



Division of Epidemiology

College of Medicine | Department of Environmental Health

Graduate Student **Handbook**

2019 | 2020

<http://med.uc.edu/eh/divisions/epi>



University of
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Quick List of Important Departmental and Divisional Offices

	<u>Phone</u>	<u>Office Location</u>
Department Director Glenn Talaska, Ph.D.	(513) 558-2147	130
Division Director Ranjan Deka, Ph.D. dekar@ucmail.uc.edu	(513) 558-5989	252
Graduate Studies Director Mary Beth Genter, Ph.D. gentermb@ucmail.uc.edu	(513) 558-6266	144
Graduate Studies Program Office ehgrad@ucmail.uc.edu	(513) 558-5704	133

Division's Website: <http://med.uc.edu/eh/divisions/epi>

Division of Epidemiology

Epidemiology is defined as the study of the distribution and determinants of disease, disability and injury within human populations. The goals of the epidemiologist are to identify the factors or agents that are linked with objectively measured patterns of harm; to advance and evaluate methods of disease prevention; and to aid in planning and evaluation of the effectiveness of programs that advance public health. The results of epidemiological research have had a great influence on clinical medicine. The training program in Epidemiology stresses environmental, clinical, molecular, genetic, quantitative, and community epidemiology. Students are provided with the tools to plan and execute studies of various designs as well as analyze and interpret the results of their investigations. Students also have the opportunity to take courses in many of the various subspecialties of epidemiology such as cancer, cardiovascular, infectious disease, pharmacological, pediatric, and neurological. Courses are also available in other departments in the College of Medicine that can provide students with a further understanding of the basic biological processes underlying human disease. Students are strongly encouraged to apply their training to ongoing research projects conducted by departmental faculty, faculty from other clinical departments in the College of Medicine, and clinical researchers working in affiliated health care institutions. Both the M.S. and Ph.D. programs require that students propose and execute original studies that test hypotheses concerning risk factors for disease and/or approaches to disease prevention.

The epidemiology and biostatistics programs are closely linked, with faculty and students working together on interdisciplinary research activities. Current research undertaken in the Division is wide ranging and includes health effects related to exposures to lead, arsenic, manganese, mercury, solvents, fuels, pesticides, organochlorines and other persistent organic pollutants, fibers, radiation, statistical issues in regulatory toxicology, alcohol and illicit drugs, and work-related ergonomic disorders. The health outcomes being studied include: *allergy, asthma, reproductive, hormone, many types of cancer, genetics of complex diseases, growth and development, neurological and psychiatric disorders, pulmonary disease, injuries, stroke, heart disease, bone health, mortality and exposure body burden*. All classical study designs are currently utilized by our faculty and students including randomized clinical trials, longitudinal studies, environmental intervention approaches, retrospective cohort, cross-sectional and case-control methodologies.

The Division of Epidemiology also houses the Clinical & Translational Research training program. The Certificate and MS programs in Clinical & Translational Research train investigators from diverse disciplines such as medicine, pediatrics, surgery, dentistry, nursing, allied health, and pharmacology. The Certificate is a 10 credit hour program designed to provide an introduction to clinical and translational research. Most classes can be completed in one 8-week summer session or in one academic year. The MS degree program in Clinical and Translational Research is designed to provide clinical professionals (physicians, nurses and other terminal degree clinical professionals) with the necessary preparation for successful career development and independent investigator awards. The program emphasizes specific training in clinical epidemiology/clinical effectiveness, molecular epidemiology, quality improvement, clinical trials, and translational research that will enable clinicians to translate scientific advances into applications for improved clinical practice and human health. The ultimate goal of the program is to move practitioners from the realm of personal clinical experience to objective evidence that can help improve patient outcomes.

Successful graduates of the MS program will leave with the epidemiological and biostatistical knowledge to conduct independent and collaborative clinical studies in their special areas of practice and interest. It is anticipated that most graduates of the program will hold positions as clinician-investigators in academic settings and will develop into independently-funded clinical researchers.

Master's Degree Program

Advisor and Course of Study

Students are assigned an advisor in consultation with the Division Director. If appropriate, a different advisor may be requested at a later date. In the event of a change in advisor, the student shall send a communication to the Graduate Studies Office (GSO) that includes the signatures of the assigned and proposed advisor and the Division Director indicating concurrence.

The course of study for the Master's degree will be planned in consultation with the student's advisor. The student's program is subject to approval by the program faculty and must show a reasonable degree of concentration on interrelated subjects.

Credit Hours

To graduate with a Master's Degree from the Division, students must complete a minimum of 30 graduate credit hours (including Thesis). In addition to the successful completion of course work, a Thesis based upon laboratory, field, or clinical research is required for the M.S. degree. Students must complete a minimum of 2 Thesis credit hours.

Students transferring to the MS program from a MS program in another institution may transfer up to one-half of the credits required for their degree at the University of Cincinnati. The transferable credits for each student are determined by the Director and Associate Director of the Division. Eligibility for graduation requires a minimum of 30 graduate credits, the final 50% of which must be completed while in residence at UC. In no case may the final 50% of a UC's program requirements be satisfied by transfer from another institution.

Research Credits

Students registering for research credit are required to complete the Research Credit Pre-Approval Form (PDF) to remove the registration block.

1. Meet with your research mentor (if different from assigned academic advisor) and advisor prior to the semester starting to discuss upcoming research goals.
2. Complete the Research Credit Pre-Approval Form (available on the Division website and at the back of this handbook) must be filed with the Graduate Studies Office, **prior** to registration.
3. Return the completed pre-approval form to the Environmental Health Graduate Office (Kettering—Room 133) to remove registration block.
4. Register for research credits on Catalyst. www.catalyst.uc.edu

Instructor: Dr. Mary Beth Genter

- ENV7091 MA
- ENV8091 Research
- ENV9091 PhD

Students are responsible for documenting their work during the semester in which they are registered for research credits. Before a grade can be assigned, a progress report and/or other meaningful products resulting from the student's work must be presented to the assigned academic advisor and research mentor (e.g., meeting abstract, poster, manuscript).

Students must also submit a Research Credit Verification form (available on the Division Website and at the back of this handbook), signed by their assigned academic advisor and research mentor (if different from their academic advisor) before the end of the semester in order to receive a passing grade. Verification forms are also required to be filed with the Graduate Studies Office, Kettering – Room 133. The assigned academic advisor is responsible for evaluating the student's work and providing an appropriate grade at the conclusion of the academic semester.

Minimum Academic Performance

Full-time M.S. students will be registered for at least 10 graduate credits per semester. Students receiving a University Graduate Scholarship (UGS) must be registered for 12 graduate credit hours for each semester for which they are receiving support. If a student is registered for at least one (1) graduate credit, he or she will maintain graduate student status throughout the entire academic year, fall through summer.

In order to obtain a Master's Degree, a student must maintain a B average (3.0) or better. In addition, at least 2/3 of the minimum graduate credits necessary for the degree must be at a level of B or higher. Students are reminded that they cannot graduate as long as I or NG grades remain on their records. They should keep their Advisors and the Graduate Studies Office well-informed of their degree intentions.

Academic Misconduct

Students in all programs within the Division are held to the highest code of academic honesty. Academic misconduct or dishonesty is defined in the University of Cincinnati, Student Code of Conduct and includes, but is not limited to, acts of cheating, plagiarism, falsification, and misappropriation of credit. The Student Code of Conduct (www.uc.edu/conduct/Code_of_Conduct.html) defines behavior expected of all University of Cincinnati students. It is each student's responsibility to know and comply with the University's Student Code of Conduct. Disciplinary procedures are explained in a step-by-step manner, and the procedures for appeal of decisions are stated.

Language Requirement

All students who do not have English as a first language must take the English proficiency examination administered by the University by the end of their first academic semester. In case of failure, the student may take the examination again after an academic semester has elapsed, for a total of two (2) attempts per year. In any case, the student will not be awarded a degree until the examination is passed.

The Division policy on language holds that all students speak English when communicating with faculty, staff and other students. The overwhelming majority of scientific literature is communicated in English, so it is to the individual's benefit to become well-equipped to convey scientific studies by speaking and writing in the English language.

Candidacy

Students are not required to submit formal applications for Master's candidacy. However, to maintain status as a graduate student and thus be eligible for a graduate degree, students must register for one (1) credit each academic year (in addition, students are required to register for at least one (1) credit during each semester that they wish to use University Resources (excluding summer semester). A student becomes a candidate for the Master's degree upon matriculation in the Master's program to which he/she has been admitted. A student must be a candidate for at least one semester before the degree is granted.

Time Limitations

Students will need to register for at least 1 credit hour per academic year to maintain active status. A student pursuing a program leading to a Master's degree must complete all requirements no later than five (5) years from the date of matriculation in that degree program. Under extenuating circumstances, students may petition the University Dean, through their department and college, for extension of the time limit. Petitions must be submitted on the approved form. Students who have not been enrolled in classes for more than three years are not eligible for reinstatement and must reapply for admission to the University. Forms are located on-line at www.grad.uc.edu.

Statement of Intent

This should be a brief (not to exceed three single-spaced pages excluding references and time table) description of the proposed Thesis. The following headings need to be used when writing the statement.

A) Significance

- Explain the importance of the problem or critical barrier to progress in the field that the proposed project addresses
- Explain how the proposed project will improve scientific knowledge, technical capability, and/or clinical practice in one or more broad fields.
- Describe how the concepts, methods, technologies, treatments, services, or preventative interventions that drive this field will be changed if the proposed aims are achieved
- Incorporate your relevant literature review as background and supporting information in this section.
- Address the scientific premise of the study.
- State clearly the public health significance of your proposal and once successful how your project will positively impact/improve public health.

B) Innovation

- Explain how the application challenges and seeks to shift current research or clinical practice paradigms
- Describe any novel theoretical concepts, approaches or methodologies, instrumentation or interventions to be developed or used, and any advantage over existing methodologies, instrumentation, or interventions
- Explain any refinements, improvements, or new applications of theoretical concepts, approaches or methodologies, instrumentation, or interventions

C) Approach

- Clearly state the hypothesis and specific aims.
- A clear description of the study design. Describe the overall strategy, methodology, and analyses to be used to accomplish the aims of your project
- A clear description of the study population including inclusion/exclusion criteria
- A clear definition of outcome and predictive variables
- Describe the methods taken to ensure scientific rigor, i.e., descriptions of research tools and their reliability/validity, and methods to address quality control and quality assurance. Include information on how the data will be collected, analyzed, and interpreted. Point out any procedures, situations, or materials, if any, that may be hazardous to personnel and precautions to be exercised.
- Include statistical analysis, including sample size
- Include a limitations section: description of potential bias – stating potential confounders, such as sex, age, weight, and other underlying health conditions and how these will be handled.
- Discuss potential problems, alternative strategies, and benchmarks/timelines for tasks to be completed to achieve the aims.

D) Timeline

E) Note concerning IRB

F) References

This should be a brief (not to exceed three single-spaced pages excluding references and time table) description of the proposed Dissertation.

The statement should indicate that the work will demonstrate the student's powers of critical evaluation. A sample cover page is found at the back of this handbook. The statement of intent must be given to the thesis advisory committee.

All human research projects must be submitted to and approved by the University of Cincinnati Institutional Review Board (IRB). Projects originating in and/or involving other institutions (e.g., Children's Hospital) must also have approval of that IRB. Other permissions may apply (e.g., animal care, radiation safety). See section 3 below for further guidance on UC Medical IRB review of graduate student activities that involve Human Subjects Research.

Thesis Advisory Committee: Students in the MS Epidemiology program need to submit the Proposed Thesis Committee Request Form to the Graduate Studies Office. Thesis Advisory Committee must comply with the rules of the Graduate School, composed of at least two full-time faculty members with professorial rank, at least one of whom is a member of the All-University Graduate Faculty. Typically, the academic advisor is the Chair of the Thesis Advisory Committee. The advisor may act as chair, convener, and voting member of the Thesis Advisory Committee. The final judgment on acceptability of the Thesis will be made by this Committee, by a unanimous vote if there are only two members, or else with no more than one dissenting vote.

The Statement of Intent for Master's Thesis should be submitted for the thesis advisory committee approval early in the Thesis projects timetable. Each student should meet with his/her advisor to create a timetable of completion. Master of Science Statements of Intent can be submitted before all qualification requirements are met.

Thesis

The Master's Thesis is intended to demonstrate the student's ability to communicate and evaluate critically. The Thesis needs to be the result of independent research. Information concerning the Thesis form and mechanics of preparing the final draft and abstract can be located on-line at www.grad.uc.edu.

1. Thesis Research

- a) Thesis research may be part of the ongoing work of the Thesis laboratory but must be separately identifiable. The Thesis research should reflect advisor guidance but mainly be the independent work of the student.
- b) It is the responsibility of the student and the faculty advisor to see that a Thesis Committee is formed and that the research plan is finalized. The Thesis Committee must confirm that the student's work is not, to a large extent, carried out by technical assistants or other personnel.
- c) A Thesis may be written in the form of a publishable research paper, conforming to the publication guidelines of the student's journal of choice (e.g., JAMA, Pediatrics, AJE, etc). This option must be approved by the student's Thesis Advisor and Thesis Committee. The research must be conducted while the student is enrolled in the program and the student must be the first author of the manuscript. The manuscript should not be submitted for publication until approval by the Thesis Committee. The student must place an embargo on the Thesis prior to submission of his or her manuscript for publication (see section 5 for further instructions).
- d) In agreement with the function of the Thesis Committee, as specified by the rules of the University of Cincinnati Graduate School, any decisions about the quantity and quality of the work done are the responsibility of the Thesis Committee.
- e) After the student leaves the University the Thesis research results may be used as the basis for continuing investigations by the student and/or by the laboratory in which the Thesis research was done. The student and the laboratory are entitled to retain copies of the data and analyses for their use.

2. Policy for External Thesis Research for Master's Program

Thesis research outside the department requires careful coordination between the department and the collaborating institution. There are circumstances where it is in the interest of the student, the department, and an outside laboratory of academic stature, such as elsewhere in the University, or at a Federal Agency, to permit pursuit of graduate Thesis research outside the department. The requirements of external Thesis research are:

- a) A departmental faculty advisor who has expertise in the field of Thesis research;
- b) Appointment of the external supervisor to the Thesis Committee;
- c) An explicit understanding that, as in the case for Thesis research carried out within the department, every effort will be made to ensure that the Thesis research, when initiated, will be supported to its conclusion;
- d) Adherence to the same rules and governance procedures used for Thesis research within the department. These include the clear understanding that the results are available for publication as a Thesis and in the open literature, and it is the responsibility of the Thesis Advisory Committee to make final decisions about the direction and extent of work. Attention is also drawn to the requirement that the Thesis Advisory Committee meet at least twice each year;

3. Guidance on UC Medical IRB Review of Graduate Student Activities that involve Human Subjects Research in the Department of Environmental Health.

