

The University of Louisville
School of Public Health and
Information Sciences

2009-2010 Catalog

Introduction

The *School of Public Health and Information Sciences Catalog* (“*SPHIS Catalog*”) is the official bulletin and catalog for students in the School of Public Health and Information Sciences (SPHIS) at the University of Louisville (UofL). The *SPHIS Catalog* has been prepared to acquaint students with the departments, faculty, and curriculum of the SPHIS. Graduate students in the SPHIS are expected adhere to the policies and procedures of the University, School of Interdisciplinary and Graduate Studies, and SPHIS. Additional information and University student policies are in the [University of Louisville Graduate Catalog](#), [University of Louisville Student Handbook](#), the [University of Louisville Schedule of Courses](#), and the University of Louisville [website](#).

The student is responsible for being familiar with the contents of the catalogs, student handbooks, and official notices to be informed about grades, credits, requirements, and the regulations of the University of Louisville and the School of Public Health and Information Sciences. UofL and SPHIS reserve the right to change programs of study, academic policies, academic requirements, fees, schedules of courses, course descriptions, procedures for the confirmation of degrees, or the announced academic calendar without prior notice. The provisions of the *SPHIS Catalog* do not constitute an express or implied contract between the University and any member of the student body, faculty, or general public.

The University of Louisville is an equal-opportunity institution and does not discriminate against persons because of race, religion, sex, age, handicap, color, citizenship or national origin. Inquiries or complaints about illegal discrimination including sexual harassment or handicap access can be made to the Affirmative Action director (852-6538) if response from SPHIS personnel is unsatisfactory.

The Redbook is the official statement of the organizational structure, rules of governance, and policies and procedures of the University of Louisville. If there is any conflict between the policies, procedures, or other statements contained in the *SPHIS Catalog*, *The Redbook* shall govern. A copy of *The Redbook* is available on the University’s web site at www.louisville.edu. Official copies are maintained at all University libraries, the Student Government Association Office, the Student Grievance Officer, and the Vice President for Student Affairs.

Links:

SPHIS Catalog

Graduate Catalog (graduate.louisville.edu/pubs/graduate-catalog)

UofL Student Handbook (campuslife.louisville.edu/policies/studenthandbook)

UofL Course Catalog (htmlaccess.louisville.edu/CrseCatalog/searchCrseCatalog.cfm)

UofL *Redbook* (www.louisville.edu/provost/redbook/)

UofL website (www.louisville.edu)

From the Dean

At the University of Louisville School of Public Health and Information Sciences, we are proud to be delivering on all of the elements of UofL's new tagline, "It's Happening Here."

The courage to question convention is found every day in our classrooms, labs and communities as we tackle problems that affect the public's health and new and different ways. We collaborate with others across the university and the community to find answers through unique organizations like the Center for Health Hazards Preparedness and the Center for Environmental Genomics and Integrative Biology, which do not limit themselves to addressing health issues through research, but are also committed to taking their findings to the community for the betterment of all.

The passion to break new ground is demonstrated by our commitment to applying leading-edge information sciences resources to problems that affect the public's health. Whether working to establish secure and private electronic health records or pioneering bioinformatics in laboratory and clinical research, we are committed to ensuring that technology can be used to enhance the public good.

The insight to champion community is clear in our dozens of community partnerships, focused on issues that affect public health in our own backyard and across the state. It is also found in the real-world experiences we offer our students, who truly serve while they learn.

The imagination to pursue the undiscovered is demonstrated by innovative research projects aimed at improving infection control behavior in respiratory diseases, in our focus on climate change and the public's health to celebrate this year's National Public Health Week and in all of the ways we think outside of the traditional track to address the challenges of our ever-changing global society.

The will to achieve greatness is evident in our full accreditation by the Council on Education for Public Health for the maximum period and our ongoing growth through strategic hiring of top experts. We are dedicated to pursuing excellence in all that we do.

The promise of a limitless future is found in our commitment to developing the degrees and programs needed to prepare the public health workforce for the 21st century and for providing a pathway to rewarding careers for individuals who want to make a difference.

The people to bring it to life are our dedicated faculty, staff and students, whose commitment to bettering the public's health knows no bounds.

Things change quickly at SPHIS. Please continue to check our web site to learn about new projects, opportunities and programs – it truly is "happening here."

Best regards,

Richard D. Clover, M.D.

Dean



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Academic Calendar 2009-2010

Fall 2009

Classes start	Aug. 24
Last day of registration	Aug. 24
Last day to drop or add courses	Aug. 28
Labor Day holiday	Sept. 7
Last day to apply for degree	Sept. 14
Mid-term break	Oct.12-13
Last day to withdraw	Oct. 15
Thanksgiving break	Nov. 25-29
End of classes	Dec. 7
Reading day	Dec. 8
Final examinations	Dec. 9-15
Degree date	Dec. 15
December commencement	Dec. 17

Spring 2010

Classes start	Jan. 6
Last day of registration	Jan. 6
Last day to drop or add courses	Jan. 12
Martin Luther King Jr. holiday	Jan. 18
Last day to apply for degree	Jan. 28
Last day to withdraw	Feb. 24
Spring break	Mar. 15-21
End of classes	Apr. 21
Reading day	Apr. 22
Final examinations	Apr. 23-29
Degree Date	May 8
Commencement	May 8

Summer 2010

General:

Classes start	May 10
Last day of registration	May 10
Last day to drop or add courses	May 13
Memorial Day holiday	May 31
Last day to apply for degree	June 7
Last day to withdraw	May 18
Independence Day holiday	July 5
Term ends	Aug. 5
Degree date	Aug. 9

MPH Term 1:

Classes start	May 10
Last day of registration	May 10
Last day to drop or add courses	May 13
Memorial Day holiday	May 31
Final examinations	June 22-23
Term ends	June 23

MPH Term 2:

Classes start	June 24
Last day of registration	June 24
Last day to drop or add courses	May 28
Independence Day holiday	July 5
Final examinations	Aug. 8-9
Term ends	Aug. 9

<http://louisville.edu/calendars/academic/undergrad-grad.html>

Student Government Association

The purpose of the School of Public Health and Information Sciences Student Government Association” (“SPHIS SGA”) is to empower the students of SPHIS to make group decisions, take group actions, and participate in governance of SPHIS through an organization that is operated entirely by and for the students of SPHIS. The SPHIS SGA is a Registered Student Organization in the University of Louisville.

A member of the SPHIS SGA is any student currently enrolled in a degree program in SPHIS, whether full-time or part-time. For a student to be considered currently enrolled, the student must be enrolled in at least one course. A newly enrolled student in a degree program in SPHIS is not a member until the first day of classes for the semester in which the student is first enrolled. If a member leaves the degree program in which he or she is enrolled, he or she is no longer a member.

Members may:

- Vote in elections or referenda of the SPHIS SGA
- Run for elected positions in the SPHIS SGA
- Serve on SPHIS Council of Chairs and Deans, SPHIS Faculty Forum, and other SPHIS committees
- Serve as representative of SPHIS on Graduate Student Council
- Petition for a meeting or vote by entire membership on one or more issue

Academic Policies

The academic policies of the SPHIS come from three sources: the University, the School of Interdisciplinary and Graduate Studies (SIGS), and the SPHIS. Academic policy precedence is SPHIS, SIGS, and University. While every effort is made to avoid conflicting policies, should such a situation arise the University policy prevails followed by the SIGS policy.

The major academic policies specific to the SPHIS are on student academic honesty, dismissal of students for academic reasons, denial of course admission, and unregistered course attendees. All SPHIS policies and procedures are available at

<https://docushare.louisville.edu/dsweb/View/Collection-541>.

The policies on student academic honesty and on dismissal of students for academic reasons are reproduced below because of their importance.

Policy on Student Academic Honesty

Policy

The school demands and expects complete academic honesty of its students. Violations of academic honesty may result in failure of the course and expulsion from the school and university.

This policy applies to all students.

Terminology

Unless otherwise modified, each of the following words or phrases has the meaning indicated:

- university = University of Louisville
- provost = provost of the university
- school = School of Public Health and Information Sciences
- dean = dean of the school
- associate dean = associate dean responsible for academic affairs

Determination of a Violation of Academic Honesty

A violation of academic honesty is determined solely by the director of the course involved or, in the event that the violation of academic honesty is not related to a specific course, the director of the student's academic program. Prior to making a determination, the course director (or program director) is required to meet with the student involved to discuss the incident and may, at the course director's (or program director's) sole discretion, consult with, as applicable, chair of his or her department, the program director, chair of the department in which the program is located, and the associate dean.

