schools as well (e.g., nursing, nutrition, psychology); check these departmental websites for possible opportunities.

B. Travel funding

Travel funds to defray the cost of attending professional scientific meetings are available to graduate students through several sources

- The Department of Biostatistics and Epidemiology: Students who are presenting their research at a meeting, in either an oral or poster presentation, are eligible for up to $500 per academic year. Students who are not presenting at the meeting are eligible for reimbursement of up to $200 per academic year. To apply for these funds, students should submit a **BioEpi Student Travel Grant application** to the Biostatistics and Epidemiology Division Director. A copy of this form can be found in the appendix. Students receiving the funds should keep a copy of this signed form and all travel receipts.

- UMass Graduate School: Funding of up to $300/student also is available through the Graduate School for students who will be presenting their research at a conference. The Graduate Program Director in the Department of Public Health (Dr. Paula Stamps) administers these funds. Funds are usually awarded on a first come-first serve basis, so it is important to submit a request for these funds as soon as your abstract has been accepted for presentation. The **Graduate Student Travel Grant application form** is available on the following webpage: http://www.umass.edu/sphhs/public-health/academics/graduate-programs

- Travel funds also may be available through the student’s research mentor; please be sure to check with your faculty mentor regarding funding for travel.

Prior to the trip, students must complete a **Travel Preauthorization Form** and have it signed by their advisor. This signed, dated form should be kept until after the travel is completed, and then submitted along with **Travel Reimbursement Form** and all original receipts. Copies of both of these forms can be found at:

http://www.umass.edu/sphhs/faculty/deans-business-center/forms/travel
See Deb Osowski, the BioEpi Administrator, for any questions related to travel reimbursement.

Postdoctoral fellows are ordinarily not eligible for the Biostatistics and Epidemiology Department travel funds, as their travel funding would typically come from their mentor’s research grant. However, if funding is still needed, their faculty mentor may request of the Epidemiology Program that an exception to this policy be made.

C. Research funding

Research funding is generally available through a specific faculty member’s research grant. Available research assistantships are posted on the SPHHS financial-aid website noted above. Also, if you are particularly interested in the research carried out by a specific faculty member, we would encourage you to contact that faculty member directly to find out about any current or pending research funding opportunities. (Note, there may also be unfunded opportunities available that, although they do not provide financial support, may provide you with valuable research experience).

The National Institutes of Health also fund pre-doctoral training for doctoral students, e.g., through F31 Fellowships. See the link below to explore these potential, though very competitive, grant opportunities. Also, interested students should be sure to discuss this potential option with their advisor. http://grants.nih.gov/training/F_files_nrsa.htm

D. Teaching experience

Obtaining teaching experience is very important for doctoral students, and can be very useful and rewarding for master’s students as well. There are a number of opportunities to become a teaching assistant either for courses taught by the Biostatistics and Epidemiology Department, or as part of the undergraduate program in public health. Further, there are occasional opportunities to either TA or serve as an instructor for courses offered online through the University/SPHHS continuing education program.

When teaching assistants are needed for any Biostatistic or Epidemiology course, their availability is posted on the following website for one week: http://www.umass.edu/sphhs/public-health/academics/financial-aid/

We recommend you bookmark this website and check it weekly. Application instructions are provided on the website. Most teaching assistantships are for 10 hours per week for a semester. If you are interested in serving as a teaching assistant for a specific course, you might email the instructor directly to let them know and to find out if any opportunities are upcoming.
IV. THE COMPREHENSIVE QUALIFYING EXAMINATIONS

A. Overview
All PhD students must pass the written Comprehensive Exam in epidemiology and biostatistics prior to beginning serious work on their dissertation. The PhD Comprehensive Qualifying Exam in Epidemiology is intended to be primarily integrative rather than a retesting of specific material already covered in course examinations.

B. Eligibility to take the Exam
Students are eligible to take the Exam after they have completed the following:

1. Public Health core classes: BIOSTATS 540 (or equivalent)
   EPI 630
   one of the following: EHS 565
   HPP 601
   HPP 620

2. Epidemiology and Biostatistics core: EPI 631
   EPI 632
   BIOSTATS 640 (or equivalent)
   BIOSTATS 691F
   EPI 700
   EPI 737

3. 12 credits of elective courses in epidemiology

4. At least 1 semester of doctoral seminar (PubHlth 892a)

5. At least 2 semesters of residency in the doctoral program

Under extreme circumstances, students may request minor deviations from the eligibility requirements above. Any deviation from the requirements describe above must be approved by the entire Epidemiology faculty.

C. Timing and Structure of the Exam
The Comprehensive Exam tested student’s knowledge, understanding and ability to apply fundamental concepts in Epidemiology and Biostatistics. All material covered in course work required for the exam may be included on the Exam.

Timing of Exam
The PhD Comprehensive exam is given once per year, generally at the end of August. The Exam is given over 2 consecutive days, from approximately 9am until 5pm.

Exam Structure
The exam consists of four sections, each of which is weighted equally. These sections are Study Design, Study Critique, Short Answer, and Data Analysis. Two sections are completed each day. While course material from any of the required
courses may be included in any question, in general each section focuses largely on materials from one of the epidemiology methods courses, as follows:
- Study design: EPI 630
- Study critique: EPI 632
- Short answer: EPI 737
- Data analysis: EPI 700, BIOSTATS 540, BIOSTATS 640

Two components will be tested on the first day of the exam and two will be evaluated on the second day. Students will be made aware of which questions are scheduled for which days ahead of time. On each day students may choose to allocate the length of time spent on each of the two sections as they wish. The faculty members who developed the questions on a given day will be available from approximately 9:00am-10:00am to clarify any questions that arise.

For the Study Critique section, students are asked to read a specific published paper prior to the examination. One week prior to the exam, students will receive the paper for the study critique. This paper will be available in hard-copy through Deb Osowski’s office and will also be sent to students electronically via their university email address. Students may not discuss or consult with anyone regarding the study and related issues. It is neither expected nor appropriate to look up any other material on the subjects of the papers or any reviews or critiques of the papers. The marked up copy of the paper may not be brought to the exam. However, a fresh copy of the critique paper will be provided at the time of the exam.

For the Data Analysis students may bring an 8.5” x 11” sheet of paper (both sides) with formulas/text relevant to the Data Analysis exam. Any needed reference tables (e.g. normal distribution) will be provided as part of the exam.

Allowable materials
The Exam is closed book. Students are asked not to bring books or papers or other class-related materials, aside from a purse/small bag and a calculator, into the exam room. Students may use a laptop to complete the exam instead of hand-writing their answers. A USB drive will be provided to each student for saving Exam answers and submitting them to the department faculty. Students may have cell phones in the exam room in case of emergencies but phones should be muted and not used during the exam.

Academic Honesty
Students do not need to erase any computer files from laptops used for the exam but it is expected that they will not refer to them. You are expected to follow the Graduate Student Honor code found in the Graduate Student Handbook, as follows: It is expected that all graduate students will abide by the Graduate Student Honor code which reads as follows: We, the graduate students of the University of Massachusetts at Amherst, hereby affirm that graduate students do not lie, cheat, or steal, or willingly tolerate those who do. We do not plagiarize the work of others, falsify data, or knowingly allow false data to be generated or published with our compliance. We do not harass or discriminate against others for reasons of race (phenotype), creed, sexual orientation, or political belief, or keep faith with those who do.

Blinding
Grading of the Exam is blinded. Students will be assigned an ID name by the Department Administrator prior to starting the Exam. This ID name should be used on all Exam answers.

D. Preparation for the Exam
A meeting to discuss the examination will be scheduled for the spring semester prior to the Exam. Any student interested in taking the exam the coming fall may attend. This meeting will cover study strategies as well as review the general structure and expectations for the Exam. Students will also be provided with a complete copy of the previous year’s exam at this time.
for reference, but not with an answer key. To prepare for the exam, students have often found it useful to form study groups with one or more of their peers also taking the exam.

E. Grading of the Exam
Faculty members will provide Exam results to students within two weeks from the end of the examination period. Students will be notified of the examination results in writing by letter in their campus mailboxes, along with an email notification indicating that results are available. At this time results will also be forwarded to the GPD. After three days, results can also be emailed to the student’s university email address, upon request.

Each section is graded by the faculty member writing the question, along with one additional faculty reader. Individuals writing and grading each question are provided to students ahead of time. After faculty grade individual sections, program faculty as a whole meet to discuss exam results and determine final grades for each section.

Each section of the qualifying exam is graded separately as pass with distinction, pass, conditional pass, or fail. If a student receives a pass with distinction or pass, they are considered to have passed the exam and may move forward with their dissertation preparation. Students who receive a conditional pass will be expected to complete additional coursework and/or training, as specified in their exam results. After the conditions stated in the Exam results are met, the student is considered to have passed and no additional action is required. Examples of conditions may include completion of additional coursework, redoing or discussing question with faculty or completion of additional seminar work.

If one or more sections are failed, a single re-examination of the failed section(s) is/are allowed. The retake will occur the next time the qualifying exam is regularly scheduled, generally one year later. Failure to pass any previously failed section(s) on the second attempt results in an automatic dismissal from the Doctoral Program. Students failing one or more sections have up to 2 years to retake the exam before dismissal from the PhD program.

A student who does not pass the qualifying exam on the first or second attempt may request transfer from the PhD program to the MS program in Epidemiology (non-thesis track) prior to dismissal from the program. In this situation, the advisor will review the student’s transcript to determine that all course requirements for the MS degree (non-thesis track) have been met. In addition, the faculty will re-grade the student’s most recently qualifying exam to determine if the student has demonstrated sufficient mastery of the material consistent with expectations for the MS degree. If the faculty unanimously determine that the student has passed the exam at a Master’s level, the student will be judged to have passed a Master’s General Examination. The date of passage of the exam will then be the date the exam was re-graded. The advisor will submit a memo requesting the transfer to the MS program to the GPD. Students are then required to complete any outstanding coursework required for the MS degree prior to awarding of the MS degree.
IV. THE MINOR EXAM CHAPTER

After successful completion of the Comprehensive Exam, students should identify a Dissertation Committee Chairperson and work with the Chairperson to determine a topic for the dissertation. The Committee Chair must be full-time graduate faculty in Epidemiology. For further information on the dissertation and guidance on selecting a topic, see the section below (IV. Dissertation). After the dissertation chair and topic have been selected, students should meet with their dissertation chair to determine an area of focus for the Minor Exam Chapter. This chapter should provide a comprehensive background (including etiology and prior research in the area) of the student’s planned dissertation research area, may be used as the first chapter of their dissertation proposal in some form, and should be of ‘publishable quality’.

Within 1 year of completing both the comprehensive exam and minor area coursework, students will submit a proposed topic and outline for the paper to be approved by the dissertation committee. The student should receive minimal input on the paper prior to submitting a final version, with specifics to be at the discretion of the dissertation chair. The acceptability of the submission will be evaluated by the dissertation committee. The student must complete the paper within a maximum of 1 year from when the proposed outline is approved. Failure to do so will result in a review of the student’s status in the program by the Epidemiology Faculty. The minor paper must be completed prior to the dissertation proposal defense.

V. DISSERTATION

A. Purpose

The dissertation represents the culmination of the PhD degree program. It is intended to be a demonstration of the student’s ability to conceive, plan, execute, and analyze a substantial research project. The dissertation must contain original research. In the process the student is expected to develop both methodological and technical skills and to establish professional working relationships with the members of the dissertation committee. In addition, the student is expected to demonstrate considerable skill in communicating the results of the research at the final doctoral oral examination (dissertation defense).

B. Timing

Work on the dissertation normally begins only after successful completion of the comprehensive examinations (written). If dissertation work is begun prior to that time, the student is “at risk” for any investment of time or resources and this premature involvement constitutes neither endorsement of the project nor support for its continuation. Under no circumstances may the student register for dissertation credits prior to successfully completing the comprehensive examinations. The number of required dissertation credits in the School is eighteen (18) and is the number of dissertation credits required by the Graduate School. A student can register for a maximum of nine dissertation credits a semester.

If a student elects to begin work on a dissertation project prior to completion of the Comprehensive Exam, this work must be undertaken with the knowledge and consent of all faculty members who are likely to be included on the Dissertation Committee. The student should work closely with his/her advisor to make sure all appropriate faculty have a chance to contribute to the research and serve as coauthors prior to the submission of any work for publication.
C. Process

C1. Dissertation Committee
Planning for the dissertation research usually begins with the informal exploration of the topics that are of interest to the student and to a faculty member who is likely to be named as chair of the dissertation committee. Once a specific topic or problem has been defined, the next step is to obtain a formal commitment from a faculty member in the major area of concentration to chair the committee. In conjunction with the Committee Chair, other committee members should be recruited who can provide the expertise to help carry out the research project.

The committee must meet the following guidelines:

a. Be composed of no less than three (3) full-time graduate faculty from UMass.

b. The Committee Chair must be full-time graduate faculty in Epidemiology.

c. One committee member must be faculty in Epidemiology.

d. One member must be a graduate faculty member from another program or department. It is highly recommended that the committee include a faculty member with substantive knowledge in the specific research area most relevant to the dissertation.

e. It is highly recommended that the committee includes a Biostatistics faculty member, but is not required.

f. At least two members must have their primary appointment in the School.

Also, additional persons who are not UMASS graduate faculty or who are adjunct graduate faculty from outside the University may be appointed only as (non-voting) consultants.

C2. Dissertation Pre-proposal /one-page prospectus
After the dissertation committee chair and members have been formally named, but prior to completing the Dissertation Proposal, students are expected to complete a pre-proposal. The pre-proposal is a concise description of the planned dissertation work, and should describe the overarching theme linking the individual dissertation papers, provide the rationale for the proposed research and basic methods, and briefly outline each of the individual papers. The pre-proposal should be roughly one page in length and provide sufficient detail for the dissertation committee to assess feasibility and suitability of the dissertation topic. Approval of the pre-proposal by all committee members is required. As this document is not required by the graduate school there are no specific formatting requirements.

C3. The Dissertation Proposal
After the one-page prospectus has been approved, students are required to satisfactorily develop and defend their Dissertation Proposal. The dissertation proposal should be developed in collaboration with and must be approved by the Dissertation Committee. Once approved, it is forwarded to the GPD for review and approval. It is then forwarded to the Graduate School for their approval. An additional copy of the final proposal is provided by the student to the Graduate Program Secretary for the School files. Graduate School regulations specify that at least seven (7) months must elapse between the time the proposal is filed with the Graduate School and the time of the final oral defense.

Developing the Dissertation Proposal
Students should work primarily with the chair in developing the proposal and in consultation with the other committee members for their input. The proposal generally includes three chapters, each presenting one of the three papers to be included in the dissertation.

The formatting requirements for the Written Dissertation Proposal do not specify section headings or an outline. However, a recommended format for each chapter of the proposal is presented below. Because multiple chapters
may include the same exposure or outcome, the same study population, etc, students and chairs may decide to shorten specific sections of individual chapters in order to avoid unnecessary redundancy in text:

1) Abstract
   • a short synopsis of the background, significance, aims, methods, and anticipated outcome of the research

2) Statement of the Problem
   • A background statement outlines the nature of the problem to be studied and indicates the contribution the study will make.

3) Brief Review of the Literature
   • A brief review of the literature should include at least several primary articles or recent review papers and should document the major issues to be addressed in the proposed project. It is expected that this section will define the conceptual background of the project.

4) Research Questions (Hypothesis)
   • A statement of the questions to be addressed, the goal(s) of the project, or the hypothesis.

5) Methods
   • The central feature of the proposal. This section should provide the details on how the study will be carried out. Usual sections include:
     a) Study population
     b) Study design
     c) Definitions of dependent and independent variables (instruments, procedures, etc.)
     d) Table of variables indicating which are dependent, independent, or control including level of measurement for each variable (nominal, ordinal, interval, ratio)
     e) Data analysis plan
        i. General strategy of analysis
        ii. Statistical procedures to be used
        iii. Include dummy data tables for main hypothesis
        iv. Sample size and/or power calculations
     f) Study Limitations: to demonstrate an understanding of the limitations of the study and any anticipated problems that may be encountered.
     g) Significance: There should be some thoughtful comments explaining the importance of the anticipated outcome(s) such as contribution to program effectiveness, better understanding of the etiology of disease, improvement in prevention activities, etc.
     h) Human Subject Protection: This section should indicate the procedures which will be used to insure confidentiality and protection of the privacy of the subjects. An informed consent statement should be included if original data are being collected. The section should indicate whether an outside agency Institutional Review Board (IRB) approval of the project is involved. If there is no other human subjects review, the proposal will be referred automatically by the Graduate Program Director to the School's Institutional Review Board. In this case the student is responsible to obtain an IRB form from the Graduate Program Director to be filled out and turned in at the same time as the finished dissertation proposal. Data collection from human subjects, or use of confidential records, may not proceed until an IRB approval has been obtained.
i) Access to study population or faculty/agency database. Include a written statement from the agency (or faculty owner) or gatekeeper of a data set or population to be studied indicating their willingness to grant you access to the information or the population.

The proposal represents a demonstrated readiness to conduct research on a specific topic, and the proposed hypotheses or procedures may need to be revised further, with the agreement of the committee, as the project proceeds. The proposal should be written using the future tense. Students may wish to review several recent dissertation proposals similar to theirs as available from any faculty member. But the up-to-date outline included in this write-up should be followed.

Format for the Proposal
It is highly recommended that the student follow the guidelines presented in the Graduate School’s Guidelines for Master’s Theses and Doctoral Dissertations even when preparing the dissertation proposal:

Additionally, the Office of Information Technology offers workshops on formatting that may be helpful in preparing the proposal and final version of the dissertation. General advice on formatting and information on workshop can be found on the OIT website at:
http://www.oit.umass.edu/support/workshops-training/format-a-thesis-or-dissertation-ms-word-general-advice

Timelines for the Proposal
There are no specific timing requirements regarding the written dissertation proposal. However, it is expected that students will complete the written proposal within 1 year after approval of the one-page prospectus. Although this expectation does not represent a format deadline, students should work closely with their dissertation committee chair to ensure that the student continues to make satisfactory progress and will have successful yearly status reviews.

Students should distribute the Written Dissertation Proposal to the Committee at least two weeks prior to the Oral Presentation and Defense.

Human Subjects
Prior to beginning any involvement with human subjects or data meeting the definition of human subjects, the student must complete training in the use of human subjects for research, as mandated by the University. Information on the University’s policies concerning the use of human subjects in research can be found at:
http://www.umass.edu/research/human-research-protection-office-hrpo

Students should complete training through the CITI system, if they have not already done so for another project and/or their training is out of date. Also, appropriate IRB approval must be obtained for the student’s research. It is the responsibility of both the student and the committee chair to ensure that the student has met all University policies concerning human subjects. Information on CITI training can be found at:
http://www.umass.edu/research/training-and-education

C4. Carrying Out the Project
As for master’s theses, the dissertation committee chair is expected to assume the major role in guiding the student through the project. Other faculty generally contribute to selected aspects of the project. It is important that the student keep each of the committee members up-to-date on significant aspects of the project. In the case of conflicting or extreme
demands from the committee, the student should inform the chair and request a committee meeting to resolve any issues. Any substantial change in the proposed project should trigger a meeting of the full committee.

C5. Writing the Dissertation
Be sure to strictly follow the Graduate School guidelines for Dissertations to the letter. Otherwise you will have a lot of unnecessary hassle at the last minute when you need it the least. Students should use the table format, reference format, and reference citation method of the American Journal of Epidemiology. If you transfer over any of your dissertation proposal text to the dissertation, please change the text from the future tense to the past tense.

The chapter headings of the dissertation are as follows: Introduction; Review of the Literature; Methods; Results; Discussion. As with all scientific writing, the writing of the dissertation usually involves an intense period of writing, editing, rewriting, editing, rewriting, and so forth. To maximize the clarity and impact of the writing included in the dissertation, students are encouraged to contact the University’s Writing Center, and meet one-on-one with a writing tutor. This may be especially beneficial for students who do not have extensive experience with scientific writing or for whom English is a second language. Information on the Writing Center can be found at: http://www.umass.edu/writingcenter/

C6. Oral Presentation/Defense of the Proposal
Students are required to give an oral presentation of the proposed research described in the Written Dissertation Proposal. The presentation should highlight key elements of the written proposal. The formal presentation (assuming no interruptions) should take approximately 45 minutes.

As part of the Oral Defense of the Dissertation Proposal, following the presentation and a general question period non-committee members will be asked to leave the room and students are required to field questions from the dissertation committee members. It is expected that these questions largely will pertain to the proposal; however, students may be asked to answer questions to assess the student’s knowledge of the area of research relevant to their dissertation research topic. It is expected that the oral presentation plus defense should take approximately two hours, after which students will be asked to leave the room to allow the members of the dissertation committee to decide among the following grade options: pass, pass with conditions, or fail. Following that decision, the committee will ask the student to return in order to discuss their decision and provide comments and constructive feedback on the presentation and proposed research plan. It is expected that no more than two attempts at this stage will be required for a student who expects to earn a doctoral degree.

C7. Final Doctoral Oral Examination (Dissertation Defense)

Scheduling the Defense
When the committee chair affirms a consensus among the committee members that the project is essentially completed and is ready for the defense, the chair fills out and signs the Dissertation Defense Notification Form. The student can then take the signed form to the Department Administrator and request that the defense be scheduled. Please note, the submission of the defense form must precede the defense by at least two weeks.

The date, time and location of the defense must be advertised to the public for at least 1 week, and cannot be held without this requisite advance notification.

Who May Attend the Dissertation Defense
The Graduate School requires that every member of the Dissertation Committee be present for the examination, or the defense must be rescheduled and re-announced in the same manner.

The dissertation defense is public. Departmental faculty member and students are welcome to attend.

The Dissertation Defense Process
Note that the Graduate School requires that all members of the committee must be present for the defense to be held. Each committee member shall have received a "final" polished version of the dissertation at least a week before the defense.

The committee chair oversees the proceedings of the defense. The student is expected to present, generally in about 40 minutes, a synopsis of the key elements of the project, especially emphasizing methods, analytical approach, results, limitations, and the significance of the results within the context of the literature. Usually, questions of information or clarification are asked during the presentations, but matters of substance are held for the question period.

Outcomes of the Dissertation Defense
When the presentation is finished, the chair directs the question period. Upon completion of the question period, the committee then meets in private to discuss the student’s performance and votes for a pass or not. To pass, the candidate must receive a unanimous vote.

Committee members may recommend additional minor changes to the dissertation at this time, as some new issue may have been raised during the dissertation defense question period.

The student should bring three copies of the Dissertation Signature Page printed on acid-free paper to the defense, which will be signed by all committee members indicating that the student has passed the defense. If only minor changes are required in the final version of the dissertation, then most members of the committee are willing to sign the cover sheets at that time. The dissertation committee chair signs the cover sheet only when the final copy of the corrected dissertation is received. The Graduate Program Director will then sign the cover sheet after the committee chair.

The student should also bring a copy of the Notification of Completion of Dissertation Defense Form, included in the Appendix, to the defense. Upon completion of a successful defense, the committee members sign the form. The student then returns the completed form to the Departmental office. This sheet initiates the Department's Graduate Program Director's formal notification to the Graduate School that you have successfully defended your dissertation.

C8. Submission of the Dissertation
After the Dissertation defense is successfully passed, students should work with their Dissertation chair to complete any additional revisions required by the committee. After the chair has determined that the final draft is acceptable and signs the Signature Page, the student should submit the dissertation to the Graduate School electronically through Scholarworks. Information on the submission process may be found at:
Archiving of dissertation data and statistical code
After the Dissertation defense is passed and prior to graduation, students should make sure that a final version of their dissertation data set and relevant statistical code (SAS, STATA logs, etc) have been archived in the appropriate folder on the J drive, along with documentation. Students should confirm the location of data with their Chair.

Publications from the Dissertation
Where the dissertation results are publishable, the student is encouraged to write-up a first draft of the manuscript with him/herself as first author. If the student does not prepare a draft of the manuscript within six months of the defense, especially where the student was using faculty or agency data, it is the prerogative of the committee chair or other committee member or agency person to prepare a first draft and include the student as a co-author.

In the case of the use of faculty data or data from an outside agency, it is vitally important the authorship of paper(s) resulting from the project be explicitly negotiated in writing in advance of beginning the project. Such an agreement should state the order of authorship for any potential publication(s) and the general content of such publication(s). Failure to address this issue in advance has caused unhappy complications in the past.

Final Steps
1. Download the Checklist for Doctoral Degree Form and verify that you have met all of the requirements for graduation. This form can be found on the Graduate School website
2. Pay the commencement and placement fees at the Graduate School Office of Degree Requirements.
3. Fill out the yellow Doctoral Degree Eligibility Form from the Office of Degree Requirements. You may wish to list only those courses needed to fulfill the degree requirements. The Eligibility Form must be reviewed and signed by the Departmental Graduate Program Director who certifies that you have met all the degree requirements. The form will then be signed by the Department chair.
4. Fill out a final copy of Epidemiology Tracking Form, which will serve as an archive copy of your record with us. The Tracking Form and the Degree Eligibility Form for the Graduate School should both be filled out as soon as the dissertation defense is scheduled. Do not delay until the last moment.
5. Submit your dissertation to the Graduate School through Scholarworks, following procedures described on their website at http://scholarworks.umass.edu/theses
6. Submit one original copy of your signed Dissertation Signature Page printed on acid-free paper to the Graduate Student Service Center.
7. Provide a hard copy of the final draft of your dissertation in a modest binder to each member of your committee.