- a) The UC IRB must review and approve all thesis or dissertation projects conducted to meet the requirements of a graduate degree that involve human subject's research.
- b) The UC IRB may accept CCHMC as the IRB of record for UC student projects that involve human subjects research. In addition, UC has a MOU with CCHMC and CCHMC is listed on the UC FWA.

IRB Review and Approval Requirements of Student Projects that Involve Human Subjects

<http://researchcompliance.uc.edu/HRPP/IRB/IRBOverview.aspx>

Location of Research	IRB Approval Status	Required Action
UC or CCHMC	UC IRB Approved	Submit modification request to UC IRB to add student to the study as a sub-investigator.
CCHMC	Exempt or CCHMC IRB Approved	Submit an amendment through CCHMC IRB stating student will be using project for thesis or dissertation and request "reliance review" from the UC IRB.
UC	None	Student must submit the project to UC IRB for review with their faculty advisor as a Co-Principal Investigator.
CCHMC	None	When the student submits materials to CCHMC IRB, state that the project will be used for thesis or dissertation research and request a "reliance review" from UC IRB.
External	Approved, Exempt, or None	Student must submit the project to UC IRB for review. On the "Research Classification" page, student should check "reliance on external IRB."

4. Embargo of Thesis

You can request an embargo be placed on your thesis for two years initially, with the option of extending the embargo a third year. An embargo is simply a hold on publishing your thesis in OhioLINK. If you plan to submit your thesis in part or whole for publication it is vital that you embargo your work for a period of time. Some journals still consider a thesis that is published on the internet a "publication." In order to avoid the fact or appearance of a "duplicate" publication it is important to embargo your document. You request an embargo electronically when you upload your thesis for final approval by your chairperson. As a further protection, you should acknowledge in any submitted manuscripts based upon your graduate research that the work was completed in partial fulfillment of the requirements for the MS in Epidemiology. See your advisor if you have any questions regarding the embargo of your work.

5. Submitting Your Thesis

The University of Cincinnati Electronic Thesis or Dissertation (ETD) website has all the details you'll need to submit your final thesis: <http://grad.uc.edu/student-life/etd/formatting.html>. In short, you will need to submit your full thesis in PDF form to OhioLINK following the directions on the ETD website, along with a scanned PDF of your fully signed Committee Approval form.

If you publish part or your entire thesis, you should add the following acknowledgement to your publication: "This work was completed in partial fulfillment of the Master of Science degree in Epidemiology in the Department of Environmental Health, Division of Epidemiology, University of Cincinnati College of Medicine."

6. Graduation

Any student intending to receive a graduate degree is responsible for completing the “On-line Graduation Application” at: www.grad.uc.edu and ensuring that the procedures are carried out and the indicated forms are submitted electronically to the Graduate School.

- a) **Cap and Gown** - may be purchased or rented at the University Bookstore.
- b) **I and NG Grades** - Notification of removal of all **I** and **NG** grades must be submitted prior to the student’s graduation. (See “IV. Grades and Grading Practices” section)
- c) **Credit Hours** - Completion of the required semester credit hours for the degree.
- d) **Departmental Requirements** – Students must complete all departmental requirements for the degree. Any graduate student who expects to receive a degree at any of the three (3) University commencements must make a formal application for the degree.

Required Courses for a Master's Degree in Epidemiology (Effective as of Fall 2018)

Course Number	Course Title	Credits	Required or Elective	Semester Offered
MS Epidemiology Core Courses: 18 credit hours		<i>ALL semester course offerings are subject to change</i>		
ENV 7001	Environmental Health Seminar (2 semesters)	2	Required	Fall/Spring
BE 7022	Introduction to Biostatistics	3	Required	Fall
BE 7076	Introduction to Epidemiology	2	Required	Fall/Spring
BE 8028	Epidemiology Seminar (2 semesters)	2	Required	Fall/Spring
BE 8082	Research Methods for Human Population Studies	3	Required	Fall
BE 8083	Data Analysis with R and SAS	3	Required	Fall
BE 9073C	Molecular Epidemiology	2	Required	Spring
GNTD 7003	Ethics in Research	1	Required	Spring
Research Credits: 2 credit hours (Research Pre-Approval Form & Advisor Meeting Required for Permission to Enroll)				
ENV 7091	Master's Thesis Research	2	Required	Fall/Spring/Summer
Epidemiology Credits: 4 credit hours - Select a minimum of 4 credit hours from Course Catalog List (fill-in with advisor)				
			Required	
			Required	
			Required	
Biostatistics Credits: 4 credit hours - Select a minimum of 4 credit hours from Course Catalog List (fill-in with advisor)				
			Required	
			Required	
			Required	
Free Electives: ≥ 2 credit hours - Select remaining credits from Course Catalog List (fill-in with advisor)				
			Elective	
			Elective	
Total Credits		30		

Master's Degree Graduation Checklist

- English Proficiency requirement met for international students (OEPT must be taken by the end of your first academic year). Letter attesting to satisfactorily completed OEPT submitted by examiner to program director and Graduate Studies Office (GSO).
- Course work required for M.S. Degree completed satisfactorily, and all grades from previous terms have been confirmed (no outstanding "I" or "NG" grades). Academic status confirmed with GSO or program office.
- If applicable, all necessary IRB approvals have been obtained (*see Guidance on Medical IRB Review*).
- Statement of Intent submitted to Thesis Committee for approval. (Submittal of the Statement of Intent can be made before all course work has been completed.)
- Once your Statement of Intent is approved, you should meet regularly with your Committee members to discuss progress, questions, and keep on a timeline for completion.
- Thesis written. You should give the draft to your Thesis committee members **at least one month** before the deadline (www.grad.uc.edu) to give them ample time to review and send back comments. Committee members have approved it and signed the Committee Approval form found at www.grad.uc.edu.
- Complete "On-Line Graduation Application" at: www.grad.uc.edu. Graduation paperwork filed with GSO and University Officials (see official dates in GSO).
- Thesis uploaded submitted electronically following the instructions found at <http://grad.uc.edu/student-life/etd/formatting.html>. Current information regarding Thesis and electronic submission can be obtained at: www.grad.uc.edu.

Doctor of Philosophy Degree Program

Advisor and Course of Study

An applicant to the Departmental Doctoral Program is admitted as a Doctoral degree student upon recommendation of the Director of Graduate Studies and the program Admissions Committee, following faculty evaluation. An initial advisor is assigned by the Division Director and program directors. If appropriate, a different advisor may be requested at a later date. In the event of a change in advisor, the student shall send a communication to the Graduate Studies Office that includes the signatures of the Division Director and both the assigned and proposed advisor indicating their concurrence.

The course of study to be pursued for the Doctoral degree will be arranged with each student by his/her advisor following the guidelines specific to the program. Course work in other departments may be scheduled according to the needs of the individual student. In all cases, the aim of the Doctoral program will be a reasonable concentration and a breadth of study, designed to develop competence in research, scholarship, teaching, and professional performance in general.

Full-time first year PhD students receiving Graduate Assistantships are expected to participate in research activities in their advisor's laboratory on an average of 12 hours per week during the academic year. Exact hours and research activities will be planned with the advisor.

Credit Hours

To graduate with a Doctor of Philosophy Degree from the Division, students must complete a **minimum of 90 graduate credit hours** of which 60 must come from didactic course work. The last 30 credits, exclusive of research credits, must be completed at the University of Cincinnati or under its direction. If a student is coming in with a verified Master's degree, they are required to have 41 credit hours come from didactic course work and at least 8 credit hours from research credits, the remaining 11 credit hours are to be free electives. Students matriculating with some graduate level course work may transfer up to 30 credit hours at the discretion of the Division Director. **Students must register for at least 7 PhD Dissertation research credits (ENV-9091)**, but they should not do so before passing the Qualifying Exam. In no case, however, will a degree be granted solely on the basis of accumulation of the required number of credits. The Division will recommend students for a degree only after they have developed the necessary intellectual abilities and have fulfilled all requirements of the Department and the Division.

Doctoral degrees are conferred on the basis of sustained study and high scholarly attainment in a special field of learning. In no case will the degree be granted for less than 3 years of full-time graduate study or its equivalent, of which the last year must be in residence in the University of Cincinnati or under the University's direction.

Minimum Academic Performance

Full-time Ph.D. students will be registered for at least 10 graduate credits per semester. Students receiving a UGS must be registered for 12 graduate credit hours for each semester for which they are receiving support. If a student is registered for at least one (1) graduate credit, he or she will maintain graduate student status throughout the entire academic year, fall through summer. All students are required to maintain an overall B average (3.0) and to obtain grades of A or B in all required courses.

A written assessment of performance for each Doctoral student is required at the end of a student's first year; an annual review or some other formal evaluation of progress is required throughout a student's program. The Division of Research and Advanced Studies will conduct a required exit survey on the Doctoral experience of all graduating Doctoral students. The results will be shared with the Doctoral programs (Graduate Faculty).

Residency

Prior to admission to doctoral candidacy, all doctoral students shall complete a residency requirement by enrolling in 10 graduate credit hours (12 if funded by a Graduate Assistantship) per term in each of two semesters (including summer) during a span of four consecutive semesters. Exceptions to this policy must be submitted for approval to the Graduate Council.

Language Requirement

All individuals who do not have English as their first language must take the English proficiency examination administered by the University as soon as possible after the beginning of their studies, but not later than at the end of their first academic year. In case of failure, the student may repeat the examination several times, if necessary; but in any case may not apply for the Qualifying Examination until the language examination has been passed.

The Division policy on language holds that all students speak English when communicating with faculty, staff and other students, staff. The overwhelming majority of scientific literature is communicated in English, so it is to the individual's benefit to become well-equipped to convey scientific studies by speaking and writing in the English language.

Qualifying Examinations

Before a Doctoral student becomes a candidate for a Doctoral degree, he/she is required to take an examination for candidacy, i.e., the Qualifying Examination. The purpose of the examination as a whole is that of determining the candidate's potential for Ph.D. work; its major purpose is not the preparation of a statement of intent for the candidate's Thesis research.

Prior to Qualifying Exam, the student must have completed all required course work in his/her respective program and maintained a grade point average of B (3.0) or better in all Doctoral course work. When the student is ready to take the qualifying examination, the student and advisor should submit the request to the Division Director for appointment of a Qualifying Examination Committee, through the Graduate Studies Office (GSO) with a cover memorandum from student & advisor along with a statement from the Division Director that the candidate has met all formal requirements (courses, OEPT, annual progress reports). This request must also be accompanied by the student's three mini research proposals which will serve as the vehicle for his or her examination (see below).

Full-time students should take the Qualifying Examination within two years from their admission as Doctoral students. Students are encouraged to be involved in research activities, if possible, before the examination.

Guidelines for the Qualifying Examination

The purpose of the doctoral qualifying examination is to determine if the student has adequate knowledge and understanding of the discipline (epidemiology or biostatistics) to successfully perform dissertation research. It is the responsibility of every student to be thoroughly familiar with the procedures outlined below. The advancement to doctoral candidacy is a serious process that represents an important milestone in a student's academic career.

The student should seek advice from his/her academic advisor to help prepare for the qualifying exam (QE). The QE is a **three part examination** testing the student's ability to demonstrate creativity, scholarship, writing skills and ability to orally answer questions in his/her professional discipline. The student should be aware before commencing the process that he/she could fail at any stage of the exam. Before beginning the qualifying exam process, the student should have completed all required courses and a minimum of 60 credit hours, including transfer credits if applicable and approval by the Division Director. The student is responsible for providing the Division Director with data needed to ensure that requirements have been met.

Part 1:

This first phase of the examination tests the students' knowledge and scholarship in their discipline(s) by their ability to produce three original mini research proposals. The student submits the mini-proposals via email to the Division Director. In addition, the student must propose, in consultation with his/her advisor, a Qualifying Examination Committee (QEC) that shall consist of no less than three voting members of the Graduate Faculty, one of whom must be from outside the Department. Active faculty who are involved in mentoring students are considered Graduate Faculty in the Division. Important considerations include scholarly productivity (publications in high impact journals in the areas of epidemiological research), external funding in research and training grants. The University of Cincinnati recognizes all faculty at the Assistant Professor level or above (regardless of track) as Graduate Faculty.

The three proposals should cover different health outcomes/topic areas with varying study designs. The student's academic advisor may discuss possible topics with the student, may review the proposals for overall quality and provide general but limited suggestions. The mini-proposals and the full proposal components of the QE must be a product of independent work of the student. When writing these components, the student may not obtain any assistance from another person, including but not limited to copy editing or scientific writing assistance. Neither the academic advisor, research mentor, nor any other faculty member or other person should assist in the writing, correction or the preparation of the proposals; they should maintain an arm's length from the process. At least one proposal must include a study where the student might be actively involved in the logistics of subject recruitment and data collection (i.e., not analyzing data from a previously established database – e.g., NHANES). The overall purpose of Part 1 is to ensure the student has breadth of knowledge in more than the area of the intended dissertation and the ability to think independently with *minimal* input from the academic advisor or mentor.

After a QEC has been selected with guidance by the academic advisor, the student submits the mini-proposals to them. Every examining committee must include at least one epidemiologist (full time or affiliate member within the Division of Epidemiology), one biostatistician, and one member from outside the Department of Environmental Health. The student's academic advisor cannot serve on the QEC and does not attend any of the QEC meetings except for the oral examination.

The student must ensure that all committee members have copies of the mini proposals. At the first QEC meeting, a chair is selected by the faculty committee members; students do not select their chair. The Committee Chair must be a member (full or affiliate) of the Division of Epidemiology. In advance of the first meeting, the QEC will have reviewed all three proposals for quality of the idea, design, analysis plan, and writing ability. At this first meeting, the student should expect to be questioned on the scientific content of each proposal. The academic advisor may want to be available in their office at the time of the first QEC meeting in case the QEC has a question about the student. Students should not provide food or any other refreshments for faculty at any meeting of the QEC.

After the first meeting, the student may be: 1) passed onto part 2, 2) required to re-write one or more of the mini proposals, or 3) failed. If the student fails, the student may be given one more opportunity to retake this portion of the QE during the next academic semester. In the past, if a student failed or was not able to perform a satisfactory rewrite, some have been given the opportunity to complete an MS degree and leave the program.

Part 2:

When the student proceeds to part 2, the QEC chooses one of the three proposals to be expanded into an NIH R01 proposal in approximately two months' time. The sections included in an NIH proposal of this kind can be found at <http://grants.nih.gov/grants/funding/phs398/phs398.html>.

The proposal should include a personnel, budget and human subjects section. The budget should indicate the percent effort for each of the personnel. The advisor should have no input at this stage except for answering factual questions. The QEC may also answer factual questions. When the student has completed the expanded proposal, he/she submits it to all committee members who should be given no less than two weeks to review. The QEC should meet to discuss the quality of the proposal and to determine if the student is ready for the oral exam; the student must be available at this meeting if the QEC has additional questions or concerns. At this stage the student may be passed on to the oral exam, be asked to rewrite sections of the proposal or may fail. If the student fails, the student may be given one more opportunity to retake this portion of the QE during the next academic semester. In the past, if a student failed or was not able to perform a satisfactory rewrite, some have been given the opportunity to complete an MS degree and leave the program.

Part 3:

The oral examination should be scheduled within approximately six weeks after the student has passed part 2. The QEC may grant extensions if appropriate. The date for the oral examination is set for 14 days after posting of the abstract through graduate studies and on the bulletin board designated for such postings. Any faculty member in the College of Medicine or any student who has already passed the QE may attend. The student's presentation should last about 25 but not exceed 30 minutes. The QEC asks several rounds of questions with the audience being given an opportunity to ask questions after the QEC. The questions should be rigorous and thoroughly test the student's knowledge. Questions can range outside the written proposal, testing general knowledge in epidemiology, biostatistics, pathophysiology, genetics, biomarkers, etc. that have been part of the student's curriculum. **Only the student should answer the questions with no input or help from the committee members.**

After the questioning, all except the QEC members should leave the room while the QEC deliberates and votes. At the conclusion, the student may receive a pass, conditional pass, or fail. A conditional pass will require the student to address weaknesses in the expanded proposal that require revisions that will then be submitted to the QEC for further review. If the student fails, according to University guidelines, he/she must be given a second opportunity to retake the exam, but he/she must wait until the next academic semester.

No guideline stated in this document is meant to conflict with University guidelines stated in the Graduate Handbook: http://www.grad.uc.edu/file_pdf/handbook.pdf.

Candidacy

1. Registration Requirements

Once the student has completed the required course work, the language requirements, and the Qualifying Examination, he/she is considered a candidate for the Ph.D. degree. After admission into candidacy for the Doctoral degree, registration and fee payment for at least one semester credit hour in the fall semester of each year is required for each student if his/her candidacy is not to lapse. In addition, students are required to register for at least one (1) credit during each semester that they wish to use University Resources, excluding summer.

2. Time Limitations

- a) The Doctoral degree will be granted for no less than the equivalent of three (3) years of full-time graduate study.
- b) All requirements for the doctoral degree must be completed within nine consecutive academic years of the date of matriculation into the program.
- c) No more than 15 hours of applicable graduate course work may be completed prior to admission as a graduate student in this Department.
- d) Normally, the Qualifying Examination is taken after two (2) years of full-time study. A period of at least seven (7) months must elapse between admission to Doctoral candidacy and receipt of the degree.
- e) Students who have not been enrolled in courses for more than three years are not eligible for reinstatement and must reapply for admission to the University.

3. Dissertation Advisor and Committee

The written dissertation is a product of independent work of the student, with the advice of the dissertation committee. The initial drafts of the written dissertation must be done independently by the student, without assistance for another person, including but not limited to copy editing or scientific writing assistance, other than the use of the University services for assistance with writing skills. After reviewing the initial drafts of the dissertation, the committee may request that the student obtain initial help for copy editing of the written dissertation.

When the student is ready to begin the Dissertation research, the student, through the advisor, should submit the Dissertation Committee Request Form to the Graduate Office. Rules of the Graduate School require that at least the advisor or otherwise two other members of the committee be from the Graduate Faculty of the University. The Dissertation Committee, of at least three full-time faculty members of professional rank (including full tenured, research, field service or clinical track, assistant, and associate professors; **not** adjunct, visiting, retired, or emeriti), should be appointed as soon as possible after a student has been admitted to candidacy. At least one committee member must be from outside the Department.

4. Statement of Intent Submission Outline

The SOI will be based on NIH PHS398 guidance for proposals. Follow NIH requirements for margins and font (11 pt Arial font, single-spaced, ½" margins).

G) Significance

- Explain the importance of the problem or critical barrier to progress in the field that the proposed project addresses
- Explain how the proposed project will improve scientific knowledge, technical capability, and/or clinical practice in one or more broad fields.
- Describe how the concepts, methods, technologies, treatments, services, or preventative interventions that drive this field will be changed if the proposed aims are achieved
- Incorporate your relevant literature review as background and supporting information in this section.
- Address the scientific premise of the study.
- State clearly the public health significance of your proposal and once successful how your project will positively impact/improve public health.

H) Innovation

- Explain how the application challenges and seeks to shift current research or clinical practice paradigms
- Describe any novel theoretical concepts, approaches or methodologies, instrumentation or interventions to be developed or used, and any advantage over existing methodologies, instrumentation, or interventions
- Explain any refinements, improvements, or new applications of theoretical concepts, approaches or methodologies, instrumentation, or interventions

I) Approach

- Clearly state the hypothesis and specific aims.
- A clear description of the study design. Describe the overall strategy, methodology, and analyses to be used to accomplish the aims of your project
- A clear description of the study population including inclusion/exclusion criteria
- A clear definition of outcome and predictive variables
- Describe the methods taken to ensure scientific rigor, i.e., descriptions of research tools and their reliability/validity, and methods to address quality control and quality assurance. Include information on how the data will be collected, analyzed, and interpreted. Point out any procedures, situations, or materials, if any, that may be hazardous to personnel and precautions to be exercised.
- Include statistical analysis, including sample size
- Include a limitations section: description of potential bias – stating potential confounders, such as sex, age, weight, and other underlying health conditions and how these will be handled.
- Discuss potential problems, alternative strategies, and benchmarks/timelines for tasks to be completed to achieve the aims.

J) Timeline

K) Note concerning IRB

L) References

This should be a brief (not to exceed three single-spaced pages excluding references and time table) description of the proposed Dissertation.

The statement should indicate that the work will demonstrate the student's powers of critical evaluation. All human research projects must be submitted to and approved by the University of Cincinnati Institutional Review Board (IRB). Projects originating in and/or involving other institutions (e.g., Children's Hospital) must also have approval of that IRB. Other permissions may apply (e.g., animal care, radiation safety).

The Statement of Intent for Doctoral Dissertation should be submitted for the Dissertation Advisory Committee approval early in the Dissertation project's timetable. Each student should meet with his/her advisor to create a timetable of completion. Where special expertise on, or familiarity with, the Dissertation topic is available in the person of a former faculty member or appropriate external professional, such a person should be included in the basic Dissertation Committee if he/she is nominated by the candidate and approved by the Graduate School. Such persons should be voting members of the Dissertation Committee and be appointed to the Committee along with the initial appointment of the other members. Such persons serve without compensation from either the University or the candidate.

In some cases, frequent progress reports and presentations to the Dissertation Committee can be very helpful for the candidate. When the Dissertation is completed, a copy is submitted to each Committee member for critical evaluation. If it is considered to be satisfactory with respect to form and content by the Committee, a final, public Defense of Dissertation should be scheduled through the University's and Department's Graduate Studies Office. Before the defense, a final draft of the Dissertation must be in the hands of each member of the Dissertation Committee in acceptable form and public announcements must be posted at least two weeks before the scheduled Defense.

Dissertation Research

- a. Thesis research should be part of the ongoing research affiliated with the department but must be separately identifiable. The Dissertation research should reflect advisor guidance, but mainly be the independent work of the student. The Dissertation research advisor who may or may not be their academic faculty advisor must have expertise in the field of research.
- b. It is the responsibility of the student and the academic faculty advisor to see that a Dissertation Committee is formed and that the research plan is finalized within six months after passing the Qualifying Examination. The Dissertation Committee should assure itself that the student's work is not, to a large extent, carried out by technical assistants or other personnel.
- c. After approval of the original topic by the Dissertation Committee any major change from one Dissertation topic to another is not permitted without the approval of the Dissertation Committee.
- d. In agreement with the function of the Dissertation Committee, as specified by the rules of the University of Cincinnati Graduate School, any decisions about the quantity and quality of the work done are the responsibility of the Dissertation Committee. Dissertation research should be published with the student as first author.
- e. After the departure of the student the Thesis research results may be used as the basis for continuing investigations by the student or by the laboratory in which the research was done. The student and the laboratory are entitled to retain copies of the data and analyses for use.

1. Policy for External Dissertation Research

Dissertation research outside the department requires careful coordination between the department and the collaborating institution. There are circumstances where it is in the interest of the student, the department, and an outside laboratory of academic stature, such as elsewhere in the University, or at a Federal Agency in Cincinnati, or other domestic or foreign institution to permit pursuit of graduate research outside the department. The policy outlined below represents a restatement and elaboration on the previous policy on external dissertation work, adopted by faculty on 10/1/79. The requirements of external Dissertation research are:

- a) A departmental faculty advisor who has expertise in the field of research;
- b) Appointment of the external supervisor to the Dissertation Committee;
- c) An explicit understanding that, as in the case for research carried out within the department, every effort will be made to ensure that the research, when initiated, will be supported to its conclusion;
- d) Adherence to the same rules and governance procedures used for Dissertation research within the department. These include the clear understanding that the results are available for publication as a Dissertation and in the open literature, and it is the responsibility of the Dissertation Committee to make final decisions about the direction and extent of work. Attention is also drawn to the requirement that the Dissertation Advisory Committee meet at least twice each year;

2. Final Defense of Dissertation

The student's final Defense of Dissertation will be open to the public and all members of the academic community and posted on bulletin boards at least two weeks before the defense. The Office of the University Dean must have two weeks' notice in order to make notification of defense on University website.

Under the standard procedure, the candidate will answer pertinent questions put by members of the Dissertation Committee following an oral presentation of the Dissertation. After the Committee has completed its questioning, other persons present will have an opportunity to submit questions or comments. At the conclusion of the Defense, the Committee will withdraw, make a decision forthwith with regard to the acceptability of the Dissertation and its defense, and report to the candidate. If the decision is favorable, the approval form will be signed by the Committee members and transmitted

to the Office of the Graduate Division. At least 80% of the voting members of the Dissertation Committee must approve the Dissertation.

3. Publication of Dissertation

All Dissertations must be submitted to the University in electronic form. All Dissertations approved for the doctorate will be published through Bell & Howell (formerly UMI University Microfilms International). Students submitting documents to Bell & Howell (required for Dissertations, optional for Theses) must download, print, complete, and submit the Bell & Howell Agreement Forms to the Graduate School. These documents must be submitted to the Office of the Graduate School along with the rest of the required graduation materials before the document submission deadline. Most current and complete instructions are available on-line at: www.grad.uc.edu. If you publish your Dissertation in a journal, you should acknowledge in any submitted manuscripts based upon your graduate research that the work was completed in partial fulfillment of the requirements for the PhD in epidemiology, clinical research, or biostatistics.

If you publish part or your entire Dissertation, you should add the following acknowledgement to your publication: "This work was completed in partial fulfillment of the Doctor of Philosophy degree in (Epidemiology or Biostatistics) in the Department of Environmental Health, Division of Epidemiology, University of Cincinnati College of Medicine." Also acknowledge any grant support you received as you completed your project.

4. Embargo of Dissertation

If you plan to submit your Dissertation in part or whole for publication it is vital that you embargo your work for a period of time after electronic submission to the Office of Graduate Studies. Some journals still consider a Dissertation that is published on the internet a "publication." In order to avoid the fact or appearance of a "duplicate" publication it is important to embargo your document. You can embargo your work for a period of up to three years. You request an embargo electronically when you upload your thesis for final approval by your chairperson. You must also provide a reason for the embargo such as patent pending or publisher restrictions. See your advisor if you have any questions regarding the embargo of your work.

Required Courses for a Doctor of Philosophy Degree in Epidemiology (Effective as of Fall 2018)

Course Number	Course Title	Credits	Required or Elective	Semester Offered
PhD Epidemiology Core Courses: 31 credit hours		<i>ALL semester course offerings are subject to change</i>		
ENV 7001	Environmental Health Seminar (3 semesters)	3	Required	Fall/Spring
BE 7022	Introduction to Biostatistics	3	Required	Fall
BE 7061	Biostatistics in Research	3	Required	Spring
BE 7076	Introduction to Epidemiology	2	Required	Fall/Spring
BE 7088	Regression Analysis	3	Required	Spring
BE 7089	Experimental Design	3	Required	Fall
BE 8028	Epidemiology Seminar (3 semesters)	3	Required	Fall/Spring
BE 8083	Data Analysis with R and SAS	3	Required	Fall
BE 9073C	Molecular Epidemiology	2	Required	Spring
BE 9075	Design and Management of Field Studies in Epidemiology	3	Required	Spring
TOX 7082	Survey of Toxicology	2	Required	Fall 2018 (varies)
GNTD 7003	Ethics in Research	1	Required	Spring
Research Credits: ≥ 8 credit hours (Research Pre-Approval Form & Advisor Meeting Required for Permission to Enroll)				
ENV 8091	General Research	≥ 1	Required	Fall/Spring/Summer
ENV 9091	Dissertation Research (<i>After Statement of Intent Approved</i>)	≥ 7	Required	Fall/Spring/Summer
Epidemiology Credits: Select a minimum of 6 credit hours from Course Catalog List (fill-in with advisor)				
			Required	
			Required	
			Required	
Biostatistics Credits: Select a minimum of 4 credits from Course Catalog List (fill-in with advisor)				
			Required	
			Required	
			Required	
Free Electives: Select remaining credits from Course Catalog List (fill-in with advisor)				
			Elective	
Total Credits Post-Masters: ≥ 11 credit hours Free Electives		60		
Total Credits Post-Bacc: ≥ 41 credit hours Free Electives		90		

Additional Required Courses for Molecular Epidemiology in Children's Environmental Health Training Program (MECEH)				
BE 7085	Perinatal & Pediatric Epidemiology	2	Required	Spring (odd years)
BE 8068	Genetics of Complex Disease	2	Required	Fall (odd years)
Independent Study	Molecular Epidemiology Lab Rotation	Varies	Required (2 semesters)	Fall/Spring
Students are encouraged to gain experience in <i>different</i> labs. (<i>Pre-Doctoral Fellows Only</i>)				

Doctor of Philosophy Degree Checklist

- Admission to a Ph.D. program (***step 7 should be completed in two years by full time students***).
- Course work required for Ph.D. Degree completed satisfactorily.
- Oral English Proficiency Test (OEPT) requirement met for international students (OEPT must be taken by the end of your first academic year). Letter attesting to satisfactorily completed OEPT submitted by examiner to program director, and Graduate Studies Office (GSO).
- Qualifying Examination Committee and three preliminary proposals approved by Dissertation Committee.
- Qualifying Examination passed.
- Form (obtain from GSO) attesting that Qualifying Exam was passed submitted by Examining Committee Chair to GSO.
- Statement of Intent approved by Dissertation Committee. Interim: committee meetings with candidate (written yearly progress reports to GSO).
- Dissertation written.
- Successful defense of Dissertation and signed by Dissertation Committee members (and Residency requirement completed).
- Complete "On-Line Graduation Application" at: www.grad.uc.edu. On the top bar, under "Current Students," select "Graduation." Graduation paperwork filed with GSO and University Officials. (See official dates in GSO.)
- Electronic Dissertation and approval forms turned in to Office of the Graduate School (see official dates in GSO or online). Current information regarding dissertation and electronic submission can be obtained at: www.grad.uc.edu.

Academic Resources

How to Register for Classes

Catalyst (www.catalyst.uc.edu) is the UC Web site where you can register for classes, accept your aid award, pay your bill, check your grades, request a transcript, and more. For questions contact One Stop Student Service Center is located on the second floor of the University Pavilion.

Phone: 513-556-1000 Office hours: Monday - Thursday, 8-5 and Friday 9-5

Canopy & Blackboard

<https://canopy.uc.edu/>

Blackboard is extremely versatile software that not only allows instructors to easily place course materials online, but also contains multiple communication tools that allow instructors and students to collaborate in new and exciting ways, and acts as a portal to other web services at the University of Cincinnati. There is a "Student Getting Started" link on the Canopy website that can assist you.

Study Space

The Divisions of Epidemiology and Biostatistics have a student room located in Kettering G36 equipped with a scanner, a printer, seven computers, and plenty of desk space for student work. This student room is available to all Division students. Additional study space is located in the Health Sciences Library, located in the Medical Sciences Building/CARE building.

Academic Misconduct

Academic misconduct or dishonesty is defined in the University of Cincinnati, Student Code of Conduct and includes, but is not limited to, acts of cheating, plagiarism, falsification, and misappropriation of credit.

The Student Code of Conduct (www.uc.edu/conduct/Code_of_Conduct.html) defines behavior expected of all University of Cincinnati students. It is each student's responsibility to know and comply with the University's Student Code of Conduct. Disciplinary procedures are explained in a step-by-step manner, and the procedures for appeal of decisions are stated.

Fellowships and Scholarships

Graduate Assistantships, NIEHS Fellowships, and NIOSH Fellowships

Graduate assistantships are available for full-time Ph.D. students along with tuition remission. These assistantships provide the opportunity to apply classroom learning to ongoing research projects and to learn state-of-the-art epidemiology and/or biostatistical methods, which are extremely beneficial for completion of the academic program. These assistantships are provided by the Department, individual faculty grants or contracts or external sources. Expectations are that students will, over the period of the assistantship, provide approximately 20 hours of service weekly, often with their advisor, which is also an integral part of their learning experience.

U.S. EPA STAR Program

The U.S. Environmental Protection Agency (EPA), as part of its Science to Achieve Results (STAR) program, is offering Graduate Fellowships for Master's and Doctoral level students in environmentally related fields of study. Master's-level students may receive support for a maximum of two years. Doctoral students may be supported for a maximum of three years with funding available or, under certain circumstances, over a period of four years. The fellowship program provides up to \$37,000 per year of support. <http://www.epa.gov/ncer/fellow/>

For other opportunities search these sites:

- Index of Scholarships, Fellowships and Grants for Graduate Students. University of Pennsylvania. www.sas.upenn.edu
- Graduate School Fellowship Notebook. Cornell University. www.cuinfo.cornell.edu/Student/GRFN/
- Funding Opportunities. Community of Science. www.cos.com
- Grants & Awards. National Science Foundation. www.nsf.gov/funding/research_edu_community.jsp
- Graduate Student Funding Opportunities. North Carolina State University. www.ncsu.edu/grad/financial-support/fellows.html
- Deadlines for fellowships and grants. The Chronicle of Higher Education. www.chronicle.com
- American Association for Cancer Research. www.aacr.org/page1295.aspx
- National Institutes of Health Loan Repayment Programs. Clinical Research Loan Repayment Program. http://www.lrp.nih.gov/about_the_programs/clinical.aspx

Professional Societies and Organizations

The following is a non-comprehensive list of scientific societies in Epidemiology and Biostatistics. Many societies hold annual meetings and offer student memberships at a fraction of the cost of a full-membership. Scientific meetings are an excellent forum to present your research, learn about the latest findings in your field, meet colleagues, or find a job. See information on Travel Awards to see if you are eligible for funding to attend a meeting. Also, if you are working on a research study your advisor may provide partial or full funding for you to attend a relevant scientific meeting. Look for information on their websites.

- American Diabetes Association Council on Epidemiology and Statistics. <http://professional.diabetes.org/ResourcesForProfessionals.aspx?cid=71428>
- American Public Health Association (APHA). www.apha.org
- American Statistical Association (ASA). www.amstat.org
- Association for Professionals in Infection Control and Epidemiology, Inc. (APIC). www.apic.org
- International Society for Environmental Epidemiology (ISEE). www.iseepi.org
- International Society for Exposure Analysis (ISEA). <http://www.isesweb.org/>
- International Society for Pharmacoepidemiology (ISPE). www.pharmacoepi.org
- Neurobehavioral Teratology Society. www.nbts.org
- Society for Epidemiologic Research (SER). www.epiresearch.org
- Society for Healthcare Epidemiology of America (SHEA). www.medscape.com
- Society for Pediatric and Perinatal Epidemiologic Research (SPER) www.sper.org

Travel Awards

Travel awards may be given to full-time graduate students who are attending or presenting papers at conferences. Non-presenters will be eligible for an award if they can demonstrate that they must attend a conference, which is vital for their professional development. These students will be eligible for such an award once during their academic period at UC. Presenters will be eligible for an award once each academic year. Presenters at conferences will be given preference. Many conferences also offer competitive student travel awards.

Student presenters who travel less than a 400-mile radius of Cincinnati may be eligible for a maximum of \$125. Students who travel outside of a 400-mile radius of Cincinnati may be eligible for a maximum of \$400. For travel over 2,500 miles, students may be eligible for \$500. For more information and to receive a copy of the *Travel Award Guidelines for Individual Travelers*, contact the Graduate Student

Governance Association, Room 625 Dabney (West Campus) at 556-6101 or www.uc.edu/gsga/. (All awards are subject to availability of funds.)

Graduate Student Research Forum

The Annual College of Medicine Graduate Student Research Forum is another opportunity for students to gain experience in presenting research findings. The purpose of this annual event is to promote scientific communication among students and their research advisors in our various graduate divisions, as well as to inform the scientific community about current graduate student research activities at the College of Medicine. Every graduate student should consider presenting their research poster at this forum. Monetary awards are given to the students with the most outstanding poster presentations.

Summer Programs

The Divisions of Epidemiology and Biostatistics hosts a Summer Session for the Clinical & Translational Research Program. During the summer, students can register for Introduction to Biostatistics, Introduction to Epidemiology, Introduction to SAS Programming and Scientific Integrity (also known as Ethics in Research).

Other institutions offer a summer curriculum which may be a valuable augmentation of the student's education; however, registering for these courses are at the student's expense. A few programs are listed below.

Graduate Summer Session in Epidemiology at the University of Michigan. www.sph.umich.edu/epid/GSS
Graduate Summer Institute in Epidemiology & Biostatistics at Johns Hopkins University. www.jhsph.edu/summerEpi/

The Summer Program in Applied Statistical Methods at Ohio State University. <http://sph.osu.edu/workforcedevelopment/8389.cfm>

International Agency for Research on Cancer Programme of Training Courses. www.iarc.fr

Career Opportunities in Epidemiology

Graduates of this program have exciting career opportunities as faculty in academic medicine and as scientists for both the Federal Government and private industry. Some locations where our alumnae are employed include: Emory University, University of Alabama, University of Michigan, Morehouse School of Medicine, Bowman Gray School of Medicine, Medical University of South Carolina, South Dakota State University, Xavier University, University of Cincinnati, University of Kansas Medical Center, Wake Forest University, Indiana University, NIOSH, FDA, NIMH, CDC, and EPA (Washington and Cincinnati), Eli Lilly, Ford Motor Company, Forest Laboratories, Johnson & Johnson, Medpace, Merck, Novartis, Amgen, Kendle, American Home Products, Pfizer Pharmaceuticals, Purdue Pharma L.P., P&G, Cincinnati Children's Hospital Medical Center, and Cincinnati Shriners Hospitals for Children.

Libraries

University of Cincinnati Libraries offer access to an outstanding research library collection of 2.8 million volumes and a wide range of services to help students with their research needs. Students have access to the University of Cincinnati Libraries' online library catalog and information about resources and services through these main web portals: University Libraries (www.libraries.uc.edu) or the Health Sciences Library (<http://libraries.uc.edu/hsl/>). The libraries' web sites serve as local gateways to OhioLINK, which includes a statewide library catalog of over 38 million items from 83 other academic libraries across Ohio as well as over 4700 electronic journals.

Each University of Cincinnati library is home to a knowledgeable staff eager to assist students, faculty, and staff with their research and service needs. Among the most important services provided by our staff are instruction in library research, assistance with the appropriate use of electronic resources, and help creating electronic Dissertations and Theses. For more information about these instruction sessions visit: <http://www.libraries.uc.edu/help/students.html>

Hours of libraries vary, so consult the website prior to visiting. The Health Sciences Library is located on the E level of the Medical Sciences Building/CARE building. Contact information and directions follow:

Circulation Desk: 558-0127

Reference: 558-5628

Technology Support: 558-4173

The entrance to the library is in the Medical Sciences Building on the E level across from MSB E351 and between Kresge Auditorium and the bank of passenger elevators.

If you drive:

Enter the Medical Center Campus by traveling north on Eden Avenue. Just past Goodman Avenue, turn left into the Eden Avenue Garage. Park and go to the 5th floor of the garage. An elevator is located on the east side of the parking garage. The pedestrian bridge is on the 5th floor beside the elevator. Walk across the pedestrian bridge into the Academic Health Center complex.

Continue along the hall until you reach the end. Turn left and enter the Medical Sciences Building through the double doors. You are on G level. Continue on G until you reach the bank of passenger elevators on the left. Take the elevator down one floor to the E level.

The entrance to the Health Sciences Library will be just beyond the bank of elevators. Walk toward the seating area and the entrance will be on the right.

If you take the campus shuttle:

Exit the shuttle in front of the Eden Garage on Eden Avenue. Cross the street and climb the stairs to the entrance of the Center for Academic Research Excellence (CARE) building. Go through the double doors into the atrium that is between the CARE building and the Medical Sciences Building (MSB). On the left you see the HSL computer lab through the glass wall and on the right you'll see seating plus a glass "hut". Walk between the two and the entrance to the library will be on the left before you reach the bank of red brick passenger elevators on the right.

If you get dropped off in the circular drive on Albert Sabin Way:

Enter the Medical Sciences Building (MSB) and continue along the hall until you see the MSB E351 on the left and the red brick passenger elevator bank on the right. Just before the elevators, turn right and the entrance to the Health Sciences Library will be on the right just beyond the elevator bank.

Computer Account and Printing Services

The University provides all students computer accounts free of charge. The Bearcat Online system is a client-server system that allows you to exchange electronic mail (e-mail) with other computer users on campus and around the World, and access the diverse resources of the Internet. You may access your Bearcat Online account from your home, office or a campus computer lab. To request an account, go www.ucit.uc.edu/email.

Computer Printing Procedures and Charges: The College of Medicine generously subsidizes printing for its medical and graduate students. Each student printing account is given a \$100 value (i.e., > 1400 B&W pages free) on July 1 of each year. Students may purchase additional printing by activating their UC ID badge as a Bearcat Campus Card and adding value to it using a personal credit card via the Bearcat Campus Card web site, or by visiting the East Campus Bookstore and adding value to card with cash,

credit card, or check, or by using a Value Transfer Station on the West Campus, or calling the Bearcat Campus Card office at 556-2000.

Wireless LANS at UC: The current wireless LAN environment at UC is 802.11b and 802.11g compliant. For complete information regarding wireless data communications, please visit <http://www.uc.edu/ucit/internet/oncampus/wirelessdatacommunicationswpa2.html>

Discussion Lists on the Internet

Discussion lists provide a forum for announcements, dissemination of text files, and academic discussion with colleagues and other graduate students in your field.

- EPIDEMIO-L Epidemiology Discussion Group
To subscribe, mail to listproc@cc.umontreal.ca, include only the following text in the message body: SUBSCRIBE EPIDEMIO-L firstname lastname
- EPIWORLD Epidemiology Discussion Group
To subscribe, mail to listserv@univscvm.csd.sc.edu, include only the following text in the message body: SUB EPIWORLD firstname lastname
- Occ-Env-Med-L Occupational & Environmental Discussion Group
To subscribe, mail to majordomo@list.mc.duke.edu, and send the one-line message: subscribe occ-env-med-L
- Biometry Discussion Group
To subscribe, just send an e-mail to ListServ@AMS.Med.Uni-Goettingen.DE with the simple message: SUBSCRIBE BIOMETRY firstname lastname
- Epi Info Discussion Group
To subscribe send email to: majordomo@mailhost.tcs.tulane.edu
The BODY of the message should read: subscribe epi-info end
- public-health Mailbase Discussion Group
To subscribe send email to: mailbase@mailbase.ac.uk
The BODY of the message should read: JOIN public-health firstname lastname
- SAS-L SAS users Discussion Group
To subscribe mail to listserv@vm.marist.edu and send the following message: SUBSCRIBE SAS-L firstname lastname

Statistical Software Resources

- Institute of Statistics and Decision Sciences, Duke University. List of free and commercial statistical software. www.isds.duke.edu/comp/software/
- SAS. Information for statistical software. www.sas.com
- Stata Corporation. Links to other statistical software providers: www.stata.com/links/
- StatLib, a system for distributing statistical software, datasets, and information by electronic mail, FTP and WWW. <http://lib.stat.cmu.edu/>

University Bookstores

The University of Cincinnati Bookstore is your source for all of your textbook, apparel, and supply needs. They have the largest selection of used textbooks in the community. Students need to shop early as the used books, which retail at 25% less than the new retail price, sell quickly. If you have any questions, contact them at (513) 556-1400 or www.uc.edu/bookstore. The bookstore also offers a **10% discount** to graduate assistants who present their ID badges.

For Textbooks: <http://www.bkstr.com/CategoryDisplay/10001-9604-13705-1?demoKey=d>

Read the latest "What's In Store" tabloid for information on current and upcoming promotional specials, like the 3-for-3 Payoff. Every time the Bearcats make a 3-pointer during a home basketball game, you save another 3% the next day on UC Insignia and Souvenirs! Maximum discount is 24%. Want to receive the "What's In Store" through your e-mail? Subscribe online at www.uc.edu/bookstore and you will receive a link to the monthly specials and the opportunity for discounts and coupons, exclusively for members of the UC Bookstores e-List.

University Health Insurance

The Mission of University Health Services is to provide superb health care and health education in a compassionate and caring environment, to assist the University in providing a safe environment for students and employees, and to provide wellness in a Just Community.

All students are required to be covered by health insurance, either the Student Insurance Program or another policy, which must be at least as comprehensive as the University policy. Full-time, co-op, and part-time students taking six or more credit hours are all eligible for coverage and will be automatically charged unless they have previously waived coverage during the current academic year. Graduate students enrolled in less than six (6) credit hours may purchase coverage with: 1) an Insurance Action Form; 2) written certification of matriculation from your academic department; and 3) payment.

Contact for U.C. Student Health Insurance Office for the latest in health care information: www.med.uc.edu/uhs/

Mental Health Services

The UHS Mental Health Clinic provides professional, confidential mental health services for UC students with Student Health Insurance. Students can find a list of services provided on the website: http://www.uc.edu/uhs/mental_health.html. Services include counseling for situational stress, anxiety, depression, relationship issues, grief and loss, sexual abuse, bipolar disorders, and personality disorders. They also perform psychological assessments. For UC students with Student Health Insurance, the cost is \$17 per visit for counseling, but students should obtain an appointment referral from University Health Services first (East Campus phone number: 516-584-4457).

Mail boxes / ID Badges / Keys

Students are required to wear photo ID badges. Badges are authorized for new students at new student orientation and may be picked up at 4 Edwards (East Campus). Kathy McCann (DEH Business Office, Room 130) orders keys upon authorization of the student's advisor. Keys are similarly picked up at 4 Edwards Center. For both key and badge pickup, park in the Edwards Garage (free 30 minute parking). Note that keys that are ordered but not picked up are subject to a \$20.00 fee, as are lost keys or keys not returned upon leaving DEH. Mail boxes for all students are located on the first floor of the Kettering Laboratory (Room 125). Badges and keys must be returned upon completion of or dismissal from any DEH degree program.

<https://www.uc.edu/parking.html>

4 Edwards Center

51 Corry Boulevard

Cincinnati, OH 45221-0624

556-4925 or 558-4998

Organizations

There are many organizations that may interest you. A complete listing of organizations and people to contact can be acquired at the University's home page www.uc.edu.

The Organization of Health Sciences Graduate Students (OHSGS) serves graduate students in the Colleges of Medicine, Pharmacy, and Allied Health at the University of Cincinnati. OHSGS is a part of the GSGA (Graduate Student Governance Association). Formerly known as Student Organizations and Activities, it is an important resource for UC students who want to be involved while attending the University. Staffed with full-time professionals and student paraprofessionals who are available throughout the year, the office provides leadership and direction for the more than 250 student organizations, as well as a full range of activities and cultural programs for students at the University. OHSGS activities and services are free to all graduate students, and any student is encouraged to get involved. Their web site is www.uc.edu/gsga.

The OHSGS Office is in the Medical Sciences Bldg. Room G552. The phone number is (513) 558-5723. There are currently no office hours available. Please visit their web page at www.med.uc.edu/hsga.

Parking

All students are eligible to purchase a parking decal. To park on campus one must display a Parking Services issued decal or use a parking garage and pay the hourly rate. Decals are issued on a semesterly or academic year basis and are most easily purchased through the Parking Services' web site during priority registration prior to the start of each semester. The priority registration dates coincide with those for priority class registration. Internet access for priority registration is available in the parking Offices and in some computer labs on campus. Contact the Parking Office at 556-2283 Edwards Four, or visit www.uc.edu/parking for further information.

Shuttle Bus

The University of Cincinnati offers a shuttle bus service that transports students, staff, and faculty across campus. Buses run every 7-10 minutes Monday through Friday year round (except holidays). The nearest stop to Kettering is behind Eden Garage. For information on shuttle routes and bus stops, visit their website at <http://www.uc.edu/af/facilities/services/shuttle.html> or call 556-4424.

Sports and Exercise

UC Recreational Sports Office recently unveiled the new fitness center in the Shoemaker Center. Due to the closure of Laurence Gym, Recreational Sports activities and programs will take place in the Armory Fieldhouse and the lower floor of the Shoemaker Center. Immediately south of the Shoemaker Center are Johnny Bench Field, home of Bearcats baseball, and the Meyers track and soccer complex featuring FieldTurf. For more information on facility times of operation, please visit www.uc.edu/recenter/ or call the Recreational Sports Office, which is located in 614 Dabney Hall, at (513) 556-5706.

The University Fitness and Health Promotion Program is located on the 5th floor of Holmes East Wing on the medical campus. It offers a state-of-the-art facility with cardiovascular and Nautilus equipment and specialty classes such as Aerobics and Karate. Different membership options are available. For more information or to schedule an appointment, call 584-5909.

BearCat Fitness Trail - A Cross Campus Challenge

The Bearcat Fitness Trail combines **15 exercise routines and 1.4 miles of trail for walking or jogging** to provide a well-balanced fitness program for the entire body. The fitness trail spans across the East and West campuses to provide a total campus connection. Take a casual walk along the **Bearcat Fitness Trail** and enjoy your campus community or get in full exercise mode and work out on the **Cross Campus Challenge**. www.uc.edu/news/trailmap.htm

Dining near the Medical Center

Cincinnati offers many fine dining adventures, but few are within walking distance from the Kettering Building. If you're seeking to dine between classes, the nearest facilities are the Medical Sciences Building cafeteria, Children's Hospital Medical Center cafeteria, University Hospital's cafeteria, or the Veteran's Hospital cafeteria. Chipotle and Zoup are just up the street on the corner of MLK Drive and Highland. The Kingsgate Marriott Conference Hotel also offers a buffet lunch for around \$12 per person. Another venue is the University Hall cafeteria, which offers an inexpensive dining experience.

Campus Security

[\(www.uc.edu/pubsafety/\)](http://www.uc.edu/pubsafety/)

The Department of Public Safety is comprised of four distinct, but interrelated units – University Police, Emergency Preparedness, Parking Services, and Support Services.

HOW TO CONTACT THE POLICE

- **Police Headquarters: 3 Edwards Center 51 West Corry Street Cincinnati, Ohio 45221-0215**
- **Primary phone numbers are: Emergencies 911**
- **To contact UC Police 911 from a non-university phone or cell phone dial 556-3911**
- **Non-Emergencies 556-1111, 558-1111**
- **Office 556-4900 (If long distance, the area code is 513)**
- **Help Phones**
- **Email: ucpd@uc.edu**

“Nightwalk”

Need an escort? Call NIGHTWALK!
Nightwalk is a volunteer service that operates from Sunday through Thursday from dusk until midnight.

Call 556-6110

Division Course Descriptions

Please note the Division Curriculum Committee will be re-examining and evaluating all courses and changes may occur.

Course Name	Course #	Credits	Description
Environmental Health Seminar	ENV7001	1	The course consists of weekly seminars and discussion sessions given by distinguished speakers in all areas of Environmental Health.
Statistical Computation and Software	BE7011	1	This course is designed to introduce three commonly used statistical software packages, SAS (including SAS/STAT, SAS/BASE, and SAS Enterprise), SPSS, and R. The goal is to provide basic knowledge of these software packages to users and help them understand how to acquire, input data from digital or hard copy data sources; inspect and manipulate the data in order to meet the requirements for statistical models as well as their computational procedures; perform analyses using right codes and procedures for specific models and tests; and interpret and present findings using outputs from the computation.
Case Studies in Global Health: Challenges and Proven Success	BE7015	3	This course provides an introduction to global health in today's society by considering modern concepts in international health that determine the burden and distribution of disease. Through a series of case studies, we will examine the risk factors and determinants of disease and health disparities. By learning from previous successes and failures in global health, students will explore evidence-based strategies, policies, and programmatic interventions to impact disease outcomes. Topics to be covered include: disease elimination and eradication, infectious disease transmission, maternal and child health, water and sanitation-related diseases, behavioral and mental health, diseases impacting vulnerable populations, non-communicable diseases, gender equality, neglected tropical diseases, emerging disease threats, and sustainability for future successes.
Introduction to Biostatistics	BE7022	3	The course covers descriptive statistics, probability distributions, estimation, types of error, significance level, hypothesis tests, sample size, correlation, linear regression, non-parametric methods.
Advanced Biostatistics	BE7023	3	The class will cover: Multiple Linear Regression - model fitting; checking assumptions; diagnostics. Nonparametric regression - classification trees; regression trees; LOESS. Longitudinal data analysis - mixed effects models. Sample size calculations - t-test; analysis of variance; simple linear regression; logistic regression. Meta-analysis - frequentist and bayesian analyses. Survival analysis - Kaplan-Meier and Cox regression. Survey and Questionnaire data analysis - sampling techniques; Multiple imputations - chained equations. Bayesian analysis - Monte Carlo Markov Chain simulations.

Course Name	Course #	Credits	Description
Computational Statistics	BE7024	3	This course is designed for students in Biostatistics and Epidemiology. The goal is to introduce computing software for data analysis purpose. The software that is primarily focused on are SAS and R. The ultimate aim is to empower the students acquire a good degree of mastery in the usage of these software for all practical data analysis needs. The student's knowledge and expertise is tested by weekly homework assignments, a mid-term exam, a final exam, and a project. Once the course is complete, the student is expected to use these software almost unaided in his/her own research. The training in this course will provide the student an important and useful job skill so that he/she can compete successfully in the market place.
General Linear Model	BE7026	3	In this course we are primarily concerned with a systematic study of linear models under the framework of general linear model. We will focus on estimation and inference in linear models. We will also discuss Random-Effects and Mixed-Effects Linear Models.
Communicating Your Science	BE7031	2	Communicating Your Science will enable students in scientific disciplines to develop the skills needed to explain their research to non-specialists and public audiences. Class sessions will address a variety of communication areas, including speaking and writing to lay audiences, reporting research results to community members, preparing briefings for policy-makers, and communicating with different media outlets. Students will be exposed to a broad array of professional academic researchers and community members relating to the various course topics and discussions.
Collaboration and Team Science	BE7040	2	This course provides an overview of the Science of Team Science (SciTS) for investigators who are (or will be) engaged in translational research and will be working in transdisciplinary teams. In addition to examining the theoretical and research literature on the dynamics of small groups, the course will include an examination of the construction and maintenance of highly functioning groups. Tools and exercises for assessing and improving team skills will provide hands-on experiences for learners. The course will include discussions of institutional barriers to working in teams and strategies for addressing a variety of challenges for translational researchers as they navigate their professional careers in a team-based environment.
Addressing Epidemiological Challenges with Advanced Statistical Methodology	BE7060	3	This course examines and applies advanced epidemiological and statistical concepts such as propensity scores, structural equation modeling, and multilevel analysis. This hands-on course requires participants to be familiar with SAS or R to directly apply the knowledge learned.

Course Name	Course #	Credits	Description
Biostatistics in Research	BE7061	3	Assessment of diagnostic tests vis-a-vis gold standard procedures. Quantitative markers and ROC (Receiver Operating Characteristic) curves. One-sample and two-sample t-tests. Non-parametric analogues. One-sample and two-sample proportions. Contingency tables and chi-squared tests. Odds and odds ratios. Analysis of Variance. Kruskal-Wallis test. Confidence intervals. Multiple comparisons. Sample size calculations. R software. Descriptive statistics using R. Graphics using R. Data analysis using R. Binary logistic Regression. Model based odds ratios. Conditional logistic regression for matched case-control studies. Multinomial logistic regression. Proportional odds model. Poisson regression models. Multiple regression models and interactions.
Applied Longitudinal Analysis	BE7062	2	Statistical methods for analyzing multivariate normal data, focusing on data collected in the form of repeated measurements. Multivariate normal distribution, Hotelling's T ² , multivariate analysis of variance, repeated measures analysis of variance, growth curve models, mixed effects models. Implementation with SAS software PROC GLM and PROC MIXED is provided in detail.
Pediatric Environmental Health	BE7063	2	Epidemiological and molecular methods for assessment of the impact of environmental chemical exposures on child health and development are surveyed. The health effects of prevalent environmental toxicants on neurodevelopment, pulmonary function, and cancer risk are explored in detail. Methods for evaluating primary and secondary public health prevention strategies are presented. The clinical practice of pediatric environmental health prevention and treatment is also explored. This course is taught by several instructors who are recognized as international leaders in their particular fields of study.
Statistical Genetics	BE7064C	3	Topics include: Mendelian genetics. Kinship and genetic sharing. DNA structure. Genotyping. Likelihood. Hardy-Weinberg law. Model-based linkage analysis. Model-free linkage analysis. Analysis of pedigree data. IBD estimation. Quantitative traits. Twin studies. Association. Single-locus association models. Case-control studies. Haplotype estimation. Resampling procedures.
Applied Survey Sampling	BE7065	3	Data collection is an integral part of any research. Conducting surveys is one vehicle of obtaining data, especially in public health. The main focus of the course is survey sampling. The following topics will be covered: Simple random sampling; Stratified random sampling; Systematic sampling; Cluster sampling; Multistage sampling; Double sampling; Network sampling; Adaptive sampling; Spatial sampling; Estimates of population features and their standard errors; Ratio estimation; Regression estimation; Implementation of sampling schemes; Sample size determination; Estimation of population size; Capture-recapture methods; Randomized response; Analysis of public health data.

Course Name	Course #	Credits	Description
Principles of Clinical Trials	BE7066	3	The main emphasis of the course is to address issues related to Design, Conduct, and Analysis of Clinical Trials. The topics that will be covered are: 1. The role of Institutional Review Board; 2. Protocol Development; 3. Selection of Appropriate Experimental Design; 4. Methods of Randomization; 5. Adaptive Designs; 6. Sample Size Determination; 7. Appropriate Methods of Data Analysis; 8. Interim Monitoring and When to Stop a Designed Clinical Trial; 9. Ethical Issues. The major thrust of the course is in the realm of biostatistics. A student who takes this course is expected to design a clinical trail in his/her own field including a critical review of the literature. Introduction to Biostatistics is a prerequisite for this course.
Scientific Integrity & Research Ethics	BE7067	1	This seminar discusses the ethical issues in clinical research. The course objectives are: 1) to argue the importance of integrity in research; 2) to develop effective mentoring styles; 3) to develop responsible data management and record keeping practices; 4) to discuss the ethical basis that guides research with human and animal subjects; 5) to analyze ethical authorship and publication practices; 6) to appreciate the concepts of conflict of interest, including conflict of commitment and conflict of time; and 7) to understand the concept of intellectual property and how intellectual property is protected.
Decision Analysis and Cost-Effective Analysis	BE7068C	3	This course will introduce participants to the methods and applications of decision analysis, cost-effectiveness analysis, and cost-benefit analysis in medical decision making. Topics will include Bayes' theorem and evaluation of diagnostic tests, the design and interpretation of decision trees, sensitivity analysis, Markov models, utility assessment, and economic analysis of healthcare programs. Examples will be drawn from both the individual patient and health policy perspectives. Students will learn how to use decision analysis software.
Patient Specimen Methods	BE7069	1	A critical component of translational research is to use human subject specimens to drive laboratory research that may impact ongoing clinical research or lead to a new clinical trial. Therefore, it is essential for translational researchers to understand the steps required for collecting, handling, storing, and allocating patient material for study in a HIPAA-compliant fashion. This is a hands-on course in which students will spend time in the CCHMC Cell Processing Facility and the Translational Trials Development Support Laboratory. Practical knowledge of using the Web-based protocol manager and biologic sample tracking system developed at CCHMC will also be covered. Knowledge of how clinical material is handled will aid students in designing translational research trials.

Course Name	Course #	Credits	Description
Quantitative and Qualitative Data Collection Methods for Health Services Research	BE7070	2	In this course, students will learn the fundamentals of quantitative and qualitative research methods as well as how to integrate the two approaches in a single research design. Students will design either a sequential or concurrent mixed methods study that combines survey research and qualitative methodology to answer their health-related research question. Students will acquire the following skills: defining a health-related research question, identifying constructs, selecting sampling and data collection strategies, designing survey instruments and qualitative question guides, and data analysis. Learning objectives will be achieved using didactic lectures, in-class activities and projects.
Quality Improvement and Patient Safety	BE7071	1	This course will cover the fundamentals of quality improvement and patient safety via a combination of independent reading and study, didactics and team based learning. It will focus on three main topic areas: Human error and bias, System errors and resilience and Quality Improvement and Plan-do-study-act cycles. Within and between each of these three main topic areas, students will work in teams during the class hour to apply their basic knowledge to cases. Students will also be responsible for performing and presenting a quality improvement or patient safety project during the semester. At the end of the course students will be able to CRITICALLY EVALUATE and APPLY knowledge and skills from patient safety, medical error and quality improvement fields to important issues in health care, including diagnostic error, the use of checklists, testing error, medication error, surgical error, handoffs and sign outs, duty hours, etc.
Data Analysis with R	BE7072	2	Data analysis is pervasive in biomedical research. The objective of this course is to string together a variety of biomedical research fields and their attendant data sets and use R as a common platform for their analyses. The fields will be selected in partnership with the participants. Some of the fields of research are outlined in the Course Description. Once the course is completed, the participant is expected to achieve two major objectives. 1. Expertise in using R in data analysis in the field of his/her own specialization. 2. Ability to develop R codes to advance research in his/her own field of specialization. The participants of the course will be tested on the achievement of course objectives in the form exams and projects.
Sample Size Calculation with R	BE7073	2	Level of significance. Power. Effect size. Sample size. Their inter-relationship. Introduction to R package. One-sample t-test. Two-sample t-test. One-sample proportion test. Two-sample proportion test. Analysis of variance. Contingency tables and chi-squared test. Repeated measures. Crossover designs. Multiple-arm trials. Survival analysis. Bioequivalence. Dose response studies. Group sequential methods.
Community-Based Participatory Research	BE7074	1-3	This class is designed to familiarize learners with the theoretical frameworks, methodologies, and applications of community-based participatory research. The class will emphasize how to apply such methodology to complex health and socio-cultural problems.

Course Name	Course #	Credits	Description
Introduction to Epidemiology	BE7076	2	The course introduces methodology for studies of diseases in human populations. The distribution and determinants of diseases are at the center of epidemiologic investigation. Methods to determine morbidity and mortality of diseases are summarized. Study designs to investigate risk factors of diseases are detailed. Topics that are covered are chronic diseases, infectious diseases, occupational and environmental epidemiology, and genetic epidemiology.
Nonlinear Models for Univariate and Multivariate Data	BE7077	2	The coverage is broad with the loglinear Poisson regression model binomial regression model primarily used for methodology. Topics include deviance, asymptotics, diagnostics, and over dispersion. Programming of example data sets will use Proc Genmod.
Spatial Epidemiology	BE7079	3	This course is intended to cover aspects of spatial methods in application to epidemiologic problems. The course focuses on the basic epidemiological and statistical issues to be found in the study of the spatial/geographical distribution of disease. The topics of disease mapping, disease clustering and ecological analysis will be covered. The WinBUGS and R packages would be used for model fitting and analysis.
Analysis of Internet Health Data	BE7080	3	A vast amount of data on health is available on the internet. The student will be trained how to get access to internet data following his/her line of inquiry. Once the data become accessible, the student will be trained how to analyze the data in order to answer research questions posed. The training will include usage of a computing software. One-half of the time in the course will be spent on practical demonstrations working with some specific internet health data. The remaining time will be spent working on new research projects. Once the course is complete, the student is expected to be able to download and analyze internet data on his/her own. Students will be evaluated by homework assignments, midterm and final exams. Students are required to make a presentation of their research.
IRB Submission Process for Researchers	BE7081	1	The course provides hands-on experience with preparing a human subject research study and submitting it to the IRB, including use of the IRBs online submission site, ePAS.
Introduction to Data Science	BE7082	3	This course is a fusion of computer science, mathematics, and statistics, which are all needed to handle big data.
Epidemiology of Infectious Diseases	BE7084	3	The course covers the epidemiologic, serologic, and public health aspects of modern infectious diseases, their transmission, and methods of control.

Course Name	Course #	Credits	Description
Perinatal & Pediatric Epidemiology	BE7085	2	Perinatal and Pediatric Epidemiology (PPE) is a branch of epidemiology studying the risk factors that may affect human reproduction, pregnancy, birth outcomes, fetal and child development, and maternal and child health conditions. PPE utilizes surveillance, case-control study, cohort study, clinical trial, and community prevention trial to provide data regarding infertility, pregnancy loss, stillbirth, pregnancy complications, adverse birth outcomes, infant and child disorders to guide prevention efforts. The PPE course will provide an introduction to perinatal and pediatric health outcomes from a population viewpoint, describe major risk factors identified, summarize research progress and limitations, and stimulate students to identify unsolved questions and design new studies in the relevant areas.
Regression Analysis	BE7088	3	The course covers the following topics: linear regression, least squares, multiple regression models, model diagnostics & building, correlation analysis, introductory analysis of variance and introductory logistic & Poisson regression models.
Experimental Design	BE7089	3	This course covers the statistical basis for experimental designs and the analysis of experimental data. Designs that are presented include the two-group independent and correlated design; completely randomized factorial design for more than 2 groups; nested and split plot models; repeat measure designs; complete and incomplete block designs and fractional factorial designs. Associated topics include tests for homogeneity of variance; power analysis; methods for performing multiple comparisons; fixed, random and mixed models; construction of an EMS table; and construction of proper (direct and pseudo-) F-ratios.
Applied Survival Analysis	BE7090C	3	Upon completion of the course, the student will know how to analyze lifetime data in the presence of censoring. The student will know how to compare two treatments in terms of lifetimes and will know how to take into account predictors that could influence lifetimes. The student will know how to apply knowledge of survival analysis to analyzing multiple endpoints that could arise in a clinical trial. The student will know how to analyze data using R software. Learning outcomes will be measured by homework, mid-term exam, final, and a project.
Applied Multivariate Analysis	BE7091	3	The class introduces the nature of multivariate data; graphical presentation; R package; multivariate normal distribution; one-sample problem; two-sample problem; multivariate analysis of variance; multivariate multiple regression; principal component analysis; cluster analysis; multidimensional scaling; factor analysis; discriminant analysis; pattern recognition.
Categorical Data Analysis/Logistic Regression Analysis	BE7097	2	Statistical models and methods for categorical responses including logistic regression. Chi-square test, Fisher's exact test, McNemar's test, Mantel-Haenszel test, sensitivity and specificity, odd ratio, and relative risk. Some discussion of software and implementation of methods and usage including sample size and power issues in analysis of categorical data.

Course Name	Course #	Credits	Description
Environmental Health Disasters and What They Can Teach Us	BE8010	2	Environmental Health Disasters are defined as events of anthropogenic origin; including but not limited to chemical releases. An environmental disaster by this definition is caused by human activity, not to be confused with a natural disaster such as an earthquake, hurricane, or tornado. The course will focus on events that have had a direct effect on human health, including reproductive, developmental, and psychosocial. It will encompass events as diverse as the Great Smog in London, Minamata disease, the Bhopal leak of methyl isocyanate, and the more recent lead poisoning epidemic due to artisanal gold mining in Nigeria that killed and handicapped thousands of children. Course requirements include class attendance, participation, a mid-term and final examination, and a platform presentation on a current or potential environmental health crisis and the efforts necessary for prevention or remediation.
Chronic Disease Epidemiology	BE8022	3	The course will cover major chronic diseases except cancer. We will emphasize Western chronic diseases including heart disease, diabetes, chronic kidney disease, and osteoporosis and fractures. The first half of each class session will generally be in a lecture format, followed by discussion. Discussion will focus on the lecture material and/or the assigned journal article(s).
Classic Topics in Epidemiology	BE8023	2	Study of historical works in epidemiology including Snow, Panum, Goldberger, Hamilton, and comparison with recent epidemiologic research.
Epidemiology Seminar	BE8028	1	In this weekly seminar, the members of the faculty and the students or outside experts present their research.
Neuroepidemiology	BE8042	2	Neuroepidemiology is the investigation of the distribution and dynamics of neurological disease in free ranging human populations. This course explores the scope and methods of neuroepidemiology. Students will receive an introduction to the history and systems of neuroepidemiology, test theory and measurement in neuroepidemiology, the epidemiology of neurodegenerative diseases, seizure disorders, neurodevelopmental disorders, cerebrovascular disease and stroke, and environmental neuroepidemiology. Class requirements include readings, class discussion, a student presentation and final examination.

Course Name	Course #	Credits	Description
Introduction to Medical Informatics	BE8062	2	<p>Medical Informatics is the multidisciplinary scientific field concerned with the acquisition, storage, retrieval, communication, and optimal use of health information for problem solving and decision-making. Health Informatics has as its driving goals the improvement of health and healthcare and the advancement of the biomedical and health sciences. Other names often used for this broad field include Health Informatics or Biomedical Informatics.</p> <p>This course will present graduate students with an introduction to the field of health informatics and its relation to patient care and clinical research. Specific topics will include: overview of the field, data standards; security, confidentiality, regional health information exchange, standards, terminologies, databases, data marts/data warehouses, interfaces and other topic as related to the healthcare and research setting. Learning objectives will be achieved using a variety of methods including: didactic lectures, group discussions, selected readings, demonstrations, self-study and student projects.</p>
Advanced Statistical Methods in Biomedical Research	BE8064C	2	The course examines hidden markov chains; survival analysis; meta-analysis; longitudinal studies; comparison of populations; electronic noses; medical diagnostics.
Health Services Research	BE8067	2	<p>This course will address research on the effects of the organization, delivery, and financing of healthcare. Principles of health services research, including patterns of resource utilization, small area variation, medical errors, and measurement and improvement of quality of care will be emphasized. This course will introduce the diverse methods used in health services research and the basic methods of inference in such research. This course will be taught as an integrative activity that draws upon the knowledge and methods from a wide range of disciplines, including the behavioral and social sciences, biostatistics, epidemiology, health economics, health education, and operations research. The course will also introduce students to: understanding variations in the organization and financing of healthcare delivery; methodologies for measuring and predicting quality of care and health outcomes; assessing the impact of technology and treatments on patient outcomes; and assessing the impact of health policy on individuals and populations. It will emphasize health services research methodology, including approaches to the analysis of large secondary databases from the National Center for Health Statistics, AHRQ, and elsewhere.</p>
Genetics of Complex Disease	BE8068	2	This course will provide a broad overview of genetics of complex diseases and traits covering topics including epidemiology and genetic basis of complex diseases; methodological considerations in the study of complex diseases, viz., genetic heterogeneity, choice of population; analytical approaches, viz., linkage, association, linkage disequilibrium; molecular methods and tools.
Study Design and Analysis	BE8069	2	Students will learn to acquire knowledge and skills in selecting an optimal study design such as cohort, case-control and cross sectional and to understand and apply appropriate statistical methods for each epidemiologic design.

Course Name	Course #	Credits	Description
Successful Scientific Writing	BE8076	2	This workshop takes an active, participatory approach to help public health and health care professionals learn how to communicate the findings of their research and investigations more effectively and expedite publication of their manuscripts. Students will critique actual published and unpublished manuscripts and solve a wide range of exercises that exemplify the real-world challenges that authors face. Major components of the course include the following: basic sections of a scientific article: the purpose, elements and organization of each section, principles of style for writing in public health and epidemiology, systematic approaches to the process of writing and publishing an article in a peer review journal, and effective strategies for dealing with requests of journal editors and reviewers.
Epidemiology of Occupations	BE8079	2	This course offers an overview of methods and topics in occupational epidemiology. The course will focus on the concepts of epidemiologic methods as they are applied in occupational epidemiology. The course will be a mixture of lectures, directed readings, and classroom exercises that will cover epidemiologic study designs, issues of validity, measurement of exposure, ascertainment of health outcomes, approaches to analysis, and special considerations for studying the health of a working population. Case studies on a variety of occupational hazards will be used to illustrate these issues.
Research Methods for Human Population Studies	BE8082	3	This course provides the student with an understanding of the methods for undertaking research that involves human populations and health. The course is structured around the selection and appropriate implementation of methods of sampling, data collection (such as questionnaires and interviews), measurements, biospecimen procurement and initial processing, data processing, and information dissemination.
Data Analysis with R and SAS	BE8083	3	In this course, we will exemplify the role of the computing software R and SAS in data analyses. The course will cover the basics of R (including data structures; data manipulation; loops and functions; graphics; statistical tests; and sample size calculation) and SAS (including importing data and different procedures).
Pharmacoepidemiology	BE8092	2	This course considers the side effects (adverse effects) of pharmaceutical products and devices, typically of a serious nature but low frequency (<2%) and how to discover such effects, problems with evaluating the data, balancing advantages and disadvantages of each medication, data systems that are available, and practical decision making. Student presentations are a major part of the course.
Introduction to Database Management Systems	BE8093	3	This course emphasizes on hands-on experience of developing and using databases. Students will learn basic concepts of database techniques, use SQL to develop relational databases (with MySQL) and use NoSQL to develop non-relational databases (with CouchDB), and develop database applications to solve practical problems in biomedical science with big data. The course is highly interactive. Students will be trained to write R code in the classroom to interact with databases and perform data analyses.

Course Name	Course #	Credits	Description
Structural Equation Modeling	BE8094	2	This course covers all of the modern multivariate statistical methods including (but not limited to) exploratory and confirmatory factor analysis, structural equations with or without latent factors, latent growth and latent class analysis (mixture models) mixed variable type analysis (continuous and categorical count), longitudinal data analysis, including multi-level models, model-based data imputation and Monte Carlo simulation.
Epidemiology of Cardiovascular Diseases	BE8097	2	This course introduces the epidemiology of major CV disease with a focus on risk factors for development of atherosclerotic CV disease, the leading cause of death in the developing world. Didactic lectures are combined with practical hands on demonstrations of techniques used in the field. Leading researchers are invited to lecture offering the opportunity to network with the experts as they share the most up-to-date knowledge in the field.
Cancer Epidemiology	BE8098	2	A general overview of known associations of environmental and occupational factors with various types of cancer; includes discussion of types of studies that give rise to associations and causation.
Meta-Analysis	BE9061C	3	Meta-analysis is the systematic quantitative review of all research studies directed toward a particular scientific or policy question. This course will cover all aspects of this process, including searching and evaluating research reports, extracting data, computing measures of effect size for continuous and categorical data, estimation of statistical models using SAS and WinBUGS software, and preparation of a manuscript. Students will conduct a meta-analysis on a topic of their choice, subject to instructor approval.
Special Topics	BE9063	1-6	A sampling of topics: Bagging and Boosting, Observational Studies, R package, Genetics with R, Multivariate Analysis with R, Sample Size Calculation, Cluster Data Analysis, Hidden Markov Models, Bayesian Analysis, Mixture Models, Discrete Longitudinal Data Analysis, Mini Proposals, and various topics related to Epidemiology.
Leadership in Clinical Research	BE9065	1-2	This course focuses on the managerial and leadership competencies required for clinical and translational research in Academic Health Centers. Each topic area will have a corresponding practice and application component, allowing learners to work with real projects and challenges. Leadership styles will reviewed, including corresponding strategies to employ based on the style type and personal attribute and inventory assessments. Individual contributor, team member and managerial roles in multi-disciplinary teams will be illustrated. Time and productivity strategies conducive to collaborative relationships and research teams will be reviewed, and active project management plans will be populated. Methods to identify mentors, be a good mentee, and serve as an effective mentor will be illustrated, and applied across the spectrum of relationships necessary to be effective in an Academic Health Center. Techniques to stimulate creative thinking and leverage innovation will be reviewed and applied. Methods and measurement of academic success, including evaluation, scholarly activity and productivity, and funding will be delineated.

Course Name	Course #	Credits	Description
Clinical Research Scholars Seminar	BE9066	1	This monthly seminar has four objectives: 1) to cover topics not typically covered in most courses, such as how to write papers, how to write grants, how to present research, and how to negotiate for jobs; 2) to allow students from all tracks to see and critique each other's' research-in-progress presentations; 3) to enable students to meet with various cutting-edge clinical researchers; and 4) to foster further interaction among Dr. Tsevat, Dr. Grupp-Phelan, and other students in the clinical research training program. The seminar will meet monthly for 2 semesters for 1 credit.
Disease Specific Translational Research	BE9067	1	Emerging therapies or assays currently in early phase clinical trials will be selected for discussion for a variety of diseases in specialties such as hematology/oncology, immunology/rheumatology, pulmonology/neonatology, and cardiology. Students will select a total of 10 topics/lecturers (from a list of 20) to schedule individually during the semester. Prior experiences of the faculty lecturer in translational research will form the basis for the lessons in each session. Examples of topics include: 1) gene and cell therapy: NIH recombinant DNA guidelines, Appendix M, and the Recombinant DNA Advisory Committee; 2) surrogate outcomes; 3) pilot studies and Phase I trial design in human patients (vs. normal subjects); 4) vaccine trials; 5) local and national funding mechanisms for translational research; 6) repositories and cores; 7) the regulatory affairs alphabet soup: IBC, SAC, IRB, FDA; and 8) risk vs. benefit issues of early phase trials in children vs. adults.
Survey of Clinical & Translational Research I	BE9070	1	This survey introduces students to a wide variety of topics related to clinical and translational research, including professionalism, research design, review of medical literature, measurement, biostatistics, interpersonal relations and communication, and grant and manuscript preparation.
Molecular Epidemiology	BE9073C	2	This course covers both the major theoretical concepts and practical issues involved in conducting research involving biomarkers in human populations. Class topics include: the theoretical advantages of biomarkers, criteria for evaluating potential markers, sample collection and storage, laboratory quality control considerations, issues in epidemiologic study design and analysis, ethical/legal concerns, and discussion of specific examples of research involving molecular markers of internal dose, susceptibility, early pathological alteration, and prognosis.
Design and Management of Field Studies in Epidemiology	BE9075	3	Opportunity to acquire knowledge and skills in many aspects of the designs and conduct of field and clinical research. Includes writing a hypothesis and writing a research proposal or grant application, designing questionnaires, survey sampling, sample size determination and the art of presenting results and evaluating research.
Design and Management of Clinical Research	BE9076	3	Opportunity to acquire knowledge and skills in many aspects of the designs and conduct of field and clinical research. Includes writing a hypothesis and writing a research proposal or grant application, designing questionnaires, survey sampling, sample size determination, and the art of presenting results and evaluating research. ³

Course Name	Course #	Credits	Description
Ethics in Research	GNTD 7003	1	This seminar discusses the ethical issues in clinical research. The course objectives are: 1) to argue the importance of integrity in research; 2) to develop effective mentoring styles; 3) to develop responsible data management and record keeping practices; 4) to discuss the ethical basis that guides research with human and animal subjects; 5) to analyze ethical authorship and publication practices; 6) to appreciate the concepts of conflict of interest, including conflict of commitment and conflict of time; and 7) to understand the concept of intellectual property and how intellectual property is protected.

Other Courses in the Department or University

Students in the Division of Epidemiology may find their research interests necessitate training in subject matter outside the Department of Environmental Health. Courses outside the Department can be taken for elective credit, but students must consult with their academic advisors about which classes are most appropriate. Some Departments/Divisions where students commonly find relevant electives include, but are not limited to:

Genetic Counseling (GC)
Geography (GEOG)
Graduate Medicine Interdepartmental (GNTD)
Mathematics (MATH)
Molecular Genetics, Biochemistry & Microbiology (MG)
Nursing (NURS)
Sociology (SOC)
Statistics (STAT)
Toxicology (TOX)

Division Faculty

Primary Faculty

Kelly Brunst, PhD

Assistant Professor



Phone: (513) 558-1723

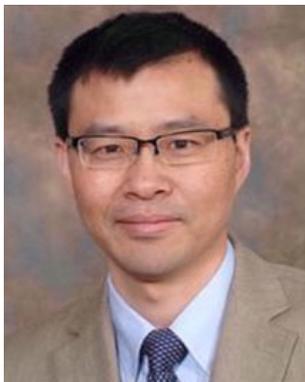
Email: kelly.brunst@uc.edu

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Kelly Brunst is an Assistant Professor of Epidemiology in the Department of Environmental Health in the College of Medicine. She earned her B.A. in Biology from Thomas More College (Crestview Hills, KY), her Ph.D. in Molecular Epidemiology from the University of Cincinnati (Cincinnati, OH), and completed a postdoctoral fellowship in the Department of Pediatrics at the Icahn School of Medicine at Mount Sinai (New York, NY). Her research focuses on understanding the programming mechanisms by which prenatal/early-life exposure to physical, social and/or nutritional factors influences childhood respiratory health and neurodevelopment. She was recently awarded a National Institute of Environmental Health Sciences (NIEHS) Pathway to Independence Award to examine the effects of prenatal air pollution and maternal psychosocial stress exposure on childhood neurobehavioral outcomes; her study utilizes novel mitochondrial DNA biomarkers of oxidative damage to address questions regarding the role of mitochondrial function in the programming of infant neurobehavior.

Aimin Chen, PhD

Professor



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Dr. Chen's primary research interest is perinatal and pediatric environmental epidemiology, studying chemical exposures and reproductive and neurodevelopmental outcomes, preterm birth, and obesity. He has conducted epidemiologic research on DDT, isoflavones, lead, mercury, cadmium, tobacco smoke, flame retardants, and perfluoroalkyl substances. He also has research interest in reduction of adverse pregnancy outcomes, infant morbidity and mortality, and childhood disorders through exposure mitigation and behavioral changes. He investigated mixture exposure of toxicants from electronic waste recycling in developing countries for adverse impact on children's health and exposure mitigation. He examined developmental neurotoxicity of flame retardants, particularly PBDEs, in a collaborative effort with a large group of researchers, focusing on thyroid hormone disruption, cognitive function and child behavior.

Ranjan Deka, PhD
Professor



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Dr. Deka is a molecular population geneticist by training. His primary research interest is in the area of genetic epidemiology of complex diseases. He is leading NIH funded genome-wide association studies to identify genetic variants associated with obesity and cardiometabolic traits. Dr. Deka's other research interests are in the area of human genome diversity and evolutionary genetics. He has established strong international collaborations to conduct research in genetic variation, epidemiology and genetics of common diseases in diverse human populations. He brings in considerable administrative, research and student training experience spanning a period of over two decades. He was a chartered member of the NIH GHD Study Section (2007-2011). He has published over 140 peer-reviewed papers. His trainees (over 35) include pre-doctoral, post-doctoral and visiting international scholars; past trainees are holding senior positions in Universities, Research Institutes and Industry. Dr. Deka is the Director of an NIEHS funded training grant (T32) on Molecular Epidemiology of Children's Environmental Health that trains pre-doctoral, post-doctoral and clinical fellows. The mission of this program is to educate and train next generation scientists in molecular epidemiology to conduct inter-disciplinary research relevant to pediatric environmental health. Dr. Deka was awarded the Gorjanovic-Krambergeri Award for 2010 by the Croatian Anthropological Society and Croatian Academy of Sciences for his work on population genetics in the Adriatic Islands. He was also the recipient of the Director's 2010 Award for Excellence in Research, Department of Environmental Health, and University of Cincinnati College of Medicine. He is an elected fellow of the Graduate School, University of Cincinnati.

Among Funded projects are:

- Genetics of Metabolic Syndrome in an Island Population of the Adriatic
- Genome-wide Association Study of Adiposity in Samoans
- *Training Grant:* Molecular Epidemiology of Children's Environmental Health

Kim N. Dietrich, PhD
Professor



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Dr. Dietrich is a Professor of Environmental Health, former Director of the Division of Epidemiology and Biostatistics and currently Associate Director of the Molecular Epidemiology in Children's Environmental Health training program at the University of Cincinnati College of Medicine, Department of Environmental Health. He has also served as Associate Director of the Cincinnati Children's Center for Environmental Health and Disease Prevention at the Children's Hospital Medical Center of Cincinnati. Dietrich has served as a consultant to numerous local, state, national and international agencies and organizations concerned with the impact of environmental chemical exposures on the health and development of young children. These agencies and geopolitical entities have included the National Institutes of Health (chartered membership on the NAME study section and NCEH/ATSDR Board of Scientific Counselors), National Academy of Sciences, the United States Environmental Protection Agency, the United States Centers for Disease Control and Prevention, including the Advisory Committee on Childhood Lead Poisoning and Prevention and its various subcommittees, the United States Agency for Toxic Substances and Disease Registry, Health and Welfare Canada, the European Economic Community, the Australian Government, the World Health Organization, the United States White House Office of Science and Technology, Physicians for Social Responsibility, Sierra Club, and Environmental Defense Fund. He presently serves on the Board of Scientific Counselors of the Centers for Disease Control, National Center for Environmental Health, and Agency for Toxic Substances and Disease Registry. He is also an Associate Editor for Environmental Health Perspectives and on the editorial boards of Neurotoxicology and Neurotoxicology and Teratology.

Dietrich's research has focused on the developmental effects of prenatal and early postnatal exposure to lead in infants, toddlers, school-age children, adolescents, and young adults. He is presently examining the relationship between early exposure to lead, genetic factors, and adult criminality in a longstanding prospective longitudinal birth cohort study. His other studies include an examination of the developmental benefits of chelation therapy with succimer in a multi-center clinical trial and investigations of the effects of prenatal exposure to prevalent developmental toxicants including lead, manganese, pesticides, mercury, PCBs, tobacco smoke, drugs and alcohol in several birth cohorts. Recently he helped launch a developmental study of health effects related to primitive e-waste recycling in rural China. He has also recently launched an NIH-funded study of the relationship between early environmental chemical exposures and bone health outcomes in African-American women. Dietrich uses a wide range of neuroassessment tools and biomarkers in his studies. Neurodevelopmental assessments include standardized psychometrics, measures of neuromotor functions, and advanced neuroradiological techniques including volumetric and functional magnetic resonance imaging, magnetic resonance spectroscopy, and diffusion tensor imaging. Biomarkers of environmental exposure have included analyses of a wide range of metals and other environmental toxicants in a variety of tissues including blood, meconium, urine, hair, nails, teeth, and in vivo bone.

Scott M. Langevin, PhD
Assistant Professor



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Dr. Langevin received his PhD in Epidemiology from the University of Pittsburgh Graduate School of Public Health and completed a postdoctoral fellowship in Environmental Pathology at Brown University. The focus of Dr. Langevin's research is molecular cancer epidemiology, with a particular interest in cancers of the upper aerodigestive tract. His current topics of study include cancer genomics, DNA methylation, and non-coding RNA expression for etiologic research and biomarker discovery and development using non- or minimally invasive biospecimens, such as blood, oral rinse, and saliva.

Susan M. Pinney, PhD
Professor



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Dr. Pinney, an environmental and genetic epidemiologist, conducts large cohort studies of reproductive health effects and cancer. She also has had extensive experience in exposure characterization and in assessing related health effects. Environmental exposures that she has examined in research studies include perfluoroalkyl chemicals, ionizing radiation and metal toxicity of uranium, and chemicals in personal products such as phthalates and phenols. Previous research has examined reproductive effects of occupational glycol ether exposure and pulmonary effects of super absorbent polymer exposure in paper products industry.

Funded Research:

- Puberty & Cancer Initiation: Environment, Diet & Obesity
- Genetic Epidemiology of Lung Cancer
- Studies of exposure to perfluoroalkyl compounds in persons living in the Ohio River Valley
- Research Director of the Fernald Community Cohort
- Director of the Breast Cancer Registry of Greater Cincinnati
- Director of the Integrative Health Science and Facilities Core of the Center for Environmental Genetics
- Program Leader, Cincinnati Cancer Center

Secondary, Emeritus and Contributing Faculty

David I. Bernstein, MD
Professor



Dr. David Bernstein is Professor of Clinical Medicine and Environmental Health, Co-director Allergy Fellowship Training Program, Principal Investigator - T32 Allergy Immunology Training Grant, and the Director Diagnostic Allergy Laboratory at the University of Cincinnati College of Medicine. His clinical interests are in asthma, occupational allergies, and clinical immunology.

Jason Blackard, PhD
Associate Professor



Hepatitis C virus (HCV) is a positive-strand RNA virus that infects over 170 million people worldwide. Multiple studies have demonstrated the adverse effects of human immunodeficiency virus (HIV) co-infection on liver fibrosis, HCV RNA levels, HCV disease progression, and response rates to HCV treatment.

Because of the inability to infect small animals with HCV and the lack of efficient cell culture models, much of the current understanding of HCV pathogenesis has been inferred from studies of infected human samples. Using a variety of cell culture, immunologic, and molecular virology techniques, as well as patient-derived samples, we are investigating the pathogenic and evolutionary mechanisms by which viruses interact with the host and cause disease.

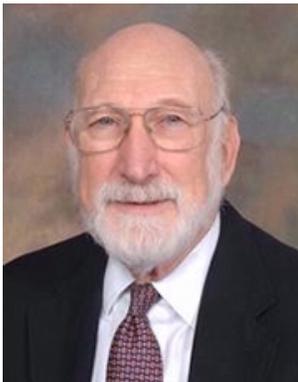
Current work in the laboratory involves studies of several hepatitis viruses, including hepatitis B (HBV), hepatitis E (HEV), and hepatitis G (HGV/GBV-C), as well as HIV. Ongoing research projects include: 1) characterizing the extent of extrahepatic replication of HCV and development of models of HCV replication; 2) HIV replication in hepatocytes and the development of novel in vitro systems of HIV/HCV co-infection; 3) genotypic and phenotypic characterization of hepatitis viruses, particularly in the context of HIV co-infection.

Robert Bornschein, PhD
Emeritus



Dr. Bornschein's research interests focus on sources of childhood lead exposure, causes of lead poisoning, its developmental consequences, primary prevention and evaluation of chelation therapy. He has also conducted numerous exposure assessments of communities living adjacent to Superfund sites, with an emphasis on heavy metal exposures, residential soil and dust contamination, and biomarkers of exposure. He is currently working with the City of Cincinnati to reduce lead paint sources in inner city neighborhoods. Dr. Bornschein serves as Associate Director of the Breast Cancer and Environment Research Center, which is investigating genetic, dietary, hormonal, and environmental factors associated with the early onset of puberty in girls.

C. Ralph Buncher, ScD
Emeritus



Dr. Buncher's research covers many aspects of biostatistics and epidemiology. This includes the sub-areas of these fields related to environmental and occupational studies such as the effects of exposure to lead, clinical trials- especially of pharmaceutical products, evaluating imaging systems, cancer studies- especially of lung cancer, prostate cancer and pancreatic cancer with relation to Cincinnati and Ohio, and studies of the effects of radiation.

**Melinda Butsch-Kovacic,
PhD, MPH
Research Associate Professor**



One of Dr. Butsch Kovacic's long-term goals is to improve the understanding of how the environment modifies chronic disease risk in genetically and/or economically vulnerable children. To this end, she is the PI of an ongoing study that is evaluating associations between environmental exposures and biomarkers of oxidative stress and whether or not these biomarkers will better predict risk of severe/uncontrolled childhood asthma compared to parental report of exposure alone (previous NIEHS R21 and CCTST KL2). As her preliminary data revealed strong associations between her outcomes and socioeconomic factors, over the last year, she has partnered with Cincinnati's CoreChange, a grassroots advocacy group, and Seven Hills Neighborhood Houses, a full service social service agency and community center in the West End of Cincinnati, to expand her research into the community using a community-based participatory research (CBPR) approach. To this end, she has implemented a community-based research registry and begun needs assessments using a child-centered PhotoVoice approach and adult focus groups. A peer family health COACH (Coaching On Achieving Community Health) program will begin soon. To inform these community-based studies, she is collaborating on a project seeking to develop unique multimedia educational materials targeting low-income and low-literacy caregivers with asthmatic children.

In addition to these studies, she is also the PI of an ongoing longitudinal epidemiological study seeking to evaluate environmental and sexual exposure to human papillomavirus (HPV) in families with children diagnosed with Fanconi anemia.

**Tania Carreon-Valencia, PhD
Volunteer Assistant Professor**



Dr. Carreon's research interests include molecular epidemiologic studies of populations exposed to occupational and environmental carcinogens. Her research currently focuses on risk factors for bladder and brain cancer. She is also interested in the effects of occupational and environmental hazards on disadvantaged populations. Of particular interest is to understand the proposed link between parental occupational exposures and increased risk of childhood cancers.

Kim Cecil, PhD
Professor



Dr. Cecil's research interests have focused on how diseases, acquired disorders, injuries and neurotoxicant exposures alter brain structure, organization, and function and how these neural changes ultimately affect executive function and behavior. She conducts magnetic resonance imaging and spectroscopy studies of children, adolescents and young adults at Cincinnati Children's Hospital Medical Center. As part of the NIH funded Cincinnati Children's Environmental Health Center, Dr. Cecil examined the influence of childhood lead exposure on brain structure, metabolism, and function in young adults.

Funded Research:

- Neurobehavioral and Neuroimaging Effects of Traffice Exposure in Children
- Anomalous Motor Physiology in Attention Deficit Hyperactivity Disorder
- Outcome of Non-Alcoholic Steatohepatitis in Adolescents after Bariatric Surgery vs. Lifestyle Intervention
- Serial Neuroimaging in Premature Infants with Necrotizing Enterocolitis
- Neurofunctional Predictors of Treatment Response in Adolescents with Generalized Anxiety Disorders
- Aerobic Training for Management of Post-Concussion Syndrome in Children

Kari Dunning, PhD, PT
Associate Professor



Dr. Dunning's primary research focuses on recovery and rehabilitation after stroke. Current projects include: 1) high intensity interval training on treadmill or recumbant bike including identifying neuroplasticity and aerobic mechanisms; 2) development of a modified exercise program post stroke; cardiac data analysis of epidemiology; 3) analysis of epidemiology data from the UC Stroke Team.

Mark Eckman, MD
Professor



For the past twenty-two years, Dr. Eckman has followed his passion as a general internist and a decision scientist, first as an active member of the Division of Clinical Decision Making at the Tufts University School of Medicine and the New England Medical Center (1984-1999), and more recently as Director of the Center for Clinical Effectiveness in the Institute for the Study of Health at the University of Cincinnati Children's Hospital Medical Center (1999-present). While at Tufts, Dr. Eckman also served as Division Director of General Internal Medicine (1996-1999), and as President of the Medical Staff of the New England Medical Center (1996-1998). He is also a past President of the Society for Medical Decision Making (1999-2000). As both a researcher and clinician, Dr. Eckman's interests lie in combining both clinical and theoretic applications of decision analysis to the care of individuals and to broader issues of health policy. In particular, his methodological interests have included the application of artificial intelligence techniques to decision analysis, cost-effectiveness analysis, the development of patient-specific decision support tools, and the continued study and development of new decision analytic methods.

**Shelley Ehrlich, MD, ScD,
MPH
Assistant Professor**



Dr. Ehrlich joined Cincinnati Children's Hospital Medical Center in the Division of Biostatistics and Epidemiology as Assistant Professor in September 2012. She is a physician trained in obstetrics and gynecology as well as an environmental and perinatal epidemiologist. Dr. Ehrlich received her doctoral and postdoctoral training at the Harvard School of Public Health and has dedicated the past few years of research to studying the impact of bisphenol A (BPA) and other endocrine disrupting chemicals on human reproduction in a fertility cohort and perinatal health outcomes. Dr. Ehrlich was recently a part of 2 NIEHS working groups as part of a BPA consortium where she was tasked with critically reviewing the epidemiological literature on BPA and reproductive health outcomes. Two consensus papers with experts in BPA research are in press and will be critical for upcoming policy evaluations regarding BPA. Dr. Ehrlich serves as an ad-hoc reviewer for several journals: *Biology of Reproduction*; *Human Reproduction*; *Environmental Health Perspectives*; *Journal of Exposure Science and Environmental Epidemiology* is on the editorial board of *Fertility and Sterility*.

**James Heubi, MD
Professor**



Dr. Heubi's areas of practice interest include liver disease and complications related to end-stage liver disease and liver transplantation and the management of patients with "short gut" or compromised gut function requiring prolonged enteral or parenteral nutritional support. His practice includes treatment of all disorders affecting the gastrointestinal tract, liver and biliary tract and pancreas. His research interest lies in cholesterol absorption, cholesterol metabolism, inborn errors of bile acid metabolism, bone metabolism in health and disease and TPN-related cholestasis and its treatment. With special interest in inflammatory bowel disease, cholestatic liver disease and malabsorption. Dr. Heubi was a recipient of "2004 Best Doctors" award.

**Richard Hornung, DrPH
Professor**



Dr. Hornung is currently Director of the Biostatistics and Data Management Core of the Cincinnati Children's Environmental Health Center at the Cincinnati Children's Hospital Medical Center. Dr. Hornung continues his work in statistical methods for epidemiologic research, including survival analysis models, matched case-control studies, hybrid designs, exposure assessment methodology, and also has expanded into outcomes research, quality of life studies, vaccine effectiveness studies, repeated measures analysis using mixed effects models, and evaluation research.

Jane Khoury, PhD
Professor



Dr. Khoury is an assistant professor in the Division of Biostatistics and Epidemiology at Cincinnati Children's Hospital Medical Center (CCHMC), and holds a secondary appointment in the Division of Epidemiology and Biostatistics in the Department of Environmental Health. Dr. Khoury has worked with the Greater Cincinnati and Northern Kentucky Stroke team for the last 20 years. She is the lead biostatistician for the epidemiological studies of stroke and is director of the biostatistical core for the Cincinnati SPOTRIAS (Specialized Program of Translational Research in Acute Stroke), which includes two clinical trials. Dr. Khoury has also been involved in research with the Division of General and Community Pediatrics at CCHMC for the last ten years. The latter currently involves study of childhood neurobehavior and environmental exposure to insecticides and phthalates. Dr. Khoury's personal research interests involve the effect of inter-uterine exposure to type 1 diabetes on childhood growth, metabolism and cardiac function. She currently has an internally-funded CCTST award for examining modeling of maternal glycemic control during pregnancy.

Stephen Kralovic, MD
Associate Professor



Dr. Kralovic is associate professor in the Division of Infectious Diseases in the Department of Internal Medicine at the University of Cincinnati; he has secondary faculty status in the Division of Epidemiology and Biostatistics in the Department of Environmental Health. He also serves as a medical epidemiologist for the national VA Infectious Diseases Program out of VA Central Office. In addition to his clinical responsibilities, for the past 15 years, Dr. Kralovic's primary research interests in infectious diseases are epidemiology of infections, including those occurring in health care settings, and surveillance mechanisms. He has experience with population-based surveillance and analysis of infectious diseases for trends forecasting, resource allocation and policy development. He is involved at the national level in VA with use of information technology for improving quality in healthcare settings. As an aside, a pet area of interest is the epidemiology of mycoses.

Grace LeMasters, PhD
Emeritus



For over two decades, Dr. LeMasters has conducted research on epidemiological studies related to respiratory disease, cytogenetic effects, reproductive effects and ergonomics and musculoskeletal research. She is currently receiving funding as the principle investigator of a 9 year study on diesel exposure, atopy, and respiratory disorders in children. She has conducted research on men and women in the military for over 15 years examining the effects of exposures to fuels and solvents on neurological conditions, hearing loss, and male and female reproduction. Other areas of research include an 18-year ongoing pulmonary longitudinal study of health effects of refractory ceramic fiber exposure and lung cancer and lung disease. Her laboratory has examined the effects of caffeine ingestion and hormones during pregnancy and occupational risk factors related to falls and injuries during pregnancy. She served as the director of an NIEHS training grant on Molecular Epidemiology in Children's Environmental Health and trains predoctoral and postdoctoral PhD students and physician fellows. She serves on national advisory committees for NIEHS and the Health Effects Institute. She was awarded the DoD silver medal for outstanding public health service training.

**Linda Levin, PhD
Emeritus**



Analysis of repeated measures data using GEE and random effects models is a focus of current research interest, with particulate applications to longitudinal pulmonary function data. Another research interest is the study of measurement error, as applied to exposure estimation.

**Maurizio Macaluso, MD,
DrPH
Professor**



Dr. Macaluso has authored over 190 publications and a larger number of presentations made at national and international conferences. During his academic career at UAB, he taught advanced doctoral courses on the analysis of epidemiologic research studies and advised over 50 masters' students in all areas of public health and 15 doctoral students in epidemiology, biostatistics, nutrition sciences, and medical sociology. In addition to providing guidance and advice to the DBE faculty, Dr. Macaluso mentors postdoctoral fellows and junior faculty in several Cincinnati Children's divisions. At CDC he mentored junior scientists, Association of Schools of Public Health fellows, Preventive Effectiveness fellows, and Epidemiologic Intelligence Service Officers. He has taught in Italy, China, and Botswana.

**Jareen Meinzen-Derr, MD,
MPH
Associate Professor**



Dr. Meinzen-Derr is a quantitative epidemiologist whose overall goal is to improve outcomes in children who are deaf/hard of hearing. Her currently funded research involves understanding the needs of children who are deaf/hard of hearing and have a co-existing disability. She has a prolific publication background in the areas of pediatric hearing loss, developmental disabilities, and prematurity. She is involved with teaching courses at the University of Cincinnati Department of Environmental health as well as in supporting the educational curricula for fellow research education within the Divisions of Neonatology, Developmental and Behavioral Pediatrics, and Pediatric Otolaryngology.

Ardythe Morrow, PhD
Professor



Dr. Ardythe Morrow is Professor of Pediatrics and Director of the Center for Epidemiology and Biostatistics, Cincinnati Children's Hospital Medical Center. She is also a former fellow of the Hedwig van Amerigen Executive Leadership in academic Medicine Program, MCP Hahnemann University. Dr. Morrow's research interests include the role of human milk in nutrition and health, vaccine surveillance, probiotic intervention trials in day care centers, asthma, and childhood obesity.

Patrick Ryan, PhD
Associate Professor



Dr. Ryan's research focus is primarily related to air pollution epidemiology, and in particular, the development and application of land-use regression models for exposure assessment. Dr. Ryan is currently involved with the Cincinnati Childhood Allergy and Air Pollution Study (CCAAPS), a longitudinal birth cohort whose purpose is to determine if children exposed to diesel exhaust are at increased risk for allergic disease and asthma. In addition, Dr. Ryan is involved in several other environmental and occupational epidemiologic studies. His current research interests include the application of geographic information systems and spatial models for air pollution exposure and risk assessment and exposure and reduction of air pollutants at schools.

Joel Tsevat, MD
Professor



Dr. Tsevat is a general internist and Professor of Medicine in the University of Cincinnati College of Medicine. He is Associate Dean and Co-Director of the Center for Clinical and Translational Science and Training; Director of Outcomes Research in the Department of Internal Medicine; Director of Health Services Research and Development (HSR&D) for the Veterans Healthcare System of Ohio (Veterans Integrated Service Network (VISN) 10); and Research Director in the Center for Clinical Effectiveness. A past President of the Society for Medical Decision Making, Dr. Tsevat's research interests include health-related quality of life, in particular health status vs. utility assessment; HIV/AIDS; spirituality; cost-effectiveness analysis; and decision analysis. He is multi-PI on UC's NIH Institutional Clinical and Translational Science Award (CTSA), he has served as principal investigator on multiple other federally-funded grants, and he has published over 150 peer-reviewed papers, reviews, book chapters, and editorials.

Jeffrey Welge, PhD
Associate Professor



Dr. Welge's research interests include meta-analysis, placebo responsiveness in clinical trials, hierarchical regression models for longitudinal and multi-center data, and intra-dyadic agreement about sensitive behaviors. He currently serves on the editorial board of Schizophrenia Research, Bipolar Disorders and Current Drug Therapy.

Jessica Woo, PhD
Professor



Dr. Woo's research is focused on the role of growth and nutrition in the development of obesity and its complications during childhood, and across the lifecourse. She is interested in the role of breastfeeding and human milk components in early-onset obesity, and how early nutrition experiences may influence later dietary choices. She is currently the PI of a large multi-center grant to explore how childhood cardiovascular risk factor measurements can help distinguish development of cardiovascular disease by mid-adulthood.