A determination of a violation of academic honesty may not be made more than one year after the actual occurrence of the violation. If the date of the violation is unclear but the course director (or program director) believes it to be no more than a year prior to the discovery of the violation, a determination of a violation of academic honesty may be made.

Disciplinary Actions for a Violation of Academic Honesty in a Course or Program

The course director or, if the violation is not related to a specific course, the program director may take whatever disciplinary action or actions with regard to the course or program, respectively, that he or she determines to be appropriate in response to the violation of academic honesty, except as noted below. For a course these actions may include, for example, failing the course or receiving a score of 0 or its equivalent on the test or paper in which academic honesty was violated. For a program these actions may include, for example, denying successful completion of the requirement or requiring the student to redo the requirement.

The actions taken by the course or program director may not include dismissal or expulsion from the program, the school, or the university. These actions require the course or program director to recommend pursuit of further disciplinary actions, as discussed below.

Communication Requirements

Within five business days after the determination of the violation of academic honesty, the course director or, if the violation is not related to a specific course, the program director notifies the student of the disciplinary actions taken by the course director or program director. In addition the course or program director, as applicable, notifies the student that the incident has been reported to the associate dean, who will be notifying the student whether additional disciplinary actions will be pursued. **The course or program director shall not disclose to the student his or her recommendation whether to pursue further disciplinary actions or not.**

Within five business days after the determination of the violation of academic honesty, the course director or, if the violation is not related to a specific course, the program director notifies the associate dean in writing about the violation and disciplinary actions taken, along with a recommendation whether to pursue further disciplinary actions. The latter recommendation is based solely on the judgment of the course or program director, as applicable, with regard to the single incident being reported.

Within ten business days after receiving the latter notification, the associate dean notifies the student in writing whether any further disciplinary actions will be pursued and, if so, the process for determining whether and which further disciplinary actions will be taken.

If further disciplinary actions were pursued, then within five business days after being notified of the final disposition of the case (see below) regarding further disciplinary actions, the associate dean notifies the student of the disposition.

Documentation Maintained by Associate Dean

The associate dean maintains a record of each violation of academic honesty not in the student's permanent record maintained by the school. This documentation includes the notification received from the course or program director, all notifications sent to the student, and the minutes of all panels discussed below. These records are confidential and are used only as described herein; copies of these records are not included in the student's records except as stated below.

If the determination is made to pursue further disciplinary actions against a student, any records of previous violations of academic honesty are transferred to the student's permanent record maintained by the school.

Upon graduation or other separation of a student from the school, any records of academic honesty violations by the student maintained by the associate dean are destroyed. Such destruction does not apply, however, to documentation in the student's permanent record maintained by the school.

Procedure for Determining Whether to Pursue Further Disciplinary Actions

If the course or program director, as applicable, recommended not pursuing further disciplinary actions and the associate dean has no previous record of a violation of academic honesty by the student, then no further disciplinary actions is pursued, and the student is so notified.

In all other cases, within five business days after receiving notification of a violation of academic honesty, the associate dean convenes a panel to determine whether to pursue further disciplinary actions. The panel consists of the course or program director; the associate dean, who serves as chair; and the associate dean for student affairs. The following information is made available to the panel:

- The notification sent by the course or program director to the associate dean, including the recommendation whether to pursue further disciplinary actions
- Any records maintained by the associate dean responsible for academic affairs concerning previous violations of academic honesty by the student
- The student's permanent record maintained by the school
- This policy, which includes the provision that the student's permanent record maintained by the school includes a record of the violation of academic honesty if the panel votes to pursue further disciplinary actions

The panel's activities are limited solely to discussing the case and any previous cases and then voting on the motion to pursue further disciplinary actions on the student. The chair may participate freely in the discussion and voting. The motion is approved by majority vote; no abstentions are permitted by panel members.

Procedure for Pursuing Further Disciplinary Actions

Within ten business days after the determination was made to pursue further disciplinary actions, the associate dean convenes a second panel to consider recommending further disciplinary actions. The panel consists of the following, as available within the required timeframe and as applicable:

- Chair of the department in which the program is located
- Chair of the department in which the course is located
- Program director
- The student's faculty advisor
- A student representative selected (elected or appointed) by the school's student association and not in the same course or program as the student under consideration
- Faculty appointed by the associate dean (at least one but not more than the number needed to have the total number of panel members equal seven)
- Associate dean

No member of the panel may be the person who made the determination of a violation of academic honesty. The associate dean chairs the panel. (Note: The constitution of the panel to include faculty at-large and a student is consistent with policies of the university and the Family Educational Rights and Privacy Act of 1974 (FERPA). See Discussion, below, for additional information and references.)

The panel interviews the course director (or program director, as applicable); the student under consideration, if he or she agrees to be interviewed; and, in addition, other persons the panel determines to be appropriate. The panel may not consider the student's refusal to be interviewed as evidence against the student. The panel may also request physical evidence. However, the student may not be compelled to provide such physical evidence, and the panel may not consider the student's refusal to do so as evidence against the student. Persons interviewed by the panel may provide physical evidence as they deem appropriate.

Within ten business days after being convened, the panel forwards to the dean its recommendation, which is one of the following decided by majority vote and includes an explanation for the recommendation:

- No further disciplinary action
- Further disciplinary action with specified action or actions
- No recommendation

Within ten days after receipt of the panel's recommendation, the dean, at his or her sole discretion, either accepts the panel's recommendation or reaches his or her own separate determination. The dean notifies the associate dean in writing of his or her decision and actions to be taken. If one such action is to recommend to the provost expulsion of the student from the university, the dean does so in writing as soon as practicable. Within four weeks the provost notifies the dean in writing of his or her decision and subsequent action or actions, if any.

Dismissal or expulsion from a program within the school results solely from dismissal or expulsion from the school. There is no provision for dismissal from a program within the school or for denial of repeating a course for violation of academic honesty.

Panel Members' Privacy Obligations

The above two panels and their members are bound by the university's guidelines to protect the privacy of student records. (See Discussion, below, for additional information and references.)

There are three guidelines in particular that are important for the panels:

- Panel membership does not include inherent rights to any and all education record information.
- Disclosure of student information to the panel does not constitute authorization to share that information with a third party without the student's written permission.
- Student information, when it has fulfilled its originally specified purposes with the panel, should be properly destroyed or returned to the originating office for appropriate disposition.

Student Record Documentation Requirements

If, and only if, further disciplinary actions were pursued, the following are included in the student's permanent record maintained by the school:

- The notice sent by the course director or, if the violation is not related to a specific course, the program director to the associate dean responsible for academic affairs about the violation and disciplinary actions taken within the course or program, as applicable
- Minutes of the panel that determined to pursue further disciplinary actions
- The notice sent by the associate dean to the student that the school intends to pursue further disciplinary actions and the process for determining any further disciplinary actions to be taken
- Minutes of the panel that recommended any further disciplinary actions to the dean
- The decision of the dean sent to the associate dean
- If applicable, the recommendation for expulsion or dismissal sent by the dean to the provost
- If applicable, the notice sent by the provost to the dean of his or her decision and any actions
- The notice sent by the associate dean to the student of the final disposition of the case if further disciplinary actions were pursued by the school

Absence of Consideration for Ignorance of Policies on Academic Honesty

Students are expected to be familiar with applicable policies on academic honesty. Ignorance of one or more of these policies neither excuses a violation nor is considered in determining disciplinary actions.

Absence of Right of Appeal

The determinations or actions of the course director or program director, dean, and the provost are final and may not be appealed by the student or a third party or reversed or modified by a third party, including but not limited to, the university.

Student's Right to File a Grievance

The student may file a grievance if he or she feels that he or she has been treated unfairly, inconsistently, not in accord with this policy, or has been discriminated against in the determination of a violation of academic honesty or of subsequent disciplinary actions. However, neither determination may be reversed or modified by the outcome of the grievance process.

Plagiarism, Electronic Sources of Information, and Common Knowledge

The following is intended to amplify and emphasize the inclusion of electronic sources of information as sources that must be cited as references when material is used from them. Information that is available through the Internet or from other electronic sources is not considered to be common knowledge solely because it is available widely and electronically. Designation of common knowledge is limited to knowledge that is widely known either generally or within a specific field or discipline. If a student is unclear whether an item of information is common knowledge or not, he or she is strongly advised to cite the source.

Preventive Measures by Students

Students should carefully read and consider this policy and other information about academic honesty made available to them by instructors, the school, and the university.

If a student is uncertain whether a planned activity or behavior could be construed as a violation of academic honesty, the student is strongly advised to discuss the matter with the course director or, if applicable, the program director prior to engaging in the activity or behavior.

If a student is uncertain whether the use of ideas or paraphrases from a source other than the student himself or herself may constitute plagiarism, the student is advised to cite the source.

Students are strongly encouraged to use plagiarism-prevention software made available to them by course instructors for analyzing preliminary drafts of their written works for possible problems. Reports of such analyses are available only to the submitting student.

Preventive Measures by School, including Plagiarism-Prevention Software

The school presents information on academic honesty and violations thereof during student orientation at the beginning of the academic year and makes such information available to students electronically.

Course directors are strongly encouraged to present and discuss information on academic honesty and violations thereof at the beginning of each course that they teach.

Course instructors use a range of strategies (including plagiarism-prevention software provided by the university) to compare student works with private and public information resources in order to identify possible plagiarism and academic dishonesty. Comparisons of student works require students to submit electronic copies of their final works to the plagiarism-prevention service. The service delivers the works to instructors along with originality reports detailing the presence or lack of possible problems. The service retains copies of final works and may request students' permission to share copies with other universities for the sole and limited purpose of plagiarism prevention and detection.

In addition instructors provide the opportunity for students to submit preliminary drafts of their works to the service to receive reports of possible problems. Such reports are available only to the submitting student. Copies of preliminary drafts are not retained by the service.

Disclaimers

Each student is solely responsible for his or her own academic honesty. Failure by the university or its employees to do or not do anything described in this policy does not excuse the student from violations of academic honesty or reduce the severity or extent of any resulting disciplinary actions.

Discussions by a student with the course director or other university personnel regarding future behaviors that may constitute violations of academic honesty do not excuse the student from investigations for violations of academic honesty or any subsequent actions against the student for such violations, regardless of the information received by the student.

Lack of availability or use of plagiarism-prevention software may not be considered to be grounds for excusing a student's violation of academic honesty or for reducing the severity of any disciplinary actions.

The information on academic honesty and on academic dishonesty presented in the university policy, reproduced in part, below, represents guidelines to help students understand several major aspects of academic honesty and dishonesty. These guidelines cannot and do not exhaustively define academic honesty or dishonesty. Any lack of completeness of this information may not be considered to be grounds for excusing a student's violation of academic honesty or for reducing the severity of any disciplinary actions.

Relevant Excerpts from the University Student Handbook

The following is excerpted from "Student Handbook: Code of Student Rights and Responsibilities" (<http://campuslife.louisville.edu/cloffice/handbook/pages/studentrights/>) and is included here for the student's convenience. The official Student Handbook is maintained by the university and is the source document upon which the school's policy is based.

[start of excerpt]

Section 5. ACADEMIC DISHONESTY

Academic dishonesty is prohibited at the University of Louisville. It is a serious offense because it diminishes the quality of scholarship, makes accurate evaluation of student progress impossible, and defrauds those in society who must ultimately depend upon the knowledge and integrity of the institution and its students and faculty.

Academic dishonesty includes, but is not limited to, the following:

1. CHEATING:

- a. Using or attempting to use books, notes, study aids, calculators, or any other documents, devices, or information in any academic exercise without prior authorization by the teacher.
- b. Copying or attempting to copy from another person's paper, report, laboratory work, computer program, or other work material in any academic exercise.
- c. Procuring or using tests or examinations, or any other information regarding the content of a test or examination, before the scheduled exercise without prior authorization by the teacher
- d. Unauthorized communication during any academic exercise.
- e. Discussing the contents of tests or examinations with students who have not yet taken the tests or examinations if the instructor has forbidden such discussion.
- f. Sending a substitute to take one's examination, test, or quiz, or to perform one's field or laboratory work; acting as a substitute for another student at any examination, test, or quiz, or at a field or laboratory work assignment.
- g. Conducting research or preparing work for another student, or allowing others to conduct one's research or prepare one's work, without prior authorization by the teacher.

Except when otherwise explicitly stated by the teacher, examination questions shall become public after they have been given.

2. FABRICATION:

Inventing or making up data, research results, information, or procedures, such as:

- a. Inventing or making up data, research results, information, or procedures.
- b. Inventing a record of any portion thereof regarding internship, clinical, or practicum experience.

3. FALSIFICATION:

Altering or falsifying information, such as:

- a. Changing grade reports or other academic records.
- b. Altering the record of experimental procedures, data, or results.
- c. Altering the record of or reporting false information about internship, clinical, or practicum experiences.
- d. Forging someone's signature or identification on an academic record.
- e. Altering a returned examination paper in order to claim that the examination was graded erroneously.
- f. Falsely citing a source of information.

4. MULTIPLE SUBMISSION:

Submission of substantial portions of the same academic work, including oral reports, for credit more than once without prior authorization by the teacher involved.;

5. PLAGIARISM:

Representing the words or ideas of someone else as one's own in any academic exercise, such as:

- a. Submitting as one's own a paper written by another person or by a commercial "ghost writing" service.
- b. Exactly reproducing someone else's words without identifying the words with quotation marks or by appropriate indentation, or without properly citing the quotation in a footnote or reference.
- c. Paraphrasing or summarizing someone else's work without acknowledging the source with a footnote or reference.
- d. Using facts, data, graphs, charts, or other information without acknowledging the source with a footnote or reference.

Borrowed facts or information obtained in one's research or reading must be acknowledged unless they are "common knowledge". Clear examples of "common knowledge" include the names of leaders of prominent nations, basic scientific laws, and the meaning of fundamental concepts and principles in a discipline. The specific audience for which a paper is written may determine what can be viewed as "common knowledge": for example, the facts commonly known by a group of chemists will differ radically from those known by a more general audience. Students should check with their teachers regarding what can be viewed as "common knowledge" within a specific field or assignment, but often the student will have to make the final judgment. When in doubt, footnotes or references should be used.

6. COMPLICITY IN ACADEMIC DISHONESTY:

Helping or attempting to commit an academically dishonest act.

The academic units may have additional guidelines regarding academic dishonesty. It is the student's responsibility to check with their teachers and academic units to obtain those guidelines.

Section 6. DISCIPLINE PROCEDURES FOR ACADEMIC DISHONESTY

Charges of academic dishonesty shall be handled through the appropriate academic unit level procedures.

An academic unit that determines that a student is guilty of academic dishonesty may impose any academic punishment on the student that it sees fit, including suspension or expulsion from the academic unit. A student has no right to appeal the final decision of an academic unit. However, a student who believes that he or she has been treated unfairly, has been discriminated against, or has had his or her rights abridged by the academic unit may file a grievance with the Unit Academic Grievance Committee, pursuant to the provisions of the Student Academic Grievance

Procedure; the Unit Academic Grievance Committee may not substitute its judgment on the merits for the judgment of the academic unit.

An academic unit that suspends or expels a student from the academic unit because the student has been found guilty of academic dishonesty may recommend to the university provost in writing that the student also be suspended or expelled from all other programs and academic units of the university. Within four weeks of receiving such a recommendation, the provost shall issue a written decision. Neither the student nor the academic unit shall have the right to appeal the provost's decision. However, a student who believes that he or she has been treated unfairly, has been discriminated against, or has had his or her rights abridged by the issuance of a decision by the provost may file a grievance with the University Student Grievance Committee, pursuant to the provisions of the Student Academic Grievance Procedure; the University Student Academic Grievance Committee may not substitute its judgment on the merits for the judgment of the provost.

[end of excerpt]

University Policy Relevant to Composition of Panel To Include Students and Faculty At-Large

The following is excerpted from "Guidelines to Protect the Privacy of Student Records at the University of Louisville," <http://library.louisville.edu/uarc/stupriv/guidpriv.htm>:

[start of excerpt]

PURPOSE

These guidelines are intended to help U of L students, faculty, staff, and administrators comply with the federal Family Educational Rights and Privacy Act.

WHAT IS THE FAMILY EDUCATIONAL RIGHTS AND PRIVACY ACT?

The Family Educational Rights and Privacy Act of 1974 (sometimes referred to as the Buckley Amendment, but more often by its acronym, FERPA) affords students certain rights concerning their education records. Under FERPA, U of L students have the right

- to inspect and review their education records;
- to seek to have their records amended; and
- to have some control over the disclosure of information from their records.

No one, not even a U of L student's parent or legal guardian, will have access to a student's education records, nor will their contents be disclosed, without the written consent of the student, except as provided by the Act.

U of L may release certain categories of "directory information," however, unless a student asks that some or all of that information not be disclosed.

FERPA, as amended, may be found at 20 U.S.C. 1232g; its final revised regulations may be found at 34 CFR 99. It is administered by the Family Policy Compliance Office of the U. S. Department of Education; for additional information, see the FPCO web site at <http://www.ed.gov/offices/OM/fpc>.

...

DISCLOSING EDUCATION RECORDS WHERE THE STUDENT'S CONSENT IS NOT REQUIRED

U of L may disclose education records to the following persons without the student's consent:

...

3. U of L officials with legitimate educational interests. ***A university official is a person employed by the university in an administrative, supervisory, academic or research, or support staff position*** (including the student grievance officer, law enforcement unit personnel, and health staff); a person or company with whom the university has contracted (such as an attorney, auditor, or collection agent); a person serving on the board of trustees; or ***a student serving on an official committee, such as a disciplinary or grievance committee***, or assisting another university official in performing his or her tasks. A university official has a legitimate educational interest if the official needs to review an education record in order to fulfill his or her professional responsibility. ***Although a person may be regarded as a "university official," he or she does not have inherent rights to any and all education record information.*** The university official must demonstrate a legitimate educational interest to the records custodian as opposed to a personal or private interest and such determination must be made on a case-by-case basis. When necessary, this determination is made by the director, University Archives and Records Center, who shall use the following criteria: a) is the person performing appropriate tasks that are specified in his or her position description or by a contract agreement; b) performing a task related to a student's education; c) performing a task related to the discipline of a student; d) providing a service or benefit relating to the student or student's family, such as health care, counseling, job placement, or financial aid. ***Disclosure to a university official having a legitimate educational interest does not constitute authorization to share that information with a third party without the student's written permission.*** Furthermore, ***such information, when it has fulfilled its originally specified purposes, should be properly destroyed or returned to the originating office for appropriate disposition.*** Appropriate U of L units must establish procedures for initially instructing and periodically reminding university officials of FERPA's confidentiality requirements before giving them access to computer systems containing student education records. These university officials must also be informed of the university's criteria for determining legitimate educational interest and their responsibility for assuring that access is not abused. [Emphases not in original.]

[end of excerpt]

Revision 3, 07/28/08

Link for Policy on Student Academic Honesty:

<https://docushare.louisville.edu/dsweb/Get/Document-10846/SPHIS+Policy+on+Student+Academic+Honesty+Rev+3.pdf>

Policy on Dismissal of Students for Academic Reasons

Policy

The school demands and expects satisfactory academic performance by its students. Unsatisfactory academic performance by a student may result in dismissal from the student's academic program and the school.

This policy applies to all students and academic programs in the school. Violation of academic honesty by students is covered separately in the Policy on Student Academic Honesty.

Unless otherwise modified, "school" refers to the School of Public Health and Information Sciences, and "associate dean" to the associate dean responsible for academic affairs.

Measures of Satisfactory Academic Performance for a Program

Each academic program is responsible for publishing its measures for satisfactory academic performance in the program, including placement on academic probation, removal from academic probation, and transition from provisional to full admission status. These measures may not be less demanding than those of the school and must be approved by the dean.

In the absence of measures specific to the program, the measures of the school apply.

Each academic program is responsible for notifying its students about the program's measures of satisfactory academic performance and about this policy at least once each academic year.

School's Measures for Satisfactory Academic Performance

For the purposes of this policy, graduate grade point average (GGPA) is on a 4-point scale and includes all courses listed on the student's graduate transcript, whether the courses are at the undergraduate or graduate level.

Measures for Probationary Admission

A student admitted with a grade point average below 2.75 on a 4-point scale is placed on academic probation upon enrollment. If the student does not attain a GGPA of 3.0 in the first term after enrollment, the student may be subject to dismissal for academic reasons. Other conditions and timeframes may be included in a probationary admission. If the student fails to meet these conditions or timeframes, the student may be subject to dismissal for academic reasons.

Measures for Good Standing

A student in an academic program of the School is in good standing if the student's GGPA is 3.0 or higher. A student must be in good standing in order to receive his or her degree.

Measures for Academic Probation

A student whose GGPA falls below 3.0 is placed on academic probation until the student attains GGPA of 3.0 or higher, which is expected to be achieved in one semester but may be extended upon approval by the dean of such a request submitted by the student's academic program.

Academic Performance and Probationary Admission

If a student's admission is probationary, the student's letter of admission states that the student will be placed on academic probation upon enrollment and also includes the performance measures and timeframe required for the student to be removed from academic probation. The program director notifies the associate dean in writing within ten working days following enrollment by the student and includes a copy of the student's letter of admission. If the student does not meet the performance measures within the timeframe and the academic program determines that the student should be recommended for dismissal, the program director notifies the student in writing of the recommendation, including reference to this policy, and notifies the associate dean in writing of the recommendation including a copy of the notice sent to the student. The latter two notices are sent within five working days following the close of the student's timeframe requirement.

Academic Performance and Academic Probation

If a student is placed on academic probation, the program director notifies the student in writing within five working days of his or her placement on probation and the performance measures and timeframe required for the student to be removed from academic probation. Within the same five working days, the program director sends the associate dean a copy of the notice sent to the student. If the student does not meet the performance measures within the timeframe and the academic program determines that the student should be recommended for dismissal, the program director notifies the student in writing of the recommendation, including reference to this policy, and notifies the associate dean in writing of the program's recommendation for dismissal and includes a copy of the notice sent to the student. The latter two notices are sent within five working days following the close of the student's timeframe requirement.

Other Academic Performance

A student who is not on academic probation may perform at such an unsatisfactory level that if the student were placed on academic probation, there is no possibility that the student could meet the measures for removal from academic probation. In such a case, if the academic program determines that the student should be recommended for dismissal, the program director notifies the student in writing of the recommendation, including reference to this policy, and notifies the

associate dean in writing of the program's recommendation for dismissal and includes a copy of the notice sent to the student. The latter two notices are sent within five working days following the program's determination, which is made within ten working days following the close of the semester or other grading period.

Actions following Notice of Provisional Admission or Placement on Probation

Upon receipt of a notice from a program director of probationary admission or placement on probation, the associate dean confirms that the applicable measures have been followed and acknowledges receipt of the notice within five working days following receipt of the notice.

Actions following Recommendation for Dismissal

Upon receipt of a recommendation for dismissal of a student for academic reasons, the associate dean reviews with the program director the circumstances of the case within two working days. If the associate dean agrees that the policies have been followed appropriately and that the recommendation is appropriate, the associate dean sends the recommendation for dismissal to the dean in writing within five working days following receipt of the initial recommendation. Within the same five working days, the associate dean notifies the student of the recommendation to the dean.

If the associate dean does not agree with the recommendation, the case is referred to the dean, who, within five working days, reviews the case with the associate dean and program director and decides whether to accept the dismissal recommendation or not. If the dean's decision is to accept the recommendation, then the associate dean notifies the student in writing of the his or her dismissal from the program ten within working days following receipt of the initial recommendation.

If the Dean's decision is not to proceed with the dismissal recommendation, then the Dean provides an alternate course of action, which is communicated to the student in writing by the program director within ten working days following receipt of the initial recommendation.

Student Grievances

Students who believe they have been treated unfairly, discriminated against, or have had their rights abridged in being dismissed for academic reasons may initiate grievances. However, the finding of the grievance process may not set aside or provide substitutes for dismissal decisions by the school.

Revision 0, 07/28/08

Link for Policy on Dismissal of Students for Academic Reasons:

<https://docushare.louisville.edu/dsweb/Get/Document-29878/SPHIS+Policy+on+Student+Dismissal+for+Academic+Reasons+rev+0.pdf>

Academic Programs

SPHIS academic programs are listed in the following table. An SPHIS academic program is a program whose curricula and students are managed separately from other SPHIS academic programs. Designation of a concentration as an SPHIS academic program is for the convenience of referencing within SPHIS and does not constitute recognition as a University academic program, which may not be a concentration.

Program	Type¹	Director	Unit²
Master of Public Health (MPH) ³	degree	Robert R. Jacobs, Ph.D.	School of Public Health and Information Sciences
Concentrations in:			
Biostatistics		Richard N. Baumgartner, Ph.D.	Dept. of Bioinformatics and Biostatistics
Environmental and Occupational Health Epidemiology		David J. Tollerud, M.D., MPH	Dept. of Environmental and Occupational Health
Health Management		Richard N. Baumgartner, Ph.D.	Dept. of Epidemiology and Population Health
Health Promotion and Behavior		Raymond Austin, Ph.D.	Dept. of Health Management and Systems Sciences
		Richard W. Wilson, DHSc, MPH	Dept. of Health Promotion and Behavioral Sciences
Master of Science (M.S.) in Epidemiology	degree	Richard N. Baumgartner, Ph.D.	Dept. of Epidemiology and Population Health
Master of Science (M.S.) in Biostatistics-Decision Science ⁴	degree	Dongfeng Wu, Ph.D.	Dept. of Bioinformatics and Biostatistics
Concentrations in:			
Biostatistics			
Decision Science			
Master of Science (M.Sc.) in Clinical Investigation Sciences ⁵	degree	Susan B. Muldoon, Ph.D., MPH	School of Public Health and Information Sciences

Academic Programs

Program	Type¹	Director	Unit²
Certificate in Clinical Investigation Sciences	certif	Susan B. Muldoon, Ph.D., MPH	School of Public Health and Information Sciences
Doctor of Philosophy (Ph.D.) in Public Health Sciences		Peter L. Walton, M.D.	School of Public Health and Information Sciences
Concentrations in:			
Environmental Health	conc	David J. Tollerud, M.D., MPH	Dept. of Environmental and Occupational Health
Epidemiology	conc	Richard N. Baumgartner, Ph.D.	Dept. of Epidemiology and Population Health
Health Management	conc	Raymond E. Austin, Ph.D.	Dept. of Health Management and Systems Sciences
Health Promotion	conc	Richard W. Wilson, DHSc, MPH	Dept. of Health Promotion and Behavioral Sciences
Doctor of Philosophy (Ph.D.) in Biostatistics	degree	Somnath Datta, Ph.D.	Dept. of Bioinformatics and Biostatistics
Emphases in:		Coordinators:	
Bioinformatics		Susmita Datta, Ph.D.	
Decision Science		Steven J. McCabe, M.D., M.Sc.	

Updated 08/10/09

¹ The type of SPHIS academic program. An SPHIS academic program is a program whose curricula and students are managed separately from other SPHIS academic programs. The following type key is used in the table:

- degree degree program with no concentrations or with concentrations having a formal, common core curriculum
- conc concentration in a doctoral degree program having no formal, common core curriculum with other concentrations in the degree program
- certif certificate program
- [none] not managed as an SPHIS academic program

Note: Designation of a concentration as an SPHIS academic program is for convenience of referencing within SPHIS and does not constitute recognition as a University academic program, which may not be a concentration.

² Unit responsible for the program or concentration.

³ Also part of the M.D.-MPH dual degree program with the School of Medicine and the Bachelor-MPH dual degree program with undergraduate units.

⁴ Also part of the Ph.D.-M.S. dual degree program with the Department of Mathematics in the College of Arts and Sciences.

⁵ Also part of the M.D.-M.Sc. dual degree with the School of Medicine.

Master of Public Health (MPH)

Program Director: Robert R. Jacobs, Ph.D.

Program Administrator: Tammi A. Thomas

Website: <http://louisville.edu/sphis/academics/master-of-public-health.html>

Introduction

The Master of Public Health (MPH) degree program is a school-based program designed to graduate students each with core competencies in public health and specialized competencies in one of the following concentrations: in biostatistics, environmental and occupational health, epidemiology, health management, and health promotion and behavior.

Graduates of the MPH program are prepared for positions in the public health work force, in health-related industries, and in academic organizations and for further professional or academic education.

Competencies

The MPH program has adopted the competencies published by the Association of Schools of Public Health. (ASPH Education Committee. “Master’s Degree in Public Health Core Competency Development Project, Version 2.3.” <http://www.asph.org/userfiles/version2.3.pdf>.)

The learning objectives for each course in the MPH curriculum are mapped to these ASPH competencies.

Admission

The ideal candidate for admission to the MPH program has received the equivalent of a bachelor’s degree or higher, has education or training in one or more health-related fields, has worked or studied in a public health-related situation, can comprehend and communicate effectively in English, has the recommendations of at least three persons in a health-related or advanced education field, has performed satisfactorily in one or more standardized test, and is very interested in pursuing a career in public health or a related field.

The requirements for admission to the MPH program are:

- Bachelor’s degree from an accredited institution or its equivalent
- Recommended minimum GPA of 3.0 on a 4.0 scale
- If candidate’s primary language is not English, one of the following:
 - Test of English as a Foreign Language (TOEFL) exam with a minimum score of 250 (after conversion for test type)
 - Passing the exit examination for the advanced level of the Intensive English as a Second Language Program at the University of Louisville
 - Degree from an accredited U.S. institution (requires provisional admission with evaluation of English language competency and potential requirement to pass the exit

examination for the advanced level of the Intensive English as a Second Language Program at the University of Louisville)

An application is considered once all of the following requirements have been received:

- Graduate application and payment of application fee.
- Three letters of recommendation written within the last twelve months.
- Official transcripts of all degrees.
- Resume or curriculum vitae.
- One-page personal statement written by the application that is a clear, substantive description of his or her goals in public health, noting any professional or research experience.
- Official score from any of the following standardized tests: GRE, MCAT, DAT, GMAT, or LSAT.
- **International applicants:** Foreign credential evaluation of all degrees from non-U.S. institutions. Please contact the MPH program prior to completing this requirement.

For information on the application process, please contact:

MPH Program
 School of Public Health and Information Sciences
 University of Louisville
 485 East Gray Street
 Louisville, KY 40202

sphismph@louisville.edu

Phone: 502-852-3289

Fax: 502-852-3294

Concentrations

Concentrations are offered in each of the five basic areas of public health by the department that focuses on the area. Each concentration is designed to develop the competencies needed by a public health worker in the corresponding area.

<i>Concentration</i>	<i>Department</i>
Biostatistics	Bioinformatics and Biostatistics
Environmental and Occupational Health	Environmental and Occupational Health Sciences
Epidemiology	Epidemiology and Population Health
Health Management	Health Management and Systems Sciences
Health Promotion and Behavior	Health Promotion and Behavioral Sciences

Requirements for acceptance to the concentrations in the MPH program are:

<i>Concentration</i>	<i>Concentration Acceptance Requirements</i>
All	<ul style="list-style-type: none"> • Student in good standing in MPH program • Successful completion of core courses
Biostatistics	<ul style="list-style-type: none"> • Grade from PHST-500 Introduction to Biostatistics • Other evidence of analytic ability, for example: <ul style="list-style-type: none"> - Quantitative score from at least one of these exams: GRE, GMAT, or DAT - Transcripts showing other college-level mathematics or statistics course - Instructor recommendation - Participation in or successful completion of a research project with analytical component • Exceptions may be granted.
Environmental and occupational health	No additional requirements.
Epidemiology	<ul style="list-style-type: none"> • Grade from PHEP-501 Introduction to Epidemiology • Grade from PHST-500 Introduction to Biostatistics • Exceptions may be granted.
Health management	No additional requirements.
Health promotion and behavior	No additional requirements.

Curriculum

The curriculum consists of courses in four areas: core (6 courses), concentration (5), practicum experience (2), and integrating experience (3). Core courses and two integrating experience courses are completed prior to taking courses in other areas. Toward the end of taking these courses, each student identifies his or her area of concentration and seeks admission to the department offering the concentration. Once admitted into the concentration, the student takes concentration course, completes the practicum experience, and takes the remaining integrating experience course, which includes a comprehensive written examination focused on the School's core MPH competencies.

Full-time students are expected to complete the program and graduate in two years. Part-time students are required to complete the program and graduate within six years.

Faculty Advisor

On matriculation, each student is assigned a faculty advisor and is required to meet at least twice each semester with his or her advisor. Advisors are available to address general academic and public health questions and to assist the student in declaration of his or her area of concentration for the MPH degree.

After admission into a concentration, each student is assigned a faculty advisor from the concentration department who serves as academic practicum advisor, academic mentor, and counselor on career and employment opportunities, professional development, and opportunities beyond graduate school.

Program of Study

The program of study is predetermined for courses in core, practicum experience, and integrating experience areas and the majority of the concentration area. Concentrations have one or two elective courses.

Degree Requirements

Requirements for the MPH degree are:

- Successful completion of core, concentration, practicum experience, and integrating experience coursework
- Completion of all deliverables for the practicum experience
- Minimum score of 80% on either of two tries of a comprehensive examination on MPH competencies (part of PPHP-697 Integrating Learning and Experience in Public Health) or successful completion of remediation project (part of PPHP-601)

Coursework

47 total credit hours:

- 18 credit hours of core coursework
- 6 credit hours of practicum experience
- 8 credit hours of integrating experience
- 15 credit hours of concentration coursework

<i>Required Coursework</i>			
<i>Semester</i>	<i>Course #</i>	<i>Course Title (and Area, as needed)</i>	<i>Credit Hours</i>
Fall I	PHEP-501	Introduction to Epidemiology (core)	3
	PHST-500	Introduction to Biostatistics (core)	3
	PHMS-501	Introduction to Public Health Practice and Administration (core)	3
	PPPH-696	Issues in Public Health (integrating experience)	2
	Semester Total		
Spring I	PHEH-500	Introduction to Environmental Health Sciences (core)	3
	PHPB-501	Introduction to Health Behavior (core)	3
	PHMS-618	Public Health Informatics (core)	3
	PPPH-614	Critical Thinking and Program Evaluation (integrating experience)	3
	Semester Total		

<i>Required Coursework</i>			
<i>Semester</i>	<i>Course #</i>	<i>Course Title (and Area, as needed)</i>	<i>Credit hours</i>
Fall II		Concentration course	3
		Concentration course	3
		Concentration course	3
	PHPH-679	Public Health Practicum Experience	3
	Semester Total		12
Spring II		Concentration course	3
		Concentration course	3
	PHPH-679	Public Health Practicum Experience	3
	PHPH-697	Integrating Learning and Experience in Public Health	3
	Semester Total		12
Degree Total			47

PHPH-696 Issues in Public Health

The Issues in Public Health course is part of the integrating experience and is a trans-disciplinary course designed to integrate what students learned in other coursework and experiences and the application of these lessons to the broader scope of public health. Working in teams and on selected public health projects or initiatives are the focus of the course.

PHPH-614 Critical Thinking and Program Evaluation

The Critical Thinking and Program Evaluation course is an integrating experience course and focuses on the identification of public health problems and planning appropriate responses and evaluations. Planning and evaluation skills are considered pivotal learning concepts for the MPH degree and for successful public health practice.

PHPH-679 Public Health Practicum Experience

The Practicum Experience places the student in a non-academic organization providing public health-related services. The practicum experience and its required deliverables must be completed to fulfill degree program requirements.

PHPH-697 Integrating Learning and Experience in Public Health

This course is designed to synthesize and integrate knowledge acquired in course work and other learning experiences and to apply this knowledge to situations that represent various aspects of professional public health practice. Through the evaluation of previous cases and the development of a new case from current and emerging areas of public health, students working in teams demonstrate their abilities in applying general and specific public health knowledge they have learned through their courses of study.

The course includes a comprehensive exam that assesses a student's grasp of core public health concepts prior to graduation. The exam uses the format of the National Board of Public Health Examiners and includes questions covering the five core and cross-cutting competencies from the Association of Schools of Public Health (ASPH). The exam format consists exclusively of multiple-choice questions. Some questions may be grouped in a series following a short vignette, but they remain in an objective, multiple-choice format.

The exam is given twice, once in the middle of the semester and once at the end of the semester. All students are required to take the exam the first time it is given. Students who pass the exam (a grade of 80% or better) the first time are not required to take the exam the second time unless they want to try to improve their score. The higher score is used to calculate the student's portion of the grade for the exam. Students not passing the exam the first time must retake the exam the second time.

A student failing to make a grade of 80% or better either time the exam is given receives an I (incomplete) for the course regardless of the scores on other evaluation components. The student is required to enroll in PHPH-601 for the next term or semester (usually summer term) and to successfully complete a remediation project as specified by the course instructors by the end of the term or semester in order to graduate. If the student successfully completes the project, the student's grade of I is replaced with one calculated using an 80% score on the individual comprehensive examination. If the project is not successfully completed, the student's grade for the course is F, which means the student does not graduate.

Biostatistics Concentration

Coursework

<i>Biostatistics Concentration Coursework</i>			
<i>Semester</i>	<i>Course #</i>	<i>Course Title</i>	<i>Credit hours</i>
Fall II	PHCI-624	Clinical Trials I	2
	PHST-726	Clinical Trials Statistics Laboratory	1
	PHST-620	Introduction to Statistical Computing	3
		Concentration elective course	3
	PHPH-679	Public Health Practicum Experience	3
		Semester Total	

<i>Biostatistics Concentration Coursework</i>			
<i>Semester</i>	<i>Course #</i>	<i>Course Title</i>	<i>Credit hours</i>
Spring II	PHST-640	Statistical Methods for Research Design in Health Studies	3
	PHST-681	Biostatistical Methods II	3
	PHPH-679	Public Health Practicum Experience	3
	PHPH-697	Integrating Learning and Experience in Public Health	3
	Semester Total		
Concentration Total			24

Electives

The elective course in the biostatistics concentration may be selected from any three credit-hour, graduate-level course in the University with approval of the student's faculty advisor and the program director.

*Environmental and Occupational Health Concentration**Coursework*

<i>Environmental and Occupational Health Concentration Coursework</i>			
<i>Semester</i>	<i>Course #</i>	<i>Course Title</i>	<i>Credit Hours</i>
Fall II	PHEH-610	Occupational Health and Safety	3
	PHEH-651	Advanced Environmental Health Sciences	3
	PHPH-630	Geographic Information Systems in Public Health	3
	PHPH-679	Public Health Practicum Experience	3
	Semester Total		
Spring II	PHEH-620	Global Issues on Environmental and Occupational Health	3
		Concentration elective course	3
	PHPH-679	Public Health Practicum Experience	3
	PHPH-697	Integrating Learning and Experience in Public Health	3
	Semester Total		
Concentration Total			24

Electives

The elective course in the environmental and occupational health concentration may be selected from any three credit-hour, graduate-level course in the University with approval of the student's faculty advisor and the program director.

Epidemiology Concentration*Coursework*

<i>Epidemiology Concentration Coursework</i>			
<i>Semester</i>	<i>Course #</i>	<i>Course Title</i>	<i>Credit Hours</i>
Fall II	PHEP-602	Epidemiologic Methods	3
	PHEP-616	Disease Surveillance	3
		Concentration elective course	3
	PHPH-679	Public Health Practicum Experience	3
	Semester Total		
Spring II	PHEP-617	Field Epidemiology	3
	PHEP-655	Emerging Issues in Epidemiology	3
	PHPH-679	Public Health Practicum Experience	3
	PHPH-697	Integrating Learning and Experience in Public Health	3
	Semester Total		
Concentration Total			24

Electives

The elective courses in the epidemiology concentration may be selected from any three credit-hour, graduate-level course in the University with approval of the student's faculty advisor and the program director.

Health Management Concentration*Coursework*

<i>Health Management Concentration Coursework</i>			
<i>Semester</i>	<i>Course #</i>	<i>Course Title</i>	<i>Credit Hours</i>
Fall II	PHMS-603	Legal and Bioethical Aspects of Public Health	3
	PHMS-615	Introduction to Health Systems	3
		Concentration elective course	3
	PHPH-679	Public Health Practicum Experience	3
	Semester Total		

<i>Health Management Concentration Coursework</i>			
<i>Semester</i>	<i>Course #</i>	<i>Course Title</i>	<i>Credit Hours</i>
Spring II	PHMS-605	Governance and Management of Healthcare Organizations	3
	PHMS-607	Managing Healthy Communities	3
	PHPH-679	Public Health Practicum Experience	3
	PHPH-697	Integrating Learning and Experience in Public Health	3
	Semester Total		
Concentration Total			24

Electives

The elective course in the health management concentration may be selected from any three credit-hour, graduate-level course in the University with approval of the student's faculty advisor and the program director.

*Health Promotion and Behavior Concentration**Coursework*

<i>Health Promotion and Behavior Concentration Coursework</i>			
<i>Semester</i>	<i>Course #</i>	<i>Course Title</i>	<i>Credit Hours</i>
Fall II	PHPB-604	Health Decision and Risk Analysis	3
	PHPB-615	Public Health Program Evaluation	3
		Concentration elective course	3
	PHPH-679	Public Health Practicum Experience	3
	Semester Total		
Spring II	PHMS-607	Managing Healthy Communities	3
	PHPB-612	Health Communication Campaigns	3
	PHPH-679	Public Health Practicum Experience	3
	PHPH-697	Integrating Learning and Experience in Public Health	3
	Semester Total		
Concentration Total			24

Electives

The elective course in the health promotion and behavior concentration may be selected from any three credit-hour, graduate-level course in the University with approval of the student's faculty advisor and the program director.

Master of Public Health (MPH) in Dual Bachelor-MPH Degree

Program Director: Robert R. Jacobs, Ph.D.

Program Administrator: Tammi A. Thomas

Website: <http://louisville.edu/sphis/academics/master-of-public-health.html>

Introduction

The dual bachelor-MPH degree program is a five-year program. The first four years are undergraduate studies, including five core public health courses. An undergraduate student in the bachelor-MPH program is already or will soon become enrolled in an undergraduate program culminating in either the bachelor of science (B.S.) or bachelor of arts (B.A.) degree in the student's chosen major field and academic unit.

The fifth year, including the summer following graduation with a bachelor degree, is graduate studies in public health, leading to the master of public health (MPH) degree. The master of public health (MPH) degree program is a school-based program designed to graduate students with core competencies in public health and specialized competencies in one of the following concentrations: biostatistics, environmental and occupational health, epidemiology, health management, and health promotion and behavior.

Graduates of the bachelor-MPH program are prepared for positions in the public health work force, in health-related industries, and in academic organizations and for further professional or academic education.

Competencies

Competencies for the bachelor degree vary and are determined by the various undergraduate degree programs.

The MPH program has adopted the competencies published by the Association of Schools of Public Health. (ASPH Education Committee. "Master's Degree in Public Health Core Competency Development Project, Version 2.3." <http://www.asph.org/userfiles/version2.3.pdf>.)

The learning objectives for each course in the MPH curriculum are mapped to these ASPH competencies.

Admission

Admission criteria for the undergraduate component of the bachelor-MPH program are:

- Undergraduate student in good standing in the University of Louisville
- Completion of at least 45 credit hours of undergraduate studies
- GPA of 3.3 or higher

- Permission of the director of the undergraduate program (“major field”) in which the student is or becomes enrolled.

The major field is not required to be related to the health sciences.

Application requirements for the undergraduate component are:

- Completed program application

The application includes name, contact information, and grant of permission for the school to access the applicant’s university records.

To continue in the undergraduate component, a student must:

- Maintain student status in the university
- Earn a B- or higher in each of the five required public health courses

Criteria for admission to the MPH component are:

- Bachelor degree from the University of Louisville
- GPA of 3.25 or higher for unconditional admission, or 3.0 to 3.2499 for conditional admission
- Grade average of 3.0 in the five required public health courses with no grade below B-

Application requirements for the MPH component are:

- Completed graduate application and \$50 application fee

For information on the application process, please contact:

MPH Program
School of Public Health and Information Sciences
University of Louisville
485 East Gray Street
Louisville, KY 40202

sphismph@louisville.edu

Phone: 502-852-3289

Fax: 502-852-3294

MPH Concentrations

Concentrations are offered in each of the five basic areas of public health by the department that focuses on the area. Each concentration is designed to develop the competencies needed by a public health worker in the corresponding area. Bachelor-MPH students select their

concentrations soon after admission to the MPH component of the program following graduation with their bachelor degrees.

<i>MPH Concentration</i>	<i>Department</i>
Biostatistics	Bioinformatics and Biostatistics
Environmental and Occupational Health	Environmental and Occupational Health Sciences
Epidemiology	Epidemiology and Population Health
Health Management	Health Management and Systems Sciences
Health Promotion and Behavior	Health Promotion and Behavioral Sciences

Requirements for acceptance to the MPH concentrations in the MPH program are:

<i>MPH Concentration</i>	<i>Acceptance Requirements</i>
All	<ul style="list-style-type: none"> • Student in good standing in MPH program • Successful completion of core courses
Biostatistics	<ul style="list-style-type: none"> • Grade from PHST-500 Introduction to Biostatistics • Other evidence of analytic ability, for example: <ul style="list-style-type: none"> - Quantitative score from at least one of these exams: GRE, GMAT or DAT - Transcripts showing other college-level mathematics or statistics course - Instructor recommendation - Participation in or successful completion of a research project with analytical component • Exceptions may be granted.
Environmental and occupational health	No additional requirements.
Epidemiology	<ul style="list-style-type: none"> • Grade from PHEH-501 Introduction to Epidemiology • Grade from PHST-500 Introduction to Biostatistics • Exceptions may be granted.
Health management	No additional requirements.
Health promotion and behavior	No additional requirements.

MPH Curriculum

The curriculum consists of courses in four areas: core (6 courses), concentration (5), practicum experience (2), and integrating experience (3). Core courses and two integrating experience courses are completed prior to taking courses in other areas. Toward the end of taking these courses, each student identifies his or her area of concentration and seeks admission to the department offering the concentration. Once admitted into the concentration, the student takes concentration courses, completes the practicum experience, and takes the remaining integrating experience course, which includes a comprehensive written examination focused on the school's core MPH competencies.

Faculty Advisor

On admission to the bachelor-MPH program, the student is assigned an program advisor and is required to meet at least twice each semester with his or her advisor. Advisors are available to address questions about program requirements and extra-curricular opportunities in public health.

On admission to the MPH component, each student is assigned an MPH faculty advisor and is required to meet at least twice each semester with his or her advisor. Advisors are available to address general academic and public health questions and to assist the student in declaration of his or her area of concentration for the MPH degree.

After admission into a concentration, each student is assigned an MPH faculty advisor from the concentration department who serves as academic mentor and counselor on career and employment opportunities, professional development, and opportunities beyond graduate school.

MPH Program of Study

The MPH program of study is predetermined for courses in core, practicum experience, and integrating experience areas and the majority of the concentration area. Concentrations may have one or two elective courses.

MPH Degree Requirements

Requirements for the MPH degree are:

- Successful completion of core, concentration, practicum experience, and integrating experience coursework
- Completion of all deliverables for the practicum experience
- Minimum score of 80% on either of two tries of a comprehensive examination on MPH competencies (part of PPH-697 Integrating Learning and Experience in Public Health) or successful completion of remediation project (part of PPH-601)

Coursework

47 total credit hours:

18 credit hours of core coursework

6 credit hours of practicum experience

8 credit hours of integrating experience

15 credit hours of concentration coursework

<i>Required Coursework</i>			
<i>Timing</i>	<i>Course #</i>	<i>Course Title (and Area, as needed)</i>	<i>Credit Hours</i>
Under-graduate	PHEP-501	Introduction to Epidemiology (core)	3
	PHST-500	Introduction to Biostatistics (core)	3

<i>Required Coursework</i>			
<i>Timing</i>	<i>Course #</i>	<i>Course Title (and Area, as needed)</i>	<i>Credit Hours</i>
(Yrs 3-4)	PHMS-501	Introduction to Public Health Practice and Administration (core)	3
	PHEH-500	Introduction to Environmental Health Sciences (core)	3
	PHPB-501	Introduction to Health Behavior (core)	3
	Undergraduate subtotal		15
Summer (Yr 5)	PHPH-696	Issues in Public Health (integrating experience)	2
	PHMS-618	Public Health Informatics (core)	3
	PHPB-614	Critical Thinking and Program Evaluation (integrating experience)	3
	Summer subtotal		8
Fall (Yr 5)		Concentration course	3
		Concentration course	3
		Concentration course	3
	PHPH-679	Practicum Experience	3
	Fall subtotal		12
Spring (Yr 5)		Concentration course	3
		Concentration course	3
	PHPH-679	Practicum Experience	3
	PHPH-697	Integrating Learning and Experience in Public Health	3
	Spring subtotal		12
MPH Degree Total			47

PHPH-696 Issues in Public Health

The Issues in Public Health course is part of the integrating experience and is a trans-disciplinary course designed to integrate what students learned in other coursework and experiences and the application of these lessons to the broader scope of public health. Working in teams and on selected public health projects or initiatives are the focus of the course.

PHPH-614 Critical Thinking and Program Evaluation

The Critical Thinking and Program Evaluation course is an integrating experience course and focuses on the identification of public health problems and planning appropriate responses and evaluations. Planning and evaluation skills are considered pivotal learning concepts for the MPH degree and for successful public health practice.

PHPH-679 Practicum Experience

The Practicum Experience places the student in a non-academic organization providing public health-related services. The practicum experience and its required deliverables must be completed to fulfill degree program requirements.

PHPH-697 Integrating Learning and Experience in Public Health

This course is designed to synthesize and integrate knowledge acquired in course work and other learning experiences and to apply this knowledge to situations that represent various aspects of professional public health practice. Through the evaluation of previous cases and the development of a new case from current and emerging areas of public health, students working in teams demonstrate their abilities in applying general and specific public health knowledge they have learned through their courses of study.

The course includes a comprehensive exam that assesses a student's grasp of core public health concepts prior to graduation. The exam uses the format of the National Board of Public Health Examiners and includes questions covering the five core and cross-cutting competencies from the Association of Schools of Public Health (ASPH). The exam format consists exclusively of multiple-choice questions. Some questions may be grouped in a series following a short vignette, but they remain in an objective, multiple-choice format.

The exam is given twice, once in the middle of the semester and once at the end of the semester. All students are required to take the exam the first time it is given. Students who pass the exam (a grade of 80% or better) the first time are not required to take the exam the second time unless they want to try to improve their score. The higher score is used to calculate the student's portion of the grade for the exam. Students not passing the exam the first time must retake the exam the second time.

A student failing to make a grade of 80% or better either time the exam is given receives an I (incomplete) for the course regardless of the scores on other evaluation components. The student is required to enroll in PHPH-601 for the next term or semester (usually summer term) and to successfully complete a remediation project as specified by the course instructors by the end of the term or semester in order to graduate. If the student successfully completes the project, the student's grade of I is replaced with one calculated using an 80% score on the individual comprehensive examination. If the project is not successfully completed, the student's grade for the course is F, which means the student does not graduate.

Biostatistics Concentration

Coursework

<i>Biostatistics Concentration Coursework</i>			
<i>Timing</i>	<i>Course #</i>	<i>Course Title</i>	<i>Credit Hours</i>
Fall (Yr 5)	PHCI-624	Clinical Trials I	2
	PHST-726	Clinical Trials Statistics Laboratory	1
	PHST-620	Introduction to Statistical Computing	3

<i>Biostatistics Concentration Coursework</i>			
<i>Timing</i>	<i>Course #</i>	<i>Course Title</i>	<i>Credit Hours</i>
		Concentration elective course	3
	PHPH-679	Public Health Practicum Experience	3
	Semester Total		12
Spring (Yr 5)	PHST-640	Statistical Methods for Research Design in Health Studies	3
	PHST-681	Biostatistical Methods II	3
	PHPH-679	Public Health Practicum Experience	3
	PHPH-697	Integrating Learning and Experience in Public Health	3
	Semester Total		12
Concentration Total			24

Electives

The elective course in the biostatistics concentration may be selected from any 3 credit-hour, graduate-level course in the university with approval of the student's faculty advisor and the program director.

*Environmental and Occupational Health Concentration**Coursework*

<i>Environmental and Occupational Health Concentration Coursework</i>			
<i>Timing</i>	<i>Course #</i>	<i>Course Title</i>	<i>Credit Hours</i>
Fall (Yr 5)	PHEH-610	Occupational Health and Safety	3
	PHEH-651	Advanced Environmental Health Sciences	3
	PHPH-630	Geographic Information Systems in Public Health	3
	PHPH-679	Public Health Practicum Experience	3
	Semester Total		12
Spring (Yr 5)	PHEH-620	Global Issues on Environmental and Occupational Health	3
		Concentration elective course	3
	PHPH-679	Public Health Practicum Experience	3
	PHPH-697	Integrating Learning and Experience in Public Health	3
	Semester Total		12
Concentration Total			24

Electives

The elective courses in the environmental and occupational health concentration may be selected from any 3 credit-hour, graduate-level course in the university with approval of the student's faculty advisor and the program director.

*Epidemiology Concentration**Coursework*

<i>Epidemiology Concentration Coursework</i>			
<i>Timing</i>	<i>Course #</i>	<i>Course Title</i>	<i>Credit Hours</i>
Fall (Yr 5)	PHEP-602	Epidemiologic Methods	3
	PHEP-616	Disease Surveillance	3
		Concentration elective course	3
	PHPH-679	Public Health Practicum Experience	3
	Semester Total		
Spring (Yr 5)	PHEP-617	Field Epidemiology	3
	PHEP-655	Emerging Issues in Epidemiology	3
	PHPH-679	Public Health Practicum Experience	3
	PHPH-697	Integrating Learning and Experience in Public Health	3
	Semester Total		
Concentration Total			24

Electives

The elective courses in the epidemiology concentration may be selected from any 3 credit-hour, graduate-level course in the university with approval of the student's faculty advisor and the program director.

*Health Management Concentration**Coursework*

<i>Health Management Concentration Coursework</i>			
<i>Timing</i>	<i>Course #</i>	<i>Course Title</i>	<i>Credit Hours</i>
Fall (Yr 5)	PHMS-603	Legal and Bioethical Aspects of Public Health	3
	PHMS-615	Introduction to Health Systems	3
		Concentration elective course	3
	PHPH-679	Public Health Practicum Experience	3
	Semester Total		

<i>Health Management Concentration Coursework</i>			
<i>Timing</i>	<i>Course #</i>	<i>Course Title</i>	<i>Credit Hours</i>
Spring (Yr 5)	PHMS-605	Governance and Management of Healthcare Organizations	3
	PHMS-607	Managing Healthy Communities	3
	PHPH-679	Public Health Practicum Experience	3
	PHPH-697	Integrating Learning and Experience in Public Health	3
	Semester Total		12
Concentration Total			24

Electives

The elective course in the health management concentration may be selected from any 3 credit-hour, graduate-level course in the university with approval of the student's faculty advisor and the program director.

*Health Promotion and Behavior Concentration**Coursework*

<i>Health Promotion and Behavior Concentration Coursework</i>			
<i>Timing</i>	<i>Course #</i>	<i>Course Title</i>	<i>Credit Hours</i>
Fall (Yr 5)	PHPB-604	Health Decision and Risk Analysis	3
	PHPB-615	Public Health Program Evaluation	3
		Concentration elective course	3
	PHPH-679	Public Health Practicum Experience	3
	Semester Total		12
Spring (Yr 5)	PHMS-607	Managing Healthy Communities	3
	PHPB-612	Health Communication Campaigns	3
	PHPH-679	Public Health Practicum Experience	3
	PHPH-697	Integrating Learning and Experience in Public Health	3
	Semester Total		12
Concentration Total			24

Electives

The elective course in the health promotion and behavior concentration may be selected from any 3 credit-hour, graduate-level course in the university with approval of the student's faculty advisor and the program director.

Master of Public Health (MPH) in Dual M.D.-MPH Degree

Program Director: Robert R. Jacobs, Ph.D.

Program Administrator: Tammi A. Thomas

Website: <http://louisville.edu/sphis/academics/master-of-public-health.html>

Introduction

The Master of Public Health (MPH) degree program is a School-based program designed to graduate students each with core competencies in public health and specialized competencies in one of the following concentrations: biostatistics, environmental and occupational health, epidemiology, health management, and health promotion and behavior.

Graduates of the MPH program are prepared for positions in the public health work force, in health-related industries, and in academic organizations and for further professional or academic education.

The dual M.D.-MPH degