Introduction

PhD degree recipients in epidemiology are preparing to assume academic and/or public health careers in research and teaching. Students should be able to do the following upon completion of the PhD degree in epidemiology:

a) Demonstrate a high degree of mastery of epidemiologic research design and methods by successfully designing and carrying out original research to discover new knowledge in epidemiology and the biological or social sciences related to human health or making advances in methodologic theory or applications.

b) Demonstrate an in depth knowledge and understanding of theoretical concepts and practical applications of epidemiology and biostatistics, as well as the principles underlying the ethical conduct of human research.

c) Communicate and present epidemiologic research findings in their area of expertise to peers and fellow students in a lucid, understandable manner.

d) Demonstrate competence in a third area of public health or science appropriate to their research in addition to epidemiology and biostatistics (e.g. anthropology, virology, sociology, health policy, demography, etc.)

Academic Residence Requirement

Epidemiology doctoral students must register and enroll in at least 12 units per semester for a minimum of four semesters of academic residence at Berkeley. Information regarding residency for tuition purposes can be found at http://registrar.berkeley.edu/Residency/legalinfo.html. Questions regarding residency should be directed to the Residence Affairs Unit at ores@berkeley.edu or (510) 642-5990.
Course Requirements

The amount of coursework necessary for each doctoral student in the Ph.D. program will vary depending on the student’s previous educational experience and background. However, the Graduate Group requires competence in the material covered by the following courses. (Note: Graduate Divisions requires that no more than one-third of units in an individual’s total curriculum while at UC, Berkeley be taken as Satisfactory/Unsatisfactory. PH 297 and 299 series courses are not counted in this calculation).

Required Courses during Years 1 and 2:

- PH250B (Fall) Epidemiologic Methods II (Letter-grade) – Year 1
- PH250C (Spring) Epidemiologic Theory (Letter-grade) - Year 1
- PH258B (Spring) Ethical Issues in Epidemiologic Research (S/U) – Year 1 or 2
- PH293 (Fall & Spring) Epidemiology Doctoral Seminar (Letter-grade)
  - Enroll for the appropriate section (noted on the course offerings at [http://epi.berkeley.edu](http://epi.berkeley.edu))
  - Required every-semester for years 1 & 2, and strongly recommended through the remaining years in the program (Letter-grade for years 1 & 2, then optional S/U).
- PH252D (Fall) Introduction to Causal Inference (Letter-grade) – Year 2
- PH298 (Spring) Group Study: Topics in Causal Inference (Letter-grade) – Year 2

Recommended Courses:

- PH142 (Fall) Intro to Probability and Statistics in Biology & Public Health (Letter-grade)
- PH145 (Spring) Statistical Analysis of Continuous Outcome Data (Letter-grade)
- PH241 (Spring) Statistical Analysis of Categorical Data (Letter-grade)
- PH245 (Fall) Introduction to Multivariate Statistics (Letter-grade)
- PH242C (Spring) Longitudinal Data Analysis (Letter-grade)
- PH248 (Fall) Statistical Computer Analysis Using R (Letter-grade)
- PH252 (Fall) Epidemiologic Analysis (Letter-grade)
- PH252A (Fall, even-years) Applied Sampling & Survey Design and Analysis (S/U)
- PH252C (Fall) Intervention Trial Design (S/U)
- PH296 (Fall/Spring) Special Study: Problems in Causal Inference (S/U)

Students are expected to take additional courses in the 255-258 series. Students must take online training in human subject research and obtain prior human subjects approval for planned dissertation research.

In addition, students are expected to develop expertise in a “third” area, which is a content or methods area not included in the above required content. The selection of an area is at the discretion of the student but should be discussed with the student’s advisor as soon as possible,
since content in the “third” area is part of the qualification examination for advancement to candidacy.

**Teaching**

Every doctoral student in epidemiology is expected to serve for at least one semester as a Graduate Student Instructor (GSI) before taking the qualifying examination. Teaching fortifies theoretical knowledge gained in coursework, prepares students for academic careers, and provides service to the Division and the School of Public Health. GSIs are required to complete a 300-level semester-long teaching pedagogy seminar before or during their first teaching appointment at Berkeley. The Graduate Division also mandates that first time GSIs take the on-line course on GSI Professional Standards and Ethics Course and attend a Teaching Conference. For more information, please see [http://gsi.berkeley.edu/](http://gsi.berkeley.edu/)

**Ethics Training**

Knowledge of how to conduct ethical research is essential. In addition to a required course in research ethics in epidemiology, all doctoral students must complete the UC Berkeley Online Human Subjects Training prior to taking the qualifying examination (see below).

**Annual Review of Progress**

To ensure that students advance in a timely manner, an annual review form will be completed by the PhD student and his/her faculty advisor (Appendix B). This form will be included in the student’s permanent academic file. These forms will also be reviewed at an annual Epidemiology Faculty Group meeting.

**Qualifying Examination**

*Purpose:* The purpose of the Qualifying Examination is to assess the adequacy of a student’s preparation to conduct dissertation research in epidemiology. All epidemiology PhD students will be examined and be required to demonstrate competence in epidemiology, biostatistics, and a “third area” of the student’s choosing. The “third area” is typically chosen so as to be relevant to the student’s proposed dissertation research. While all epidemiology PhD students will have prepared a prospectus in the form of a detailed research proposal (see below)
that has been read by the faculty comprising the Qualifying Examination Committee, the Qualifying Examination is not intended to be solely a defense of that prospectus. The Qualifying Examination is intended to assess the breadth and depth of the student’s knowledge with regard to the history, theory, concepts, and “real world” application of epidemiology, biostatistics, and the specified “third area.”

**Procedures:** Prior to writing the dissertation, each Ph.D. student in epidemiology must pass a Qualifying Examination, which is required by the Graduate Division of all doctoral students at the University of California, Berkeley. For most epidemiology Ph.D. students, the Qualifying Examination should take place after three or four semesters of coursework, although some students may require either less or more preparation, depending on their level of preparation at the time of entering the Ph.D. program. It is the shared responsibility of the student and his/her faculty advisor to assure that the student is taking appropriate coursework in epidemiology, biostatistics, and the student’s chosen “third area” and that the student is adequately prepared to take the Qualifying Examination. The student’s faculty advisor must certify in a written memo to the head of the Graduate Group in Epidemiology that in his/her estimation the student is adequately prepared to take the Qualifying Examination. The memo should also provide a brief general description of the student’s proposed dissertation research; the student’s stated “third area;” and suggestions regarding UC Berkeley Academic Senate faculty who might be asked to serve as the “outside member” on the student’s Qualifying Examination committee. The memo should be accompanied by a copy of the student’s transcript(s) covering the semesters when the student was enrolled in relevant coursework.

Once a student’s faculty advisor has certified that the student is adequately prepared to take the Qualifying Examination, the student must prepare a formal application for the Qualifying Examination to Graduate Division. This application must be approved by the Head of the Graduate Group in Epidemiology and must be submitted to the Epidemiology Student Affairs Officer. Only the Student Affairs Officer can submit the application to the Graduate Division. The Graduate Division requires that this application be submitted a minimum of three weeks prior to the proposed date of the Qualifying Examination.

To be eligible to take the Qualifying Examination, the Graduate Division requires that the student:
1) Be registered for the semester in which the exam is taken or, if taken during the winter or summer break, be registered in either the preceding or the following semester.
2) Have completed at least one semester of academic residence.
3) Have at least a B average in all work undertaken in graduate standing.
4) Have no more than two courses graded “Incomplete”.

Students may not take the exam before being notified that admission to the exam has been approved in writing by the Graduate Division.

Included in the information on the application for the Qualifying Examination are the three areas in which the student is to be examined (epidemiology, biostatistics, and whatever “third area” the student selects) and the four faculty who will comprise the Qualifying Examination Committee. The composition of the Qualifying Examination Committee must meet the requirements of and be approved in writing by the Graduate Division. The student’s faculty advisor (who is presumed to be the faculty member who will become the chair of the student’s dissertation committee) cannot serve on the student’s Qualifying Examination Committee. A student’s Qualifying Examination Committee will consist of four faculty members as follows:

1. **Chair**: The Chair of the Qualifying Examination Committee must be either a ladder rank faculty (i.e. a member of the UC Berkeley Academic Senate) member of the Epidemiology Graduate Group or an adjunct faculty member of the Epidemiology Graduate Group who has been approved in writing by the Dean of the Graduate Division to serve as the chair of a Qualifying Examination Committee.

2. **Member**: A ladder rank faculty member (i.e. a member of the UC Berkeley Academic Senate) of the Epidemiology Graduate Group or an adjunct faculty member of the Epidemiology Graduate Group who has been approved in writing by the Dean of the Graduate Division to serve as a member of a Qualifying Examination Committee.

3. **2nd Member**: A second ladder rank faculty member (i.e. a member of the UC Berkeley Academic Senate) of the Epidemiology Graduate Group or an adjunct faculty member of the Epidemiology Graduate Group who has been approved in writing by the Dean of the Graduate Division to serve as a member of a Qualifying Examination Committee. This member must also be a faculty member in the Division of Biostatistics.
4. **Outside Member**: A ladder rank faculty member of the UC Berkeley Academic Senate who is not a member of the Epidemiology Graduate Group

Lists of the members of the Graduate Groups in Epidemiology can be found in Appendix D, including information concerning which adjunct faculty members have standing permission to chair and/or serve on Qualifying Examination Committees. The chair and the second epidemiology faculty member of each Student’s Qualifying Examination Committee will be selected by the Head of the Graduate Group (or his designee) from among the eligible faculty by a process intended to assure that appropriate expertise is represented on each committee and that all eligible faculty participate in examinations periodically. The biostatistics faculty member and the “outside member” for each Qualifying Examination Committee will be selected in consultation with the respective student, taking into account the student’s prior coursework; his/her chosen “third area;” and the willingness and availability of suitable faculty to serve.

**Prospectus**: In preparation for the Qualifying Examination, each student must prepare a written prospectus, the structure and content of which are provided to students. The prospectus must take the form of a detailed proposal, described elsewhere, for an epidemiologic study. In most instances, the prospectus should be directly related to the student’s proposed dissertation research. The prospectus should be written for an audience with general knowledge of epidemiologic and biostatistical principles and methods, but knowledge that is highly specific to the proposed study, particularly knowledge relating to clinical, laboratory, environmental, genetic, or social/behavioral variables, scales, etc. should not be assumed. In preparing their prospectus, students are permitted to use any written materials that are available in the public domain as resources and to consult with their advisor or with other faculty members and fellow students. However, students may not have assistance in the actual writing of their prospectus, which must be entirely the original work of the student (This requirement does not preclude the student from receiving and making improvements in response to feedback from his/her advisor on a preliminary draft of the prospectus.). At the time the prospectus is submitted, the student’s faculty advisor must certify that he/she has read the prospectus; that he/she finds the prospectus of acceptable quality; and that to the best of his/her knowledge, the prospectus represents the original work of the student. Through his/her prospectus, the student is expected to demonstrate convincingly that he/she possesses the following skills
which are defined in a document provided to all students who are preparing for the QE: 1) conceptual; 2) problem solving; 3) critical/creative; 4) writing.

Following submission of the prospectus to the Epidemiology Student Affairs Officer, copies will be distributed to the members of the Qualifying Examination Committee at least three weeks before the scheduled date of the Qualifying Examination. Committee members will have read the prospectus before the Qualifying Examination. The committee members will not assign a grade to the prospectus but will decide if the prospectus indicates that the student is ready to stand for the oral qualifying examination. In the event that the prospectus is not considered acceptable, it will be returned to the student for revision; and the oral qualifying examination will be rescheduled once the revised prospectus is returned.

While the Qualifying Examination is not intended to be a defense of the prospectus (see below), the student’s ability to respond appropriately to questions or concerns about the prospectus will be considered in judging his/her performance on the Qualifying Examination. Committee members are expected to provide the student with specific written feedback (either in the form of a memo or in the form of an annotated copy of the prospectus with questions, comments, and concerns) at the end of or within one week following the Qualifying Examination.

Conduct and Content of the Qualifying Examination: Materials are provided to students that explain the structure of the examination and a listing of areas of theory, practice and subject matter that are the domain for the examination.

A student who fails the Qualifying Examination, as well as his/her faculty advisor, will be informed about the area(s) of deficiency that led to the failure. A student may re-take the Qualifying Examination once; any student who fails the Qualifying Examination a second time may not advance to candidacy or remain in the doctoral program.

Advancement to Candidacy:
Eligibility for Advancement to Candidacy

To be advanced to candidacy, doctoral students must:

1) Pass the Oral Qualifying Examination;

2) Have no more than two courses graded incomplete;
3) Have a minimum 3.0 grade-point average in all upper division and graduate courses taken in graduate standing.

Dissertation committees must be chaired by a UC Berkeley Academic Senate member. The dissertation committee for the Ph.D. consists of three faculty members, one of whom must be from outside the Group in Epidemiology and a UC Berkeley Academic Senate member.

Doctoral students are expected to meet with all members of the dissertation committee at least annually to review progress toward completion of the dissertation research. Students are encouraged strongly to have a schedule of regular meetings with the dissertation chair.

How students are advanced to candidacy

Once a student has passed the Oral Qualifying Examination, the student submits an “Application for Advancement to Candidacy” form (Appendix F) and a copy of the student’s CITI certification (see below) to the Division’s Student Affairs Officer, Roberta Myers (Room 113 Haviland Hall). The application form must be signed by the chair of the dissertation committee and accompanied by a check for $90 made payable to the UC Regents. Please note: The proposed members of the dissertation committee must be listed on this application form.

Human Subjects Training and Approvals

Doctoral students are responsible for obtaining any necessary approvals or exemptions from the UCB Committee for the Protection of Human Subjects for carrying out their dissertation research BEFORE they begin data collection or analysis of an extant data set, even if the study has received institutional review board approval elsewhere and/or previously collected data are being used.

All students who plan to engage in human subjects research must first complete and pass the appropriate Collaborative IRB Training Initiative (CITI) web-based education program modules. They can then be certified to serve as a “lead investigator” or as “key personnel” on any UCB human subjects research project.

No protocol submitted to CPHS with a student listed on the application coversheet or added as an amendment will be approved, re-approved, or determined to be exempt without documentation of the student having completed and passed all CITI course modules and quizzes as required and
as appropriate to the type of research (biomedical or social-behavioral) to be conducted. Completing the training and passing the quiz modules associated with the CITI program will certify a UCB-affiliated individual as trained in human subjects research. This training will also fulfill NIH human subjects training requirements, and for individuals who qualify for Principal Investigator (PI) status, will certify eligibility to serve as the PI or key personnel on a human subjects research project funded by NIH. NIH-funded investigators are encouraged to complete the appropriate CITI training modules even if they have documentation of training elsewhere or through other programs. Certification from the initial CITI training program is valid for three years. Recertification through the CITI continuing education program is required every three years thereafter. The passing score for the Core Course Modules or the Continuing Education Course is 80%. The CITI program can be found at [https://www.citiprogram.org/default.asp](https://www.citiprogram.org/default.asp). Students are also encouraged to take the NIH course on human subjects research, which can be found at [http://phrp.nihtraining.com/users/login.php](http://phrp.nihtraining.com/users/login.php).

After a student has completed and passed the appropriate modules for his/her research project, a message is automatically sent directly to the UCB Office for the Protection of Human Subjects (OPHS). Once the student finishes the course, a link will appear in his/her Learner’s Menu (main menu) called “Completion Report.” *The student should print out and maintain a copy of the Completion Report.* All students must submit a copy of their certification at the time of protocol submission to CPHS, and must attach a copy to their “Advancement to Candidacy” form. Any questions about human subjects training and approvals should be directed to the Office for the Protection of Human Subjects (OPHS), Power Building at 2150 Shattuck Avenue, Suite 313. Email: [cphs@berkeley.edu](mailto:cphs@berkeley.edu).

**Advancement to Candidacy Award**

Students who have submitted their advancement to candidacy documents are eligible to receive a one-time stipend from the School of Public Health Grossman Fund (if available). The amount of the award depends upon the number of applicants in a given award period.

**Doctoral Candidacy**

Candidacy for the PhD degree is of limited duration. When a student is advanced to candidacy, the Graduate Division informs him or her of the number of semesters he or she is
eligible to be a candidate, based on time in candidacy, or “Normative Time.” Students who do not complete the PhD within that time, plus a two-year grace period, will have their candidacy lapsed by the Graduate Division.

**Lapsing of Candidacy**

Lapsing of candidacy is a probationary status, usually lasting two years, for students who have not completed the final requirements for their degree at an adequate rate. Usually, a student’s candidacy is lapsed by the Graduate Division two years after he or she exceeds the Normative Time in candidacy for the discipline, unless the department requests and the Graduate Division grants an extension. Departments can recommend that a student’s candidacy be lapsed earlier if the student is given a written warning six months before lapsing is to take effect. A student whose candidacy has been lapsed may not hold any academic appointment on campus, including that of Graduate Student Instructor or Graduate Student Researcher.

**Please note:** The Graduate Division usually will not accept Oral Qualifying Examinations more than five years old as representing current knowledge, unless the student provides other evidence of continuing scholarly activity besides research for the dissertation. This policy is based on the Graduate Council’s belief that the Oral Qualifying Examination and submission of the dissertation are not separate “hurdles,” but together form an integrated educational experience for the PhD candidate.

**Information on Writing and Submission of the Dissertation**


For specific instructions on filing the dissertation, go to Instructions for Preparing and Filing Your Thesis or Dissertation, [http://grad.berkeley.edu/policies/pdf/disguide.pdf](http://grad.berkeley.edu/policies/pdf/disguide.pdf)

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The Dissertation Writer’s Room

An additional resource for students working on dissertations is the Dissertation Writer’s Room, a space dedicated to doctoral students advanced to candidacy, opened in Room 215 of the Doe Library on June 21, 2010. The room provides a dedicated space encouraging focus and concentration on your writing in the quiet company of fellow doctoral candidates from humanities and social science disciplines.

Located at the rear of Graduate Services (208 Doe), the Dissertation Writer’s Room hours are Monday through Thursday, 9 am to 9 p.m.; Friday, 9 a.m. to 5 p.m.; and Sunday, 1 to 9 p.m. You must sign up beforehand and show your UCB ID card when you enter 208 Doe, as the Doe Library’s Graduate Services is reserved for the exclusive use of UCB graduate students, faculty, and staff.

The Dissertation Writer's Room accommodates six students using the study tables and two using the reading chairs. As utilization increases, this will be expanded. Wireless Internet connections are available via AirBears.

Doe's Graduate Services section is a study space for all graduate students, housing around 25,000 volumes and a reserve library for graduate courses in the humanities and social sciences. The core collection comprises standard editions of core texts, works of major theorists, titles on master's exams reading lists, and other materials heavily used by graduate students in the humanities and social sciences. Graduate Services also houses the Modern Authors Collection (XMAC), comprising the works of major 20th century English, American, and Anglophone literary authors, and a small collection of English and foreign language dictionaries.

In addition to the study spaces in Graduate Services, study carrels in the Gardner (main) Stacks can be reserved by graduate students. Graduate students may apply at the Doe Circulation Desk for these carrels, and books from the Gardner Stacks may be charged out and kept in the carrels.
Presentation of Dissertation Research

Doctoral students are expected to present their research plans and progress/results in the epidemiology doctoral seminar PH 293 beginning in the first semester of year one and subsequently each semester until the completion of the second year. There is no requirement for a formal thesis defense. However, students are encouraged to present their work during the semester in which they plan to file the dissertation. Two venues are available: PH293 and the Epidemiology Research Seminar Series.

Annual Review of Doctoral Students

The Graduate Council requires that all doctoral students who have advanced to candidacy meet annually with at least two members of their dissertation committee. This annual review is part of the Graduate Council’s efforts to improve the doctoral completion rate and to shorten the time it takes to obtain a doctoral degree.

Withdrawal

Students who choose not to register for a given semester must formally withdraw in order to remain in good standing. Withdrawing from the University must be approved by the graduate advisor chair and the Graduate Division. Students are entitled to two semesters of formal withdrawal which do not count in the accrued time to degree.

How to Withdraw from the University

These are two forms that need to be submitted (to the Division’s Student Affairs Officer, Roberta Myers in 113 Haviland Hall) to withdraw from the University and then to be re-admitted:

1) “Notice of Withdrawal” petition (Appendix G)
2) “Application for Readmission” (Appendix H)
3) “Legal Residence Petition” (Appendix I)

Regulations Regarding Use of the Filing Fee

The Filing Fee enables eligible doctoral students to pay one-half the University Registration fee ($284) in lieu of full registration fees during the semester in which they file their dissertations required for the degree. The Filing Fee is not a form of, or equivalent to, registration.
may apply for the Filing Fee when all the requirements for the degree have been completed, except for the final reading and filing of the dissertation. *Filing Fee status is approved only once per degree for eligible students.* If students do not complete final degree requirements during their eligibility period, the fee is forfeited and students must pay regular registration fees during the semester in which they subsequently complete those requirements.

**Limitations of Filing Fee Status**

To use the Filing Fee in Fall, you must have been registered in the previous Spring or Summer (3 units minimum in summer). To use the Filing Fee in Spring, you must have been registered in the previous Fall. Students may **not** concurrently hold a GSI or GSR appointment and be on Filing Fee.

Students on Filing Fee status may purchase the Student Health Insurance Plan (SHIP) through one of two plans. The “Bay Area Plan” provides primary care services at the University Health Services (UHS), plus major medical coverage; the “Out of Area Plan” covers major medical care only for hospitalization, emergency, and urgent care services. For more information about enrolling in either plan, contact the Student Health Insurance Office at the UHS (2222 Bancroft Way or phone 510 642-5700) or at their website: [http://www.uhs.berkeley.edu](http://www.uhs.berkeley.edu)

*International students are required to have health insurance, whether or not they are registered or on Withdrawal or Filing Fee status. They should contact the Student Health Insurance Office for more information at (510) 642-5700.*

**Filing Fee Status and International Students**

Filing Fee status satisfies the registration requirement for international students. They should contact the International Office at (510) 642-2818 well before the beginning of the semester during which they will use the Filing Fee in order to avoid visa problems with the U.S. Immigration Service.

**How Students Apply for Filing Fee Status**

Application for use of the Filing Fee ([Appendix J](#)): Students should apply for Filing Fee status at least two weeks before the beginning of the semester in which they plan to complete their
degree requirements. The application should be submitted to the Epidemiology Student Affairs Officer, Roberta Myers in 113 Haviland Hall.

Filing the Dissertation

Doctoral degrees are awarded in December and May. Academic senate regulations state that in order to receive a degree in any given term, all work for the degree must be completed by the last day of the term. *This is a firm deadline.*

The 2010-2011 filing deadlines for each degree period are:

• December 17 for a December degree
• May 13 for a May degree.
The Qualifying Examination for Ph.D. Students in Epidemiology

Timing and Certification of Adequacy of Preparation

Prior to writing the dissertation, each PhD student in epidemiology must pass a Qualifying Examination, which is required by the Graduate Division of all doctoral students at the University of California, Berkeley. For most epidemiology PhD students, the Qualifying Examination should take place after three or four semesters of coursework, although some students may require either less or more preparation, depending on their level of preparation at the time of entering the PhD program. It is the shared responsibility of the student and his/her faculty advisor to assure that the student is taking appropriate coursework in epidemiology, biostatistics, and the student’s chosen “third area” and that the student is adequately prepared to take the Qualifying Examination. The student’s faculty advisor must certify in a written memo to the head of the Graduate Group in Epidemiology that in his/her estimation the student is adequately prepared to take the Qualifying Examination. The memo should also provide a brief general description of the student’s proposed dissertation research; the student’s stated “third area;” and suggestions regarding UC Berkeley Academic Senate faculty who might be asked to serve as the biostatistics faculty member and as the “outside member” (Appendix E) on the student’s Qualifying Examination committee. The memo should be accompanied by a copy of the student’s transcript(s) covering the semesters when the student was enrolled in relevant coursework.

Purpose of the Qualifying Examination

The purpose of the Qualifying Examination is to assess the adequacy of a student’s preparation to conduct dissertation research in epidemiology. All epidemiology PhD students will be examined and be required to demonstrate competence in epidemiology, biostatistics, and a “third area” of the student’s choosing. The “third area” is typically chosen so as to be relevant to the student’s proposed dissertation research. While all epidemiology PhD students will have prepared a prospectus in the form of a detailed research proposal (see below) that has been read by the faculty comprising the Qualifying Examination Committee, the Qualifying Examination is not intended to be solely a defense of that prospectus. The Qualifying Examination is intended to assess the breadth and depth of the student’s knowledge with regard to the history, theory,
concepts, and “real world” application of epidemiology, biostatistics, and the specified “third area.”

Application for the Qualifying Examination and Composition of the Qualifying Examination Committee

Once a student’s faculty advisor has certified that the student is adequately prepared to take the Qualifying Examination, the student must prepare a formal application for the Qualifying Examination to Graduate Division (Appendix C). This application must be approved by the Head of the Graduate Group in Epidemiology (Professor Ira Tager, 105 Haviland Hall) and must be submitted to the Epidemiology Student Affairs Officer (Roberta Myers, Room 113 Haviland Hall) for submission to the Graduate Division. Only the Student Affairs Officer can submit the application to the Graduate Division. The Graduate Division requires that this application be submitted a minimum of three weeks prior to the proposed date of the Qualifying Examination.

In order to be eligible to take the Qualifying Examination, the Graduate Division requires that the student:

5) Be registered for the semester in which the exam is taken or, if taken during the winter or summer break, be registered in either the preceding or the following semester.
6) Have completed at least one semester of academic residence.
7) Have at least a B average in all work undertaken in graduate standing.
8) Have no more than two courses graded “Incomplete”.

Students may not take the exam before being notified that admission to the exam has been approved in writing by the Graduate Division.

Included in the information on the application for the Qualifying Examination are the three areas in which the student is to be examined (epidemiology, biostatistics, and whatever “third area” the student selects) and the four faculty who will comprise the Qualifying Examination Committee. The composition of the Qualifying Examination Committee must meet the requirements of and be approved in writing by the Graduate Division. The student’s faculty advisor (who is presumed to be the faculty member who will become the chair of the
student’s dissertation committee) cannot serve on the student’s Qualifying Examination Committee. A student’s Qualifying Examination Committee will consist of four faculty members as follows:

1. **Chair:** The Chair of the Qualifying Examination Committee must be either a ladder rank faculty (i.e. a member of the UC Berkeley Academic Senate) member of the Epidemiology Graduate Group or an adjunct faculty member of the Epidemiology Graduate Group who has been approved in writing by the Dean of the Graduate Division to serve as the chair of a Qualifying Examination Committee.

2. **Member:** A ladder rank faculty member (i.e. a member of the UC Berkeley Academic Senate) of the Epidemiology Graduate Group or an adjunct faculty member of the Epidemiology Graduate Group who has been approved in writing by the Dean of the Graduate Division to serve as a member of a Qualifying Examination Committee.

3. **2nd Member:** A second ladder rank faculty member (i.e. a member of the UC Berkeley Academic Senate) of the Epidemiology Graduate Group or an adjunct faculty member of the Epidemiology Graduate Group who has been approved in writing by the Dean of the Graduate Division to serve as a member of a Qualifying Examination Committee. This member must also be a faculty member of the Division of Biostatistics.

4. **Outside Member:** A ladder rank faculty member of the UC Berkeley Academic Senate who is not a member of the Epidemiology Graduate Group.

Lists of the members of the Graduate Groups in Epidemiology can be found in Appendix D, including information concerning which adjunct faculty members have standing permission to chair and/or serve on Qualifying Examination Committees. The chair and the second epidemiology faculty member of each Student’s Qualifying Examination Committee will be selected by the Head of the Graduate Group (or his designee) from among the eligible faculty by a process intended to assure that appropriate expertise is represented on each committee and that all eligible faculty participate in examinations periodically. The biostatistics faculty member and the “outside member” for each Qualifying Examination Committee will be selected in consultation with the respective student, taking into account the student’s prior coursework; his/her chosen “third area;” and the willingness and availability of suitable faculty to serve.
Prospectus

In preparation for the Qualifying Examination, each student must prepare a written prospectus. The prospectus must take the form of a detailed proposal for an epidemiologic study. In most instances, the prospectus will be directly related to the student’s proposed dissertation research, although it is not a requirement that it be so. The prospectus should be written for an audience with general knowledge of epidemiologic and biostatistical principles and methods, but knowledge that is highly specific to the proposed study, particularly knowledge relating to clinical, laboratory, environmental, genetic, or social/behavioral variables, scales, etc. should not be assumed. In preparing their prospectus, students are permitted to use any written materials that are available in the public domain as resources and to consult with their advisor or with other faculty members and fellow students. However, students may not have assistance in the actual writing of their prospectus, which must be entirely the original work of the student (This requirement does not preclude the student from receiving and making improvements in response to feedback from his or her advisor on a preliminary draft of the prospectus.). At the time the prospectus is submitted, the student’s faculty advisor must certify that he/she has read the prospectus; that he/she finds the prospectus of acceptable quality; and that to the best of his/her knowledge, the prospectus represents the original work of the student. Through his/her prospectus, the student is expected to demonstrate convincingly that he/she possesses the following skills:

Conceptual: This refers to the student’s ability to review a body of extant literature relevant to the research problem and to provide a coherent synthesis from which a research question and design can be formulated. The specific elements of this skill will be evaluated on the ability to: a) review the literature and its ramifications; b) develop a theoretical framework that is useful for the identification of the relevant research question(s); and c) select one such research question to be expanded upon and to provide a rationale for the choice.

Problem Solving: This refers to the student’s ability to develop the following for the selected research question: a) a proposal for an appropriate study that meets established ethical standards for human research; follows criteria for valid study design; and balances issues of theoretical optimization with those of feasibility; b) sufficient detail to permit a judgment on its methodologic
adequacy; and c) a detailed plan for the appropriate analysis and interpretation of the resulting data.

**Critical/Creative:** This involves a discussion of hypothetical outcomes of the proposed study design, their likely interpretation, and their significance. Interpretation includes limitations of the proposed design and the relationship of the expected findings to the extant body of knowledge in the chosen research area (e.g., issues left unresolved, future research that follows from the proposed work).

**Writing Skills:** This refers to the ability to communicate epidemiologic, biostatistical, and other relevant concepts clearly and cogently. The use of proper, grammatically correct English will be expected.

**Format:** The format of the prospectus should be similar, but not identical, to a typical NIH style grant application:

A. Table of Contents: 1 page maximum
B. Abstract: 2 pages maximum
C. Background (literature review): 8 pages maximum
D. Statement of Research Question, Specific Aims (hypotheses) and Rationale: 2 pages maximum
E. Research Plan (including the study design and a detailed plan of analysis, with the rationale for each): 12 pages maximum
F. Human Subjects Concerns: 3 pages maximum
G. Discussion, Significance, Future Steps: 6 pages maximum
H. Selected References: no more than 3 single-spaced pages (with 1 space between each reference) maximum
I. Appendix (Optional: tabular or graphic material only): 15 pages maximum

Students are not expected to submit a budget, but should demonstrate an awareness of the resources that would be needed for the proposed study in the discussion of the design feasibility. Page limitations are based on typed, double-spaced text (except sections H and I.) **Font size must be 12** (e.g. *Times New Roman 12*). The prospectus must not exceed the page or font limitations. The prospectus must be typed. The organization of each individual section of the prospectus is left
to the student’s discretion. The submission of tabular and graphical materials in appendices is encouraged, but not required.

*Selected Comments on Specific Sections of the Prospectus*

**Abstract:** Students are expected to be able to provide a succinct overview of the research question, the rationale for the study, and generally comment on the design and expected results and implications.

**Background:** This section should provide a literature review that synthesizes and critiques the current knowledge base for the topic. The section should set the framework for the rationale that appears in the next section.

**Statement of the Research Question:** This section should provide a clear statement of the research questions and hypotheses. The section should include a rationale that explicitly links the proposed research to the review contained in the previous section. When appropriate, a directed acyclic graph should be included.

**Design and Analysis Plan:** Students may or may not identify an actual study population or data resource (if the study is a secondary analysis of an extant data resource). If the student does not identify an actual study population, he or she should identify and justify the characteristics of a desirable and feasible study population (or data resource) in the context of the design that is being proposed. The size of the study population being proposed should be fully justified, using power curves or other appropriate supporting materials.

The selection of an overall study design should be justified in light of the specifics of the research and in terms of other options that might be theoretically possible but not necessarily feasible or desirable. Details concerning data collection and management in the context of the study design should be included.

**Analysis Plan:** A detailed data analysis plan must be presented in the context of the research proposal. Issues such as the specification of the primary outcome, primary
exposure(s) and important covariates should be addressed. Choice of effect measures and the methods to obtain them should be justified, as should the choice of analytic approaches.

The statistical analysis plan should include the simplest set of tools necessary to estimate and provide inference for the relevant parameters suggested by the study’s aims. This plan typically should include: 1) the data structure implied by the design of the study (e.g., right-censored outcome with time-independent covariates); 2) the parameter(s) of interest (e.g., the unadjusted and adjusted associations of a particular binary risk factor with a continuous outcome – such as the association of outcome and risk factor within strata of potential confounders; 3) types of graphs that could be used to display data that are relevant to the estimation of those parameters (e.g., scatter plot of outcome vs. risk factor if the outcome is continuous); 4) the method used to estimate the parameters (e.g., simple linear regression, Cox regression, etc.); and 5) the method used to derive statistical inference for those estimates (e.g., simple Wald statistic, bootstrapping, robust SE’s from GEE, etc.).

Additional material, such as types of diagnostic plots or tests, model fitting procedures, etc., should be included when relevant. Examples of actual models (e.g., Y=b_0+b_1X+b_2Z+e) with reference to the parameter of interest (e.g., b_1) are encouraged.

Human Subjects Concerns: This section should address all relevant ethical concerns arising from the inclusion of human subjects in the proposed research.

Discussion, Significance, Future Steps: This section provides an opportunity to discuss the strengths and limitations of the study design in the context of the overall research. Students are expected to provide a range of interpretations that would or would not be possible from the study that is proposed. The implications of the expected outcomes for future research in this area should be addressed.

A hard copy and an electronic copy of the prospectus must be submitted to the Epidemiology Student Affairs Officer (Roberta Myers, 113 Haviland Hall) at least four weeks before the Qualifying Examination is scheduled to take place.
Following submission of the prospectus to the Epidemiology Student Affairs Officer, copies will be distributed to the members of the Qualifying Examination Committee at least three weeks before the scheduled date of the Qualifying Examination. Committee members will have read the prospectus before the Qualifying Examination. The committee members will not assign a grade to the prospectus. While the Qualifying Examination is not intended to be a defense of the prospectus (see below), the student’s ability to respond appropriately to questions or concerns about the prospectus will be considered in judging his/her performance on the Qualifying Examination. The two epidemiology faculty committee members are expected to provide the student with specific written feedback (either in the form of a memo or in the form of an annotated copy of the prospectus with questions, comments, and concerns) at the end of or within one week following the Qualifying Examination.

Conduct and Content of the Qualifying Examination

The Qualifying Examination must be scheduled to last three hours, although it may be concluded in less time. The Graduate Division requires that all Qualifying Examination Committee members be in attendance throughout the examination. If for whatever reason a committee member becomes unavailable to attend, the examination must be rescheduled or the committee formally reconstituted by the Dean of the Graduate Division. The chair of the Qualifying Examination Committee is responsible for overseeing the examination process.

At the beginning of the examination, the committee typically holds a brief meeting (without the student present) to discuss the student’s accomplishments to date and the “ground rules” for the examination. The student has the option to stipulate the order in which committee members will ask questions and whether or not he/she objects to the other committee members interjecting follow up questions during another committee member’s questioning. The student also has the option to give a brief (≤ 10 minutes) presentation concerning his/her research or other topics before the questioning begins.

At the conclusion of the examination, the student is asked to leave the room while the Qualifying Examination Committee discusses the student’s performance. The student is then invited back into the room and informed by the chair whether or not he/she has passed the
examination. Students who pass the Qualifying Examination should complete the paperwork to advance to candidacy as expeditiously as possible. A student who fails the Qualifying Examination, as well as his/her faculty advisor, will be informed about the area(s) of deficiency that led to the failure. A student may re-take the Qualifying Examination once; any student who fails the Qualifying Examination a second time may not advance to candidacy or remain in the doctoral program.
Appendices

A. Key Concepts in Areas of Epidemiology and Biostatistics (15 pages)

B. Annual Review of Progress (2 page form)

C. Application for the Qualifying Examination (1 page form)

D. Graduate Group Faculty in Epidemiology and Biostatistics (1 page)

E. Outside Members in the School of Public Health (1 page)

F. Application for Advancement to Candidacy Form (2 page form)

G. Notice of Withdrawal Petition (1 page form)

H. Application for Readmission (2 pages; 1 page form w/ directions on 2nd page)

I. Legal Residence Petition (2 page form)

J. Application for Use of the Filing Fee (2 pages; 1 page form w/ directions on 2nd page)

NOTE: Following this page are the complete texts of the appendices. Some of the appendices consist of multiple pages. The above hyperlinks lead to the first page of each appendix.
1. EPIDEMIOLOGIC METHODS

(Note—many of these concepts have close parallels in biostatistics, but the perspective is somewhat different. You should be able to address these in both contexts, if so asked. See the Biostatistics, Section 5).

- Describe the pros and cons of each study design. Indicate what effect measures can be estimated from each.
  - Relationship between case-control and cohort designs
  - Multilevel designs
- Provide formula/interpretation for measures of occurrence and measures of effect. Define OR, IRR, etc.
  - Assumptions required for OR to estimate IRR, CIR in various study designs
  - Units for incidence density and implications for interpretation
- Define key epidemiologic terms: confounding, bias (selection, misclassification, etc), effect modification, measurement error
- Identify major causes of disease and death (nationally and internationally).
- Screening and surveillance – the difference between the two, pros and cons of screening programs. Define sensitivity, specificity, false positive, positive predictive value; the tradeoffs between these
- Causation and causal inference
  - Prediction, association, causal
    - Relationships
    - Roles in epidemiologic studies
  - Development of scientific hypotheses
  - Bradford-Hill criteria and relevance
  - Causal pies
  - Association vs. causality
  - Analysis of DAG
  - Potential outcome model and counterfactuals
    - basic assumptions
    - propensity scores
  - Inductive versus deductive inference and relation to observational epidemiologic studies
  - Epidemiologic inference versus public health and policy inference and relevance
- Steps in data analysis
  - Role of DAGs
  - Elements of data analysis
    - Analysis versus science (cf: Rubin)
- Sample size and power calculations
  - Concepts and relevance to scientific inference
- Critique literature/evaluation of the evidence-base
  - Principals and role of meta-analysis in evaluation of evidence
    - Meta-analyses for observational data versus randomized trials
- Design of data collection instruments
Principles of questionnaire design
  - Face validity
  - Construct validity
  - testing

- Data quality – study design and analysis issues
  - Missing data, causes
  - Implications of missing data
  - Strategies to address

- Model building and fitting strategies
  - Relation of statistical models to scientific research questions

- Detection and interpretation of interaction
  - Statistical interaction versus response heterogeneity
  - Influence of scale

- Sampling procedures

- Study accuracy: systematic error, random error and statistical precision –
  - Relation between precision and bias
    - assumptions?

- Measurement error
  - Causes
  - Implications
  - Methods to address
  - Role of validation studies

- Matching – pros and cons, analytic methods for matched data.
  - Strategies—types and implications for inference and analysis
  - Underlying rationale for matching
  - Over-matching—concept and implications

- Classification/misclassification (random, dependent). Give examples of each (random, dependent) and the influence on the effect measures. Describe study design and analysis methods to reduce misclassification.
  - Relation of random error to differential misclassification

- Bias analysis – types and utility

- Standardization procedures
  - Purpose
  - Principals
  - Implications
  - Relation to counterfactual causal concepts

- Meta analysis – strengths/limitations

- Elements of a good grant proposal

- Consideration of multiple comparisons / data dredging

- Confounding
  - Concepts
  - Role of statistics
  - Consequence of adjustment for non-confounders of various types
  - Partial and complete exchangeability—definitions and implications
Bioterrorism

**Recommended texts or other reading:**

*The PH250C reader contains an extensive reading list of several hundred references, all of which is on a CD in PDF format distributed to the class.*


Selvin S, Statistical Analysis of Epidemiological Data, Oxford Press, 2004


Holland W et al, The Development of Modern Epidemiology - Personal reports from those who were there. Oxford/IEA, 2007


**Recommended course(s):**

PH250B Epidemiologic Methods II  
PH250C Epidemiologic Theory  
PH250D Introduction to Marginal Structural Models

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**2. HUMAN GENETICS / GENETIC EPIDEMIOLOGY**

- Basic molecular genetics: DNA structure, replication, transcription, translation  
- Genetic variation and examples. Methods to detect variation  
- Principles of meiosis, mitosis, Mendel’s laws  
- Mendelian inheritance; examples of diseases, modes of inheritance  
- Significance of migration and adoption studies  
- Familial aggregation and correlations, twin studies and significance  
- Significance of segregation analysis  
- Study designs in genetic epidemiology  
- Basics of linkage analysis, recombination, phase  
- Analytical methods for parametric and non-parametric linkage analysis  
- Quantitative genetics; quantitative vs. qualitative traits  
- Population genetics: Hardy-Weinberg equilibrium, linkage disequilibrium  
- Haplotypes, haplotype blocks, analytical methods for haplotype estimation  
- Family-based and population-based association studies, whole genome approaches/methods  
- Transmission disequilibrium test  
- Admixture and population stratification; methods for detection and adjustment, methodological approaches  
- Gene-environment interaction; significance; examples, methods of analysis; multiplicative and additive interactions
• Genotyping technologies for large scale studies. Quality control methods
• How to address multiple testing and related issues in genetic studies
• Ethical issues in genetic studies; significance of genetic information in epidemiologic studies; significance of GINA
• Epigenetics; definitions, examples, significance in human genetic studies
• Imputation of genetic data, methods and problems
• Methods of meta-analysis using genetic data
• Copy number variation in the human genome; how to detect

**Recommended texts or other reading:**


Willard HF and Ginsburg GS (editors), Genomic and Personalized Medicine, Volumes 1-2 (2008)

**Recommended course(s):**

PH256 Molecular and Genetic Epidemiology

**3. SOCIAL EPIDEMIOLOGY**

• History and development of the field of social epidemiology
• Definition, measurement, examples, significance in social epidemiologic studies with regard to the following concepts:
  o Race/ethnicity
  o Discrimination
  o Gender
  o Socioeconomic position and income inequality
  o Social support
  o Social networks
  o Social capital
  o Self-efficacy
  o Family/household structure and culture
  o Physical household characteristics
  o Place (e.g., built environment, social/cultural environment, political/economic)
• Major conceptual frameworks and models used in social epidemiology and their strengths, limitations and applications (e.g., ecological model of disease causation, fundamental causes of health, ecosocial theory, life course approach, embodiment, intersectionality).
The distinction between population health and individual health and the relevance of different research designs and analytic methods for identifying causes of each.

Challenges in making causal inference for associations between group and individual social characteristics and health outcomes.

Major methodological issues in social epidemiology including methods to study pathways, measurement of constructs, cumulative risk, ecological fallacy, aggregation bias, residual confounding, selection vs. causation.

Multilevel approaches to study social and structural environment characteristics and health.

Biological basis of social stress and stress reactivity.

Strengths, limitations and challenges of the utilization of different research designs (ecological, case/control, cross-sectional, and longitudinal) for the conduct of research in social epidemiology.

Role of interventions and randomized trials in social epidemiology.

Policy relevance or implications of social epidemiology.

Ethics in interpretation and communication of social epidemiologic findings.

**Recommended texts or other reading:**

Berkman LF, Kawachi I (editors), Social Epidemiology, Oxford University Press, New York, 2000

Kawachi I, Berkman LF (editors), Neighborhoods and Health, Oxford University Press, New York, 2003


McKinlay JB and McKinlay SM. The questionable contribution of medical measures to the decline of mortality in the United States in the twentieth century. MMFQ. 1977; Summer:405-428.


Recommended course(s):

PH255A Social Epidemiology
PH298 (Sec 53) Methods in Social Epidemiology

4. NUTRITIONAL EPIDEMIOLOGY

- Human nutritional requirements; implications of malnutrition
- Physiology and metabolism (ability to describe normal metabolism as well as modifications according to undernutrition, pregnancy, growth, infection, aging, etc)
- Food Composition-sources of data and limits
- Dietary standards and recommendations and their scientific basis
- Dietary surveys
- Assessment of nutritional status e.g. anthropometry, biochemical assays and different measures of dietary intake-implications for ranking individuals versus describing populations
- Error in nutritional exposure assessment
- Analytical methodology specific to nutritional epi: eg methods for disentangling energy from nutrients

Recommended texts or other reading:


Semba R, Nutrition and Health in Developing Countries 2nd edition, 2008

Recommended Course(s):

- PH206A Measuring Dietary Intake and Nutritional Status (highly recommended)
- PH206C Nutritional Epidemiology
- PH206D Food and Nutrition Programs and Policies in Developing Countries
- PH207A Public Health Aspects of Maternal and Child Nutrition
- NST103 Nutrient Function and Metabolism
- NST200 Advanced Organismal Nutrition and Metabolism
- NST210 Dietary Determinants of Cancer, Heart Disease and Ageing

5. BIOSTATISTICS

- Descriptive statistics
  - Expectations and variance of random variables
  - Statistical properties of common probability distributions
- Hypothesis testing
  - Confidence intervals
  - Type I and II error
  - Power
  - Sample size calculation
  - Multiple testing
- Measures of risk—
  - rates and probability
  - relative risk, relative odds, relative hazard
  - Analysis
- Variation and Bias
- Analysis of Contingency Table Data
  - Independence, conditional independence
  - Logistic regression
- Regression analysis
  - Model fitting
  - Model fit and diagnostics
  - Continuous and categorical data
  - ROC curves
  - Discriminant analysis
  - Generalized linear models
- Cohort data
  - Cohort effects
  - Life table analysis
  - Survival data
    - Estimation of risk
    - Proportional hazards
- Analysis of Count Data
  - Poisson regression
- Analysis of Matched Data
  - Types of matching
  - Different numbers of control
  - Conditional logistic regression
• Spatial Data
  o Poisson model
  o Nearest neighbor
  o Transformed maps
  o Randomization test
  o Bootstrap estimation and analysis

• Classification
  o Dendrogram
  o Principal components
  o CART

• Smoothing
  o Kernel density
  o Splines

• Longitudinal analysis
  o Advantages of longitudinal data
  o Impact of failure to account for correlated repeated measures
  o Two major approaches to repeated measures data
  o Mixed models
    ▪ Definition, class of models from which derived, parameter modeled, inference provided strengths and weaknesses.
  o GEE (parameter estimated, differences between GEE and mixed models)
  o Counts (typical reasons to assume Poisson distribution, what estimates and inference sensitive to Poisson assumption, other models for count data
    ▪ Contrast assumptions between negative binomial and Poisson regression
  o Cox proportional hazards compared to logistic regression for follow-up data

• Multivariate Analysis
  o Principal components and factor analysis
  o MANOVA
  o Clustering

**Recommended texts and other reading:**


Selvin S, Practical Biostatistical Methods, Duxbury Press, Belmont CA, 1995


Kutner M et al, Applied Linear Statistical Models, McGraw-Hill Irwin, Boston, 2005


Weisberg S, Applied Linear Regression, Wiley-Interscience, Hoboken NJ, 2005
  (requires some knowledge of matrix algebra)


6. INFECTIOUS DISEASE EPIDEMIOLOGY

- Be able to apply basic epidemiologic study designs to the study of infectious diseases
- Know the epidemiology and basic biology of important infectious diseases and syndromes with major public health impact including, but not limited to:
  (1) Specific Diseases:
    - Malaria
    - Tuberculosis
    - Dengue
    - Tuberculosis
    - HIV/AIDS
    - Methicillin-resistant *Staphylococcus aureus*
    - Herpesvirus infections
  (2) Disease Syndromes (know the epidemiology and most common causes of each syndrome)
    - Noscomial infections
    - Acute respiratory infection
    - Diarrheal diseases
    - Hepatitis
    - Influenza
    - Foodborne infections
    - Waterborne infections
    - Sexually transmitted diseases
    - Vector-borne diseases
    - Reportable infectious diseases (in California and the U.S.)
    - Malignancy-associated infections
- Key epidemiologic concepts and terms related to the study of infectious diseases
- Infectious disease transmission
  - Incubation period
  - Infectious period
  - Transmission dynamics, routes, and modeling
  - Epidemics and endemics
  - Carrier
  - Incidence, prevalence, attack rate
  - Reproductive rate
  - Reservoir
  - Factors affecting infectivity
  - Sub-clinical infection
- Outbreak investigation
- Reproductive rate
- Zoonoses (give important examples)
- Epidemic curve
- Vaccines
  - General biology of immunity and vaccine response
  - Epidemiologic designs to measure effectiveness of vaccines in the field
  - Measures of vaccine efficacy
- Reporting systems for infectious diseases at the county, state, federal, and global levels
- Seroepidemiology (definition, applications, examples)
- Contact tracing
- Herd immunity

**Recommended texts:**

Nelson KE and Williams CM, Infectious Disease Epidemiology: Theory and Practice, 2nd Edition. Jones and Bartlett Publishers, 2006. This text is designed to be used in the course; book chapters have been written by the course lecturers.

**Recommended course(s):**

PH252B  Modeling the Dynamics of Infectious Disease Process  
PH253B  Epidemiology and Control of Infectious Diseases  
PH260A  Principles of Infectious Diseases  
PH260B  Principles of Infectious Diseases  
PH260F  Infectious Disease Research in Developing Countries  
PH260E  Molecular Epidemiology of Infectious Diseases

**7. ENVIRONMENTAL & OCCUPATIONAL EPIDEMIOLOGY**

- Calculation and interpretation of SMR  
- Relevant considerations for definition and appropriate exposure metric for an environmental study of air pollution and chronic disease  
- Time window of exposure to account for disease latency in dose-response models  
- Relative advantages and disadvantages of a workplace-based study versus a community-based study  
- Health worker survivor effect and health worker hire effect and methods to adjust for each source of bias  
- Evaluation of a cancer cluster  
- Define differential versus non-differential exposure misclassification—direction of potential bias

**Recommended texts and other reading:**


Rappaport S and Smith TJ (editors), Exposure assessment for Epidemiology and Hazard Control. 1991 Lewis, Chelsea, Michigan


Recommended courses:

PH298 (Sec 2) Exposure Assessment
PH254 Environmental and Occupational Epidemiology
PH272 Case Studies in Environmental and Occupational Epidemiology

8. HISTORY OF EPIDEMIOLOGY

Students pursuing a doctoral degree in epidemiology need to have a background knowledge of the history of the field. This provides the context in which the continuing paradigm changes in the field occur as well as providing an understanding of the development of epidemiological theory, methods, and achievements. In the course A Brief History of Epidemiology these objectives are addressed from two points of view. Firstly, the field is characterized by the developments generated by the societal and environmental milieu of the times, and secondly, the field is enriched by its unique technology.
that qualifies it to be recognized as a truly scientific endeavor. These concepts and relevant content are summarized as follows:

**Part I, Eras:**

- **Ancient Times**: Hippocrates rejects the divine origin of disease and substitutes an ecological theory of causation.
- **The Renaissance**: Fracastorius produces the first comprehensive theory of infection and describes syphilis in an epic poem.
- **The Enlightenment**: Deism, the idea that all phenomena are rational opens the way for Jenner to invent smallpox vaccination.
- **The Industrial Revolution**: Bentham, Utilitarianism, and the Philosophical Radicals, react to the evils of industrialism with legislation and reform.
- **Colonialism**: Exploitation of the “developing world” creates the need to protect workers from epidemic and endemic diseases like malaria and beriberi.
- **Urban Growth and Environmental pollution**: Population growth and mass communication create new challenges like air and water pollution.
- **Women in the Progressive era**: Alice Hamilton invents occupational epidemiology; Florence Nightingale creates hospital epidemiology; and Janet Elizabeth Lane-Claypon pioneers cancer epidemiology.
- **The Great Depression Challenges Epidemiology**: Faltering economies exacerbate the disease effects of social deprivation.

**Part II, Practice, Theory, and Methodology:**

- **Descriptive Epidemiology**: Vital statistics and morbidity surveys; define the health status of the United States.
- **Cross Sectional Studies**: Unable to establish causal inference, cross-sectional studies are economical and useful for generating causal hypotheses.
- **Case-control Studies**: Intermediate between experimental and cohort designs, case-control studies lay the groundwork for cohort studies that most closely emulate experimental designs. (Good examples are early studies of smoking and lung cancer.)
- **Cohort Studies**: Most rigorous epidemiological study design for evaluating causal inference. (Good examples are the Framingham studies of cardiovascular disease and the British doctors study of smoking and lung cancer.)
- **Experimental Studies**: Limited epidemiological applications. Useful as population based clinical trials. (Best example, and a classic, is the double-blinded randomized field trial of inactivated poliovirus vaccine developed by Salk in the early ’50’s)
- **Names to Remember, I**: George Baker and Alice Hamilton (lead poisoning); John Snow (water borne cholera); Wade Hampton Frost (poliomyelitis); Joseph Goldberger (pellagra); and, Richard Doll and Bradford Hill (lung cancer)

**Recommended texts and other reading:**

Morabia A (editor), A History of Epidemiologic Methods and Concepts, Basel-Boston-Berlin, Birkhauser Verlag, 2004

Holland WW, Olson J, Florey duV (editors); The Development of Modern Epidemiology: Personal Reports from Those Who Were There, Oxford University Press, 2007.

Recommended courses:

PH259A   History of Epidemiology

9. ETHICS IN EPIDEMIOLOGIC RESEARCH

1. Recognize ethical and legal theories and principles underlying ethical concerns about research with human subjects.
2. Historical development of ethical guidelines in epidemiology and public health
3. Elements of informed consent process
4. Randomization and use of placebos
5. Concept of equipoise
6. Protecting privacy and confidentiality
7. Uses of genetic data
8. Recognizing and addressing conflicts of interest
9. Academic freedom and intellectual property issues
10. Contractual obligations in research (to study subjects, to research sponsors, to profession etc.)
11. Elements of scientific integrity
12. Recognizing and addressing scientific misconduct
13. Publication and communication of research findings
14. Responsible authorship
15. Special considerations with research conducted with vulnerable populations, i.e., children, prisoners, mentally ill, aged and populations in low resource countries
16. Professional standards and responsibilities and how these are addressed
17. Advocacy and activism in epidemiologic research

Recommended texts and other reading:


Recommended course(s):

PH200A   Current issues in Public Health Ethics: Research and Practice
PH253E   Ethics and Public Health in an Age of Catastrophe
PH295    Ethics Seminar

10. CANCER EPIDEMIOLOGY

1. History of cancer epidemiology
2. Origins of cancer
3. Causal inference in cancer epidemiology
4. Morphologic and molecular classification of cancer
5. Cancer precursors
6. Molecular and genetic events in neoplastic cellular transformation
7. Assessment of carcinogenic hazards
8. Classification of carcinogens by the International Agency for Research on Cancer
9. Uses of biomarkers of disease and exposure in cancer epidemiology
10. Genetic concepts and methods in cancer epidemiology
11. Significance of genetic susceptibility and how this is assessed
1. EPIDEMIOLOGIC METHODS

(Note—many of these concepts have close parallels in biostatistics, but the perspective is somewhat different. You should be able to address these in both contexts, if so asked. See the Biostatistics, Section 5).

- Describe the pros and cons of each study design. Indicate what effect measures can be estimated from each.
  - Relationship between case-control and cohort designs
  - Multilevel designs

- Provide formula/interpretation for measures of occurrence and measures of effect. Define OR, IRR, etc.
  - Assumptions required for OR to estimate IRR, CIR in various study designs
  - Units for incidence density and implications for interpretation

- Define key epidemiologic terms: confounding, bias (selection, misclassification, etc), effect modification, measurement error

- Identify major causes of disease and death (nationally and internationally).

- Screening and surveillance – the difference between the two, pros and cons of screening programs. Define sensitivity, specificity, false positive, positive predictive value; the tradeoffs between these

- Causation and causal inference
  - Prediction, association, causal
    - Relationships
    - Roles in epidemiologic studies
  - Development of scientific hypotheses
  - Bradford-Hill criteria and relevance
  - Causal pies
  - Association vs. causality
  - Analysis of DAG
  - Potential outcome model and counterfactuals
    - basic assumptions
    - propensity scores
  - Inductive versus deductive inference and relation to observational epidemiologic studies
  - Epidemiologic inference versus public health and policy inference and relevance

- Steps in data analysis
  - Role of DAGs
  - Elements of data analysis
    - Analysis versus science (cf: Rubin)

- Sample size and power calculations
  - Concepts and relevance to scientific inference

- Critique literature/evaluation of the evidence-base
  - Principals and role of meta-analysis in evaluation of evidence
    - Meta-analyses for observational data versus randomized trials

- Design of data collection instruments
- Principles of questionnaire design
  - Face validity
  - Construct validity
  - Testing
- Data quality – study design and analysis issues
  - Missing data, causes
  - Implications of missing data
  - Strategies to address
- Model building and fitting strategies
  - Relation of statistical models to scientific research questions
- Detection and interpretation of interaction
  - Statistical interaction versus response heterogeneity
  - Influence of scale
- Sampling procedures
- Study accuracy: systematic error, random error and statistical precision –
  - Relation between precision and bias
    - Assumptions?
- Measurement error
  - Causes
  - Implications
  - Methods to address
  - Role of validation studies
- Matching – pros and cons, analytic methods for matched data.
  - Strategies—types and implications for inference and analysis
  - Underlying rationale for matching
  - Over-matching—concept and implications
- Classification/misclassification (random, dependent). Give examples of each (random, dependent) and the influence on the effect measures. Describe study design and analysis methods to reduce misclassification.
  - Relation of random error to differential misclassification
- Bias analysis – types and utility
- Standardization procedures
  - Purpose
  - Principals
  - Implications
  - Relation to counterfactual causal concepts
- Meta analysis – strengths/limitations
- Elements of a good grant proposal
- Consideration of multiple comparisons / data dredging
- Confounding
  - Concepts
  - Role of statistics
  - Consequence of adjustment for non-confounders of various types
  - Partial and complete exchangeability—definitions and implications
Bioterrorism

Recommended texts or other reading:

The PH250C reader contains an extensive reading list of several hundred references, all of which is on a CD in PDF format distributed to the class.


Selvin S, Statistical Analysis of Epidemiological Data, Oxford Press, 2004


Holland W et al, The Development of Modern Epidemiology - Personal reports from those who were there. Oxford/IEA, 2007


Recommended course(s):

PH250B Epidemiologic Methods II
PH250C Epidemiologic Theory
PH250D Introduction to Marginal Structural Models

2. HUMAN GENETICS / GENETIC EPIDEMIOLOGY

- Basic molecular genetics: DNA structure, replication, transcription, translation
- Genetic variation and examples. Methods to detect variation
- Principles of meiosis, mitosis, Mendel’s laws
- Mendelian inheritance; examples of diseases, modes of inheritance
- Significance of migration and adoption studies
- Familial aggregation and correlations, twin studies and significance
- Significance of segregation analysis
- Study designs in genetic epidemiology
- Basics of linkage analysis, recombination, phase
- Analytical methods for parametric and non-parametric linkage analysis
- Quantitative genetics; quantitative vs. qualitative traits
- Population genetics: Hardy-Weinberg equilibrium, linkage disequilibrium
- Haplotypes, haplotype blocks, analytical methods for haplotype estimation
- Family-based and population-based association studies, whole genome approaches/methods
- Transmission disequilibrium test
- Admixture and population stratification; methods for detection and adjustment, methodological approaches
- Gene-environment interaction; significance; examples, methods of analysis; multiplicative and additive interactions
• Genotyping technologies for large scale studies. Quality control methods
• How to address multiple testing and related issues in genetic studies
• Ethical issues in genetic studies; significance of genetic information in epidemiologic studies; significance of GINA
• Epigenetics; definitions, examples, significance in human genetic studies
• Imputation of genetic data, methods and problems
• Methods of meta-analysis using genetic data
• Copy number variation in the human genome; how to detect

**Recommended texts or other reading:**


Willard HF and Ginsburg GS (editors), Genomic and Personalized Medicine, Volumes 1-2 (2008)

**Recommended course(s):**

PH256 Molecular and Genetic Epidemiology

**3. SOCIAL EPIDEMIOLOGY**

• History and development of the field of social epidemiology
• Definition, measurement, examples, significance in social epidemiologic studies with regard to the following concepts:
  o Race/ethnicity
  o Discrimination
  o Gender
  o Socioeconomic position and income inequality
  o Social support
  o Social networks
  o Social capital
  o Self-efficacy
  o Family/household structure and culture
  o Physical household characteristics
  o Place (e.g., built environment, social/cultural environment, political/economic)
• Major conceptual frameworks and models used in social epidemiology and their strengths, limitations and applications (e.g., ecological model of disease causation, fundamental causes of health, ecosocial theory, life course approach, embodiment, intersectionality).
• The distinction between population health and individual health and the relevance of different research designs and analytic methods for identifying causes of each.
• Challenges in making causal inference for associations between group and individual social characteristics and health outcomes.
• Major methodological issues in social epidemiology including methods to study pathways, measurement of constructs, cumulative risk, ecological fallacy, aggregation bias, residual confounding, selection vs. causation.
• Multilevel approaches to study social and structural environment characteristics and health.
• Biological basis of social stress and stress reactivity.
• Strengths, limitations and challenges of the utilization of different research designs (ecological, case/control, cross-sectional, and longitudinal) for the conduct of research in social epidemiology.
• Role of interventions and randomized trials in social epidemiology.
• Policy relevance or implications of social epidemiology.
• Ethics in interpretation and communication of social epidemiologic findings.

Recommended texts or other reading:
Berkman LF, Kawachi I (editors), Social Epidemiology, Oxford University Press, New York, 2000
Kawachi I, Berkman LF (editors), Neighborhoods and Health, Oxford University Press, New York, 2003
McKinlay JB and McKinlay SM. The questionable contribution of medical measures to the decline of mortality in the United States in the twentieth century. MMFQ. 1977; Summer:405-428.


Geronimus AT, Hicken M, Keene D, Bound J, "Weathering" and age patterns of allostatic load scores among blacks and whites in the United States. Am J Pub Health. 2006; 96(5): 826-833.


**Recommended course(s):**

- PH255A  Social Epidemiology
- PH298 (Sec 53)  Methods in Social Epidemiology

### 4. NUTRITIONAL EPIDEMIOLOGY

- Human nutritional requirements; implications of malnutrition
- Physiology and metabolism (ability to describe normal metabolism as well as modifications according to undernutrition, pregnancy, growth, infection, aging, etc)
- Food Composition-sources of data and limits
- Dietary standards and recommendations and their scientific basis
- Dietary surveys
- Assessment of nutritional status e.g. anthropometry, biochemical assays and different measures of dietary intake-implications for ranking individuals versus describing populations
- Error in nutritional exposure assessment
- Analytical methodology specific to nutritional epi: eg methods for disentangling energy from nutrients

**Recommended texts or other reading:**


Semba R, Nutrition and Health in Developing Countries 2nd edition, 2008

Recommended Course(s):

- PH206A  Measuring Dietary Intake and Nutritional Status (highly recommended)
- PH206C  Nutritional Epidemiology
- PH206D  Food and Nutrition Programs and Policies in Developing Countries
- PH207A  Public Health Aspects of Maternal and Child Nutrition
- NST103  Nutrient Function and Metabolism
- NST200  Advanced Organismal Nutrition and Metabolism
- NST210  Dietary Determinants of Cancer, Heart Disease and Ageing

5. BIOSTATISTICS

- Descriptive statistics
  - Expectations and variance of random variables
  - Statistical properties of common probability distributions
- Hypothesis testing
  - Confidence intervals
  - Type I and II error
  - Power
  - Sample size calculation
  - Multiple testing

Measures of risk—
  - rates and probability
  - relative risk, relative odds, relative hazard
  - Analysis
- Variation and Bias
- Analysis of Contingency Table Data
  - Independence, conditional independence
  - Logistic regression
- Regression analysis
  - Model fitting
  - Model fit and diagnostics
  - Continuous and categorical data
  - ROC curves
  - Discriminant analysis
  - Generalized linear models
- Cohort data
  - Cohort effects
  - Life table analysis
  - Survival data
    - Estimation of risk
    - Proportional hazards
- Analysis of Count Data
  - Poisson regression
- Analysis of Matched Data
  - Types of matching
  - Different numbers of control
  - Conditional logistic regression
• Spatial Data
  o Poisson model
  o Nearest neighbor
  o Transformed maps
  o Randomization test
  o Bootstrap estimation and analysis

• Classification
  o Dendrogram
  o Principal components
  o CART

• Smoothing
  o Kernel density
  o Splines

• Longitudinal analysis
  o Advantages of longitudinal data
  o Impact of failure to account for correlated repeated measures
  o Two major approaches to repeated measures data
  o Mixed models
    ▪ Definition, class of models from which derived, parameter modeled, inference provided strengths and weaknesses.
  o GEE (parameter estimated, differences between GEE and mixed models)
  o Counts (typical reasons to assume Poisson distribution, what estimates and inference sensitive to Poisson assumption, other models for count data
    ▪ Contrast assumptions between negative binomial and Poisson regression
  o Cox proportional hazards compared to logistic regression for follow-up data

• Multivariate Analysis
  o Principal components and factor analysis
  o MANOVA
  o Clustering

Recommended texts and other reading:


Selvin S, Practical Biostatistical Methods, Duxbury Press, Belmont CA, 1995


Kutner M et al, Applied Linear Statistical Models, McGraw-Hill Irwin, Boston, 2005


Weisberg S, Applied Linear Regression, Wiley-Interscience, Hoboken NJ, 2005
(requires some knowledge of matrix algebra)


Recommended course(s):

- PH145  Statistical Analysis of Continuous Outcome Data
- PH245  Introduction to Multivariate Statistics
- PH242C  Longitudinal Data Analysis
- PH252  Statistical Methods for Epidemiologic Data

6. INFECTIOUS DISEASE EPIDEMIOLOGY

- Be able to apply basic epidemiologic study designs to the study of infectious diseases
- Know the epidemiology and basic biology of important infectious diseases and syndromes with major public health impact including, but not limited to:
  (1) Specific Diseases:
    - Malaria
    - Tuberculosis
    - Dengue
    - Tuberculosis
    - HIV/AIDS
    - Methicillin-resistant *Staphylococcus aureus*
    - Herpesvirus infections
  (2) Disease Syndromes (know the epidemiology and most common causes of each syndrome):
    - Nosocomial infections
    - Acute respiratory infection
    - Diarrheal diseases
    - Hepatitis
    - Influenza
    - Foodborne infections
    - Waterborne infections
    - Sexually transmitted diseases
    - Vector-borne diseases
    - Reportable infectious diseases (in California and the U.S.)
    - Malignancy-associated infections
- Key epidemiologic concepts and terms related to the study of infectious diseases
- Infectious disease transmission
  - Incubation period
  - Infectious period
  - Transmission dynamics, routes, and modeling
  - Epidemics and endemics
  - Carrier
  - Incidence, prevalence, attack rate
  - Reproductive rate
  - Reservoir
  - Factors affecting infectivity
  - Sub-clinical infection
- Outbreak investigation
- Reproductive rate
- Zoonoses (give important examples)
• Epidemic curve
• Vaccines
  - General biology of immunity and vaccine response
  - Epidemiologic designs to measure effectiveness of vaccines in the field
  - Measures of vaccine efficacy
• Reporting systems for infectious diseases at the county, state, federal, and global levels
• Seroepidemiology (definition, applications, examples)
• Contact tracing
• Herd immunity

**Recommended texts:**

Nelson KE and Williams CM, Infectious Disease Epidemiology: Theory and Practice, 2nd Edition. Jones and Bartlett Publishers, 2006. This text is designed to be used in the course; book chapters have been written by the course lecturers.

**Recommended course(s):**

PH252B  Modeling the Dynamics of Infectious Disease Process
PH253B  Epidemiology and Control of Infectious Diseases
PH260A  Principles of Infectious Diseases
PH260B  Principles of Infectious Diseases
PH260F  Infectious Disease Research in Developing Countries
PH260E  Molecular Epidemiology of Infectious Diseases

### 7. ENVIRONMENTAL & OCCUPATIONAL EPIDEMIOLOGY

• Calculation and interpretation of SMR
• Relevant considerations for definition and appropriate exposure metric for an environmental study of air pollution and chronic disease
• Time window of exposure to account for disease latency in dose-response models
• Relative advantages and disadvantages of a workplace-based study versus a community-based study
• Health worker survivor effect and health worker hire effect and methods to adjust for each source of bias
• Evaluation of a cancer cluster
• Define differential versus non-differential exposure misclassification—direction of potential bias

**Recommended texts and other reading:**


Rappaport S and Smith TJ (editors), Exposure assessment for Epidemiology and Hazard Control. 1991 Lewis, Chelsea, Michigan


Recommended courses:

PH298 (Sec 2) Exposure Assessment
PH254 Environmental and Occupational Epidemiology
PH272 Case Studies in Environmental and Occupational Epidemiology

8. HISTORY OF EPIDEMIOLOGY

Students pursuing a doctoral degree in epidemiology need to have a background knowledge of the history of the field. This provides the context in which the continuing paradigm changes in the field occur as well as providing an understanding of the development of epidemiological theory, methods, and achievements. In the course A Brief History of Epidemiology these objectives are addressed from two points of view. Firstly, the field is characterized by the developments generated by the societal and environmental milieu of the times, and secondly, the field is enriched by its unique technology.
that qualifies it to be recognized as a truly scientific endeavor. These concepts and relevant content are summarized as follows:

**Part I, Eras:**

- **Ancient Times:** Hippocrates rejects the divine origin of disease and substitutes an ecological theory of causation.
- **The Renaissance:** Fracastorius produces the first comprehensive theory of infection and describes syphilis in an epic poem.
- **The Enlightenment:** Deism, the idea that all phenomena are rational opens the way for Jenner to invent smallpox vaccination.
- **The Industrial Revolution:** Bentham, Utilitarianism, and the Philosophical Radicals, react to the evils of industrialism with legislation and reform.
- **Colonialism:** Exploitation of the “developing world” creates the need to protect workers from epidemic and endemic diseases like malaria and beriberi.
- **Urban Growth and Environmental pollution:** Population growth and mass communication create new challenges like air and water pollution.
- **Women in the Progressive era:** Alice Hamilton invents occupational epidemiology; Florence Nightingale creates hospital epidemiology; and Janet Elizabeth Lane-Claypon pioneers cancer epidemiology.
- **The Great Depression Challenges Epidemiology:** Faltering economies exacerbate the disease effects of social deprivation.

**Part II, Practice, Theory, and Methodology:**

- **Descriptive Epidemiology:** Vital statistics and morbidity surveys; define the health status of the United States.
- **Cross Sectional Studies:** Unable to establish causal inference, cross-sectional studies are economical and useful for generating causal hypotheses.
- **Case-control Studies:** Intermediate between experimental and cohort designs, case-control studies lay the groundwork for cohort studies that most closely emulate experimental designs. (Good examples are early studies of smoking and lung cancer.)
- **Cohort Studies:** Most rigorous epidemiological study design for evaluating causal inference. (Good examples are the Framingham studies of cardiovascular disease and the British doctors study of smoking and lung cancer.)
- **Experimental Studies:** Limited epidemiological applications. Useful as population based clinical trials. (Best example, and a classic, is the double-blinded randomized field trial of inactivated poliovirus vaccine developed by Salk in the early ’50’s)
- **Names to Remember, I:** George Baker and Alice Hamilton (lead poisoning); John Snow (water borne cholera); Wade Hampton Frost (poliomyelitis); Joseph Goldberger (pellagra); and, Richard Doll and Bradford Hill (lung cancer)

**Recommended texts and other reading:**

Morabia A (editor), A History of Epidemiologic Methods and Concepts, Basel-Boston-Berlin, Birkhauser Verlag, 2004

Holland WW, Olson J, Florey duV (editors); The Development of Modern Epidemiology: Personal Reports from Those Who Were There, Oxford University Press, 2007.

Recommended courses:

PH259A   History of Epidemiology

9. ETHICS IN EPIDEMIOLOGIC RESEARCH

1. Recognize ethical and legal theories and principles underlying ethical concerns about research with human subjects.
2. Historical development of ethical guidelines in epidemiology and public health
3. Elements of informed consent process
4. Randomization and use of placebos
5. Concept of equipoise
6. Protecting privacy and confidentiality
7. Uses of genetic data
8. Recognizing and addressing conflicts of interest
9. Academic freedom and intellectual property issues
10. Contractual obligations in research (to study subjects, to research sponsors, to profession etc.)
11. Elements of scientific integrity
12. Recognizing and addressing scientific misconduct
13. Publication and communication of research findings
14. Responsible authorship
15. Special considerations with research conducted with vulnerable populations, i.e., children, prisoners, mentally ill, aged and populations in low resource countries
16. Professional standards and responsibilities and how these are addressed
17. Advocacy and activism in epidemiologic research

Recommended texts and other reading:


Recommended course(s):

PH200A   Current issues in Public Health Ethics: Research and Practice
PH253E   Ethics and Public Health in an Age of Catastrophe
PH295    Ethics Seminar

10. CANCER EPIDEMIOLOGY

1. History of cancer epidemiology
2. Origins of cancer
3. Causal inference in cancer epidemiology
4. Morphologic and molecular classification of cancer
5. Cancer precursors
6. Molecular and genetic events in neoplastic cellular transformation
7. Assessment of carcinogenic hazards
8. Classification of carcinogens by the International Agency for Research on Cancer
9. Uses of biomarkers of disease and exposure in cancer epidemiology
10. Genetic concepts and methods in cancer epidemiology
11. Significance of genetic susceptibility and how this is assessed
12. Interaction of genetic and environmental exposures
13. Role of gene methylation in cancer risk
14. Significance of tumor biology and tumor methylation
15. International patterns of cancer incidence and mortality
17. Assessing socioeconomic disparities in cancer incidence and mortality
18. Uses of migrant studies
19. Cancer screening programs and how these are evaluated
20. Cancer prevention and control programs
21. Cancer chemoprevention trials
22. Regulating carcinogens and cancer policy
23. What is currently known about major causes of cancer: tobacco, alcohol. Ionizing radiation, solar radiation, non-ionizing radiation, occupational exposures, air pollution, water contaminants, diet and nutrition, obesity and body composition, physical activity, exogenous hormones, pharmaceuticals, infectious agents, immunologic factors, hereditary syndromes and genetic modifiers.
24. What is currently known about major cancers: lung, larynx, nasopharyngeal, nasal cavity and paranasal sinuses, pleural and peritoneal neoplasms, oral cavity and pharynx, esophageal, stomach, pancreas, liver, biliary tract, small intestine, colon and rectum, anal, leukemias, lymphomas, multiple myeloma, bone, soft tissue sarcoma, thyroid, breast, ovarian, endometrial, cervical, vulva and vaginal, choriocarcinoma, renal, bladder, prostate, testicular, penile, central nervous system, melanoma, skin cancers, and childhood cancers.

Recommended texts and other reading:


Dos Santos Silva I, Cancer Epidemiology: Principles and Methods, IARC Press, 1999.


Recommended course(s):

PH258 Cancer Epidemiology

11. REPRODUCTIVE EPIDEMIOLOGY

- Understand the biology of human reproduction and development.
- Understand the life course perspective and the relationship of early factors and childhood and adult disease.
- Knowledge of the prevalence, risk factors, and methods of study for key reproductive and pediatric endpoints, including:
  - Infertility/subfertility (male and female)
Reproductive disease and conditions (e.g., STI, fibroma, endometriosis)

Contraceptive use and technology

Pregnancy complications (e.g., preeclampsia, diabetes, maternal and infant mortality, gestational weight gain)

Spontaneous abortion

Low birth weight and preterm delivery

Birth defects

Child development (growth including overweight, neurobehavioral development)

Childhood illnesses or conditions (e.g., asthma, cancer, autism)

Puberty (male and female)

Maternal and child mental health

**Recommended texts and other reading:**

*No recent texts available.*

**Recommended course(s):**

PH210D  Reproductive and Perinatal Epidemiology
11. REPRODUCTIVE EPIDEMIOLOGY

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- Understand the life course perspective and the relationship of early factors and childhood and adult disease.
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- Child development (growth including overweight, neurobehavioral development)
- Childhood illnesses or conditions (e.g., asthma, cancer, autism)
- Puberty (male and female)
- Maternal and child mental health

**Recommended texts and other reading:**

*No recent texts available.*

**Recommended course(s):**

PH210D Reproductive and Perinatal Epidemiology
University of California, Berkeley

REPORT ON PROGRESS IN CANDIDACY IN THE DOCTORAL PROGRAM

Name: _____________________________________________  Student I.D. #: ______________________
(please print)  Last Name                           First Name
Field of Study: ______________________________________  Advancement Date: __________________

Members of the Dissertation Committee are:

____________________________________________________________________________________

____________________________________________________________________________________

____________________________________________________________________________________

____________________________________________________________________________________

____________________________________________________________________________________

Name            Department

To be completed by the student:

1.) What progress have you made toward your degree during the past year? (Do not include progress recorded in last year’s report.)

2.) Please itemize the remaining requirements for your dissertation and propose a timetable for completing them. Indicate which items you expect to complete during the next year.
To be completed by Chair of the Dissertation Committee:

1.) Comments on student’s progress during the last year:

2.) Comments on student’s objectives for the next year:

3.) Comments on student’s timetable for completing dissertation:

4.) Considering the overall professional development of this student (i.e., presentations at conferences, publishing), adequate academic progress being made? If not, explain why.

5.) Two committee members met with this student to discuss progress.

Affirmed: _______________________________  ______________________

Signature of Committee Chair  Date

To be completed by student after meeting with committee members:

1.) Student’s reply to committee’s comments:

Signed: _______________________________  ______________________

Signature of Student  Date

(Original to departmental file; copy to Degrees Unit of the Graduate Division.)
University of California, Berkeley • Graduate Division

Application for the Qualifying Examination

Doctoral students who are preparing to take the Qualifying Examination (QE) must submit this application at least three weeks prior to the proposed date for the examination. Students must be registered for the semester in which the examination is held. If the student has been formally admitted to one of the approved Designated Emphasis (DE) programs on campus, the Head Graduate Adviser of the DE must also approve this application. Submit the completed application to Graduate Services: Degrees, 318 Sproul Hall #5900, University of California, Berkeley, Berkeley, CA 94720-5900. Direct questions to degrees@berkeley.edu or call (310) 642-7330.

S.I.D. #

Major:

Proposed exam date:

Designated Emphasis (if applicable): 1. none

2. none

Name:

(Applying on student records.)

(Last, first, middle)

Email address:

Local address:

(Number, street, city, zip code)

Phone number:

Subject areas. At least three subject areas must be listed, including the general field and the nondepartmental fields of knowledge in which the candidate will be examined. Incomplete applications will be returned to the department.

1.

2.

3.

Proposed committee members to conduct the qualifying examination(s) are:

Qualifying exam chair and department

Committee member and department

Committee member and department

Committee member outside the department

Proposed faculty member primarily in charge of the dissertation research:

Designated Emphasis representative(s) (if applicable): 1. none

2. none

Foreign language requirement. The foreign language requirement, if appropriate, must be satisfied prior to admission to the qualifying examination(s). I hereby certify that the foreign language requirement has been fulfilled.

Language:

Date completed:

Language:

Date completed:

Signature of Head Graduate Adviser, Major

Date

Signature of Head Graduate Adviser, Designated Emphasis (if applicable)

Date

This section for Graduate Division use only

Registration status:

Approval date:

Approved by:

Expiration date:
Graduate Group in Epidemiology

Barbara Abrams, DrPH, MPH, MS, Professor, Division of Epidemiology
Jennifer Ahern, PhD, MPH, Assistant Professor, Division of Epidemiology
Tómas Aragón, MD, DrPH, MPH, Assistant Adjunct Professor, Division of Epidemiology*
John Balmes, MD, Professor, Division of Environmental Health Sciences
Lisa Barcellos, PhD, Associate Professor, Division of Epidemiology
Michael Bates, PhD, Adjunct Professor, Division of Epidemiology*
Heidi Bauer, MD, MPH, MS, Assistant Adjunct Professor, Division of Epidemiology
Kyle Bernstein, DrPH, MS, Assistant Adjunct Professor, Division of Epidemiology**
Patricia Buffler, PhD, MPH, CPH, Professor, Division of Epidemiology
Suzan Carmichael, PhD, Assistant Adjunct Professor, Division of Epidemiology**
Ray Catalano, MD, MRP, Professor, Division of Community Health & Human Development
Anand Chokkalingam, PhD, MS, Assistant Adjunct Professor, Division of Epidemiology*
Jack Colford, MD, PhD, MPH, Professor, Division of Epidemiology
Sandrine Dudoit, PhD, Professor, Division of Biostatistics
Ellen Eisen, ScD, Adjunct Professor, Division of Environmental Health Sciences*
Maria Ekstrand, PhD, Associate Adjunct Professor, Division of Epidemiology**
Brenda Eskenazi, PhD, MA, Professor, Division of Epidemiology
Lia Fernald, PhD, MBA, Associate Professor, Division of Community Health & Human Development
Alan Hubbard, PhD, Associate Professor, Division of Biostatistics
Aubree Gordon, PhD, MPH, Assistant Adjunct Professor, Division of Epidemiology**
William Jagust, MD, Professor, Division of Community Health & Human Development
Nicholas Jewell, PhD, Professor and Head, Division of Biostatistics
Lee Kaskutas, DrPH, Assoc. Adjunct Professor, Division of Community Health & Human Development
Sandy McCoy, PhD, Assistant Adjunct Professor, Division of Epidemiology**
Catherine Metayer, MD, PhD, Assistant Adjunct Professor, Division of Epidemiology**
Alexandra Minnis, PhD, MPH, Assistant Adjunct Professor, Division of Epidemiology
Mahasin Mujahid, PhD, MSc, Assistant Professor, Division of Epidemiology
Amani Nuru-Jeter, PhD, MPH, Assoc. Professor, Division of Community Health & Human Development
Emily Ozer, PhD, Associate Professor, Division of Community Health & Human Development
Nancy Padian, PhD, MPH, Adjunct Professor, Division of Epidemiology*
Maya Petersen, MD, PhD, Assistant Professor, Division of Biostatistics
Arthur Reingold, MD, Professor and Head, Division of Epidemiology
Lee Riley, MD, Professor, Division of Infectious Diseases and Vaccinology
William Satariano, PhD, MPH, Professor, Division of Community Health & Human Development
Steve Selvin, PhD, Professor, Division of Biostatistics
Allan Smith, MD, PhD, Professor, Division of Epidemiology
Craig Steinmaus, MD, PhD, MPH, Assistant Adjunct Professor, Division of Epidemiology
S. Leonard Syme, PhD, Professor Emeritus, Division of Community Health & Human Development
Ira Tager, MD, MPH, Professor Emeritus, Division of Epidemiology
Mark Van der Laan, PhD, Professor, Division of Biostatistics
Warren Winkelstein, Jr., MD, MPH, Professor Emeritus, Division of Epidemiology

*can serve as co-chair or inside-member only (blanket approval)
**pending approval

Revised February 14, 2012
Academic Senate Faculty Members in the School of Public Health who are not members of the Graduate Group in Epidemiology and can serve as “outside member” on the doctoral oral qualifying examination committee and dissertation committee:

Bloom, Joan, PhD, HPM
Buehring, Gertrude, PhD, IDV
Dahl, Ronald, MD, CHHD
Deardorff, Julianna, PhD, MCH
Dow, William, PhD, HPM
Feachem, Richard, PhD, HPM
Francis, Darlene, PhD, HSB
Gertler, Paul, PhD, HPM
Guendelman, Sylvia, PhD, MCH
Halpin, Helen, PhD. HPM
Hammond, Katherine, PhD, EHS
Harris, Eva, PhD, IDV
Herd, Denise, PhD, HSB
Hu, Teh-wei, PhD, HPM, Emeritus
Jerrett, Michael, PhD, EHS
Keller, Ann, PhD, HPM
Koshland, Catherine, PhD, EHS
Liu, Fenyong, PhD, IDV
Miller, Suellen, PhD, MCH
Minkler, Meredith, DrPH, HSB
Morello-Frosh, Rachel, PhD, EHS
Morgan, Patricia, PhD, HSB, Emeritus
Penhoet, Edward, PhD, HPM, Emeritus
Portnoy, Daniel, PhD, IDV
Potts, Malcolm, PhD, MCH
Rappaport, Stephen, PhD, EHS
Robinson, James, PhD, HPM
Rundall, Thomas, PhD, HPM, Emeritus
Sabry, Zak, PhD, CHHD, Emeritus
Scheffler, Richard, PhD, HPM
Sensabaugh, George, D.Crim., IDV
Shortell, Steven, PhD, HPM
Smith, Kirk, PhD, EHS
Smith, Martyn, PhD, EHS
Snowden, Lonnie, PhD HPM
Spear, Robert, PhD, EHS, Emeritus
Stephens, Richard, PhD, IDV
Tarter, Michael, PhD, Biostat
Tempelis, Constantine, PhD, IDV, Emeritus
Wei, Edward, PhD, EHS, Emeritus

Rev. 6/21/10
Plan B — Application for Candidacy for the Doctoral Degree

Submit the completed application to Graduate Services Degrees, 318 Sproul Hall #5900, University of California, Berkeley, Berkeley, CA 94720-5900. Direct questions to degrees@berkeley.edu or telephone (510) 642-7330. Include a check in the amount of $90 payable to the Regents of the University of California. Please see instructions on page 2.

Specify degree: □ Doctor of Philosophy □ Doctor of Education □ Doctor of Engineering □ Doctor of Public Health

S.I.D. # Major: GPA:

Name: (Appearing on student records) Email address: (Last, first, middle)

Local address: Phone number: ( )

(Number, street, city, zip code)

Previous degrees received (specify degree, institution, date degree conferred):

1.

2.

3.

Members of the dissertation committee:

Dissertation chair and department Committee member and department

Committee member and department Outside committee member and department

Designated Emphasis:

Note: If you have been admitted to an approved Designated Emphasis (DE), specify below and obtain the signature of the DE Head Graduate Adviser.

Designated emphasis

Signature of Designated Emphasis Head Graduate Adviser

Designated emphasis

Signature of Designated Emphasis Head Graduate Adviser

Please check the appropriate box (must be completed by the student):

1. □ My research project does not involve human subjects or vertebrate animals.

Note: If your research involves human subjects, you must take the online Collaborative IRB Training Initiative (CITI) course and print out the certificate of completion to submit with this application for candidacy. Your application will not be accepted without the CITI certificate.

2. □ My research project involves human subjects. I understand that I must (a) obtain individual approval for the Committee for Protection of Human Subjects prior to the initiation of the research, and (b) inform the Graduate Division of the approved protocol number within six months of the advancement to candidacy date.

2a. □ I have completed and passed either the Biomedical or Social-Behavioral Collaborative IRB Training Initiative (CITI) Program and a copy of my certificate of completion for the course is attached.

3. □ My research project involves vertebrate animals. I understand that I must (a) obtain individual approval from the Animal Use and Care Committee prior to the initiation of the research, and (b) inform the Graduate Division of the approved protocol number within six months of the advancement to candidacy date.

Signature of Student Date

Signature of Dissertation Chair Date Signature of Head Graduate Adviser Date
Major:

Name:  
(Last, first, middle)

Qualifying examination committee:

Committee chair and department  Date examination passed

Required language(s) and term/year completed:

1. 
2. 
3. 
4. 

Instructions

To be eligible for advancement to candidacy, you must have:

1) satisfied the foreign language requirement, if applicable;
2) passed your Qualifying Examination;
3) no more than two courses graded incomplete;
4) a minimum 3.0 grade-point-average in all upper division and graduate work taken in graduate standing; and
5) fulfilled any other departmental requirements.

If you have satisfied the eligibility requirements listed above, complete this application and obtain signatures from the Head Graduate Adviser for your major and your Dissertation Committee Chair. File the advancement form no later than the end of the semester following the one in which you passed the Qualifying Examination. If you are in a program eligible for the Dean's Normative Time Fellowship (DNTF), please be aware of the deadline for submitting the advancement form to be eligible for the DNTF.

If you will be conducting research using human subjects, you are required to first take the online Collaborative IRB Training Initiative (CITI) course (https://www.citiprogram.org/default.asp) and submit a copy of the CITI Course Completion Record with this application. For more information, contact the Office for Protection of Human Subjects (http://cphs.berkeley.edu).

Submit this form and a check in the amount of $90 made payable to the Regents of the University of California to Graduate Services Degrees, 318 Sproul Hall #5900, UC Berkeley, Berkeley, CA 94720-5900.

This section for Graduate Division use only

Academic residence requirement met:  Previously published material:  Coauthored material:  

Registered for:  or Filing Fee approval date:  Expiration date:  

Date dissertation filed:  Notice of Filing sent:  Certificate of Completion issued:  

Title of dissertation:
SPH Withdrawal Form
(IMPORTANT: Application for readmission, Statement of Legal Residence (SLR) and $60 fee required)
Return form to 417 University Hall

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</tr>
<tr>
<td>CITY</td>
<td>STATE</td>
<td>ZIP</td>
<td></td>
</tr>
</tbody>
</table>

Reason for Withdrawal:

- [ ] Medical: ____________________  (UHS Approval?: ________________________)
- [ ] Parental Leave
- [ ] Reservist Called to Military Duty
- [ ] Research: (where?) ________________________
- [ ] Other: (reason) ________________________

Last date attended classes: ________________________

Does Student Receive Any of the Following?

- [ ] YES □ NO SPONSOR/AGENCY: ________________________
- [ ] YES □ NO SPONSOR/AGENCY: ________________________
- [ ] YES □ NO SPONSOR/AGENCY: ________________________

Does the student plan to return? □ YES □ NO  If yes, what semester? __________

FOR INTERNATIONAL STUDENTS ONLY: SISS verification is REQUIRED before withdrawing*

SISS Comments: ________________________

*Is there anything an international student should be aware of regarding withdrawing?
Before a withdrawal transaction is processed, it is essential that international students consult with Services for International Students & Scholars (SISS) to ascertain whether or not withdrawing will jeopardize their immigration status and their permission from INS to be in the United States. Before a withdrawal can be process, international students must obtain the signature of a SISS adviser, indicating that SISS has been consulted and has pre-approved the withdrawal. International students in F or J immigration status who withdraw without a prior SISS consultation and prior immigration approval from SISS may face deportation and exclusion from re-entry as a student by the INS.

Student Signature: ________________________

Division Head Approval: ________________________  Assoc. Dean: ________________________

Date Effective: ________________________  Entered By: ________________________

Release date will be 10 days after effective date (Name/Date)

Revised: 4/20/09
NOTE: Application will be returned to you, unprocessed, unless accompanied by the $70 readmission fee (nonrefundable, nontransferable) or Cashier's stamp indicating payment. You must also complete a Statement of Legal Residence (SLR); failure to do so will seriously delay your readmission application. Submit SLR with this application to the Graduate Division, 318 Sproul Hall.

Read procedures on reverse before filing. Application MUST be filed by applicants who were absent from any term or who formally withdrew. Please note that readmission for students on withdrawal status (for any reason) is subject to departmental approval and is not guaranteed.

Readmission requested for the:  ____ Fall  ____ Spring  Semester, 20_______

Will you be in residence at Berkeley for the entire semester?  ____Yes  ____No

Name: __________________________________________ SID# __________________

last    first    middle

Birthdate: ____________________    Sex:  ___M  ___F

Name under which you were last registered at Berkeley (if different from above):

last    first    middle

First Term Registered:  ___________________________ Last Term Registered:  ___________________________

Local address:

number/street  city/state/zip  telephone

Permanent address:

number/street  city/state/zip  telephone

E-mail address: ___________________________

Field of study prior to withdrawal:  __________________________________________________

school/college  major  degree

Requested field of study upon readmission:  __________________________________________________

school/college  major  degree

Institutions attended during absence:

If during your absence you were in attendance at educational institutions (including other campuses of this University and University Extension), indicate them below. If you have not attended any institutions, write “none.”

<table>
<thead>
<tr>
<th>Institution</th>
<th>Location</th>
<th>Admission Date</th>
<th>Withdrawal Date</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
</tbody>
</table>

Applicant's signature: ___________________________________ Date: __________________

Approvals (required for all students):  ____ Approved  ____ Denied

Head Graduate Adviser date  Dean of the Graduate Division date

Additional approval required for students in the School of Law: ______________________________________

Dean of the School of Law date

Registrar Use Only:  Received:_______ By:_______ Approved/Coded:_______ By:_______

Residence:  R  NR  P  S  By:_______ System Coded:_______ By:_______

OR-REG 05/09
INSTRUCTIONS
This form is for RETURNING UCB graduate applicants only. It is not to be used for admission to the Graduate Division.

All applicants must also complete a Statement of Legal Residence. Please retain the Legal Residence Information sheet for future reference.

If you change your address after submitting this application, you should enter the change in Bear Facts at bearfacts.berkeley.edu. (Note: If you are readmitting after a long absence (more than one year), Bear Facts might not be available to you until several days after this application is submitted; please keep checking the system periodically.)

If you want to change your field of study, the Graduate Petition for Change of Major or Degree Goal will also be required. This form can be obtained at the Office of the Registrar or at the Graduate Division.

If your application is received and approved in sufficient time, your Tele-BEARS appointments will be generated and made available via Bear Facts. If you are submitting this application after the third week of instruction of the semester in which you seek readmission, you will also need to complete and submit a Petition for Late Enrollment/Registration to enroll in classes; Tele-BEARS appointments will not be generated for you.

Please note that readmission for students on withdrawal status (for any reason) is subject to departmental approval and is not guaranteed.

FEE
This application, accompanied by a check or money order for $70 made payable to "UC Regents" to cover the nonrefundable, nontransferable Readmission Fee, is to be filed with the Dean of the Graduate Division.

FINANCIAL AID
If you are interested in need-based financial aid (primarily federal student loans), please complete a Free Application for Federal Student Aid (FAFSA) on the Internet at http://www.fafsa.ed.gov/ or contact the Graduate and Professional Unit of the Financial Aid Office, 201 Sproul Hall, 510-642-0485.

FELLOWSHIPS
If you are interested in fellowships and graduate scholarships, please contact your department or the Graduate Fellowship Office, 318 Sproul Hall.

FEDERAL REQUIREMENTS
The University of California, in accordance with applicable Federal and State law and the University’s nondiscrimination policies (see http://www.ucop.edu/ucophome/coordrev/policy/12-18-03.html), does not discriminate on the basis of race, color, national origin, religion, sex (including sexual harassment), gender identity, pregnancy/childbirth and medical conditions related thereto, disability, age, medical condition (cancer-related), ancestry, marital status, citizenship, sexual orientation, or status as a Vietnam-era veteran or special disabled veteran. This nondiscrimination policy covers student admission, access, and treatment in University programs and activities. It also covers faculty (Senate and non-Senate) and staff in their employment.

Inquiries may be directed as follows: Sex discrimination and sexual harassment: Nancy Chu, Title IX Compliance Officer, (510) 643-7985; Disability discrimination and access: Derek Coates, Disability Resolution Officer, (510) 642-2795; Other discrimination concerns may be directed to the Campus Climate & Compliance Office (see http://ccac.berkeley.edu).
University of California, Berkeley
Residence Classification Petition
Readmitted Students Only

For term beginning: ☐ Fall 20___ ☐ Spring 20___
Semester last registered: _____________________
Last paid fees as: ☐ Resident ☐ Nonresident

All students must complete in black or blue ink, sign, and date.
• Proof of status is required of non-U.S. citizens claiming California residence. Please attach copy/copies of immigration document(s) verifying your immigration status.

| Print name as listed on University records (last, first, middle) |
| UCB Student ID No. |
| Telephone No. |

Present mailing address: Number, Street, City, State, Zip
Permanent residence: Number, Street, City, State, Zip

Do you claim to be a resident of California? ☐ Yes ☐ No
Are you a citizen of the United States? ☐ Yes ☐ No
If no, are you a permanent resident of the United States? ☐ Yes ☐ No
If yes, please attach a photocopy of your Alien Registration card.
If no, have you applied for permanent residence status? ☐ Yes ☐ No
If yes, do you currently hold a valid immigration visa? ☐ Yes ☐ No

Alien registration number __________________________ Date awarded ________
Visa type: __________________________ valid from ________ to ________

Dates of Physical Presence in California: ☐ Continuously since birth
From ________ To ________ From ________ To ________

If you claim California residence but have been absent from the state for more than six weeks during the last 12 months, please attach a statement explaining your absence.

Did you attend high school in California for at least 3 years and graduate from a California high school? ☐ Yes ☐ No
If "yes," please provide copies of official transcripts.
Are you a veteran of the U.S. armed forces? ☐ Yes ☐ No
Are you a ward of the court? ☐ Yes ☐ No
If yes, under 24 and answered "yes" to any of these questions, please provide documentation.
Do you have legal dependents other than a spouse? ☐ Yes ☐ No

Financial Information:
What is your source of financial support? [1st column] 2009 Calendar Year [2nd column] 2008 Calendar Year [3rd column] 2007 Calendar Year
Will your/your parents claim you as an exemption on their tax returns? ☐ Yes ☐ No
Will you/did you file a California resident income tax return? ☐ Yes ☐ No
Will you/did you file a resident income tax return in another state? ☐ Yes ☐ No
If yes, what state? ____________
Are you/were you employed in California? ☐ Yes ☐ No
Are you/were you employed outside California? ☐ Yes ☐ No
Will you/did you receive loans, scholarships, or benefits that required residence outside California? ☐ Yes ☐ No
If yes, attach a statement describing.

Colleges or Universities Attended:
From ________ To ________ Name of School ________ State ________

U.S. Military Service:
Are you or your spouse currently on active duty? ☐ Yes ☐ No
If yes, state of legal residence ________ Dates of military service ________
Are you registered with the selective service? ☐ Yes ☐ No
If yes, state of registration ________

FOR DEPUTY'S USE ONLY
☐ Resident ☐ Nonresident
☐ ARC ☐ DL ☐ VEHR ☐ VR ☐ BA
☐ PAC ☐ PPAE ☐ TXS ☐ G/C ☐ PP
☐ W2 ☐ TA

UG G Law O.D. circle one Birthdate Age

Motor Vehicle:
Do you have a driver's license? ☐ Yes ☐ No
If yes, in which state ________ Date issued ________
Last renewed ________
If a non-driver, do you have a state identification card? ☐ Yes ☐ No
If yes, in which state ________ Date issued ________
Do you have/own a motor vehicle? ☐ Yes ☐ No
If yes, date of registration ________ State of registration ________

Voter Registration:
Are you registered to vote? ☐ Yes ☐ No
State of registration ________ Date of registration ________
Have you voted within the last 15 months? ☐ Yes ☐ No
If yes, in which state ________ date ________

Bank Accounts:
Checking: ________ Date established ________
Savings: ________ Date established ________

Marital Status:
☐ Single
☐ Married/Registered Domestic Partner: Date ________ State ________
☐ Divorced: Date ________ State ________

Do you hold any professional licenses? ☐ Yes ☐ No
If yes, valid from ________ to ________ in state of ________

Signature required on reverse

What state do you regard as your permanent home? ________
How long has the state mentioned above been your home? ________
Do you plan to remain in California after completing your education? ☐ Yes ☐ No
If you are an unmarried student under 24 years of age OR you have a parent who is a California resident and that parent claims you as a dependent for income tax purposes, complete the remainder of this form. If not, please sign and date below.

If a parent is deceased, give date and place of death; otherwise provide all information required.

<table>
<thead>
<tr>
<th>Father</th>
<th>Date</th>
<th>Place</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mother</td>
<td>Date</td>
<td>Place</td>
</tr>
</tbody>
</table>

Are your parents currently on active duty in the United States military?
- Stationed in California:
- Stationed outside California:
- State of legal residence:

<table>
<thead>
<tr>
<th>Father</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mother</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>From</td>
<td>to</td>
<td></td>
</tr>
<tr>
<td>From</td>
<td>to</td>
<td></td>
</tr>
<tr>
<td>From</td>
<td>to</td>
<td></td>
</tr>
</tbody>
</table>

Are your parents divorced or permanently separated? □ Yes □ No
If yes, who have you been living with?
- Mother □ Father □ Other (state relationship)

Dates of residence with person noted above:
- From  to  
- Address

Have you resided with your other parent since divorce or separation? □ Yes □ No
If yes, from  to  
- Address
- From  to  
- Address

---

**Student’s Father:**

<table>
<thead>
<tr>
<th>Father’s full name:</th>
<th>Last</th>
<th>First</th>
<th>Middle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address: Number, Street, City, State, Zip</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Dates of Father’s Physical Presence in California:** □ Continuously since birth
From  to  
From  to  

If he claims California residence but has been absent from the state for more than six weeks during the last 12 months, please attach a statement explaining his absence.
- Does he have a driver’s license? □ Yes □ No State I.D. card? □ Yes □ No
- If yes, in what state? Date issued  Last renewed
- Does he own a motor vehicle? □ Yes □ No
- If yes, date of registration  In what state?
- Did he/she file a California income tax return on his total income for:
  - Last calendar year? □ Yes □ No If no, what state?
  - This calendar year? □ Yes □ No If no, what state?
- Did he/she claim you as an exemption on his federal or state tax returns for:
  - Last calendar year? □ Yes □ No This calendar year? □ Yes □ No
- Alien registration #
- Date awarded
- Type of visa
- Valid from  to  
- Is he registered to vote? □ Yes □ No
- If yes, in which state? Date
- Has he voted within the last 15 months? □ Yes □ No
- If yes, in which state? Date
- Bank accounts (state/state established)
  - Checking
  - Savings

---

**Student’s Mother:**

<table>
<thead>
<tr>
<th>Mother’s full name:</th>
<th>Last</th>
<th>First</th>
<th>Middle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address: Number, Street, City, State, Zip</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Dates of Mother’s Physical Presence in California:** □ Continuously since birth
From  to  
From  to  

If she claims California residence but has been absent from the state for more than six weeks during the last 12 months, please attach a statement explaining her absence.
- Does she have a driver’s license? □ Yes □ No State I.D. card? □ Yes □ No
- If yes, in what state? Date issued  Last renewed
- Does she own a motor vehicle? □ Yes □ No
- If yes, date of registration  In what state?
- Did she/will she file a California income tax return on her total income for:
  - Last calendar year? □ Yes □ No If no, what state?
  - This calendar year? □ Yes □ No If no, what state?
- Did she/will she claim you as an exemption on her federal or state tax returns for:
  - Last calendar year? □ Yes □ No This calendar year? □ Yes □ No
- Alien registration #
- Date awarded
- Type of visa
- Valid from  to  
- Is she registered to vote? □ Yes □ No
- If yes, in which state? Date
- Has she voted within the last 15 months? □ Yes □ No
- If yes, in which state? Date
- Bank accounts (state/state established)
  - Checking
  - Savings

---

Do you authorize the Residence Affairs Unit to obtain from other University of California offices any information deemed necessary for the determination of your residence status? □ Yes □ No

Do you authorize the University of California to release to your parents information regarding your residence file? □ Yes □ No

Signature required: I declare under penalty of perjury under the laws of the State of California that the statements on both sides of this page and any attachments submitted by me in connection with the determination of my residence are, and each of them is, true and correct.

Signature:

Signed in: ________________________________

Date: ________________________________

Privacy Notice: All of the information requested on this Statement of Legal Residence is required (by the authority of Standing Order 110.2(a)-(d) of the Regents of the University of California) for determining whether or not you are a legal resident for tuition purposes. Your registration cannot be processed without this information. The Office of the Registrar on campus maintains the requested information. You have the right to inspect University records containing the residence information requested on this form.
Filing Fee Application

The Filing Fee is a reduced fee for graduate students who are advanced to candidacy, are eligible to register, and who have completed all requirements for the degree except for filing the master's thesis or doctoral dissertation, taking the final comprehensive examination for the master's degree or the Final Examination for the doctorate, and securing the required signatures on the title page. The Filing Fee is not a form of, nor equivalent to, registration. To use the Filing Fee in fall, you must have been registered in the previous spring or summer (3 units minimum in summer). To use the Filing Fee in spring, you must have been registered in the previous fall. To be eligible for Filing Fee, you also must be in good academic standing and have no blocks on your record which would prevent regular registration.

Due to SEVIS registration requirements, F-1 & J-1 international students cannot use Filing Fee to file in the summer. They must enroll in 3 units to file in the summer.

Complete the information requested below and obtain the required signatures. Submit this form to Graduate Services: Degrees, 318 Sprout Hall #5900, University of California, Berkeley, Berkeley, CA 94720-5900, by the end of the first week of classes for the semester in which you intend to file for your degree. Please see the Filing and Form Submission Deadlines page (http://www.grad.berkeley.edu/policies/degree_filing_deadlines.shtml) for specific deadline dates. If approved, the filing fee amount will be charged to your CARS bill.

Further information regarding the Filing Fee can be found on page 2 of this document.

<table>
<thead>
<tr>
<th>Student's name:</th>
<th>S.I.D. #:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address:</td>
<td>(Last, first, middle)</td>
</tr>
<tr>
<td>Email address:</td>
<td>(Number, street, city, zip code)</td>
</tr>
<tr>
<td>Last registered:</td>
<td>(Term and year)</td>
</tr>
<tr>
<td>Major:</td>
<td>Degree:</td>
</tr>
</tbody>
</table>

Term to use Filing Fee:
- [ ] Fall 20
- [ ] Spring 20

Intend to file dissertation/thesis:
- [ ] Summer 20
- [ ] Fall 20
- [ ] Spring 20

I understand that by using the Filing Fee, I acknowledge that:

- I am not a registered student and, thus, am not entitled to use any University services supported by registration fees.
- I cannot hold a GSI, AI-GS, or GSR position while on Filing Fee.
- I will be billed for the Filing Fee (one-half of the current Registration Fee amount) on my CARS bill.
- I must update my address in Bear Facts (http://bearfacts.berkeley.edu/).
- I might not be eligible to purchase SHIP (Student Health Insurance Plan).

Student's signature: ___________________________ Date: ____________

I certify that the student has met the requirements to be eligible for the use of the Filing Fee and endorse this application.

Head Graduate Adviser's signature: ___________________________ Date: ____________

Required of all F-1 or J-1 Visa Holders

International Student Adviser's signature: ___________________________ Date: ____________

FOR GRADUATE SERVICES: DEGREES USE ONLY

Filing Fee: [ ] Approved [ ] Denied By: ___________________________ Date: ____________

(rev 5-24-10)
Regulations Regarding Use of the Filing Fee

Filing Fee status will not be reinstated or transferred because the dissertation or thesis was not filed or the examination not taken or not passed. The Filing Fee is valid for the length of the semester for which Filing Fee status has been approved, up to the deadline for filing for a degree in that semester.

The Filing Fee may be used only once. An exception is allowed until spring semester 2010 for students currently in graduate programs who have used the Filing Fee for a master's degree in spring semester 2002, or a prior semester, and who wish to be on filing fee for the doctoral degree.

Please note that a student may not concurrently hold a GSI, AI-GS, GSR, or any other appointment for which registered status is a requirement and be on Filing Fee. For more information on the Filing Fee, please consult the current Guide to Graduate Policy (http://www.grad.berkeley.edu/policies/guide.shtml), or contact Graduate Services: Degrees at (510) 642-7330 or degrees@berkeley.edu.

Health Insurance

Students may be eligible to purchase the Student Health Insurance Plan (SHIP) for the semester they are on filing fee. Please see the University Health Services website (http://uhs.berkeley.edu/students/insurance/FilingFee.shtml) for types of coverage, costs, enrollment procedures, and the application.

Library Privileges

Students on Filing Fee status may, through an application and payment of a small fee, have their library privileges extended for up to six months. The procedure for extending library privileges while on Filing Fee status may be found on the Library website (http://lib.berkeley.edu/services/for_users/unregistered_ucb.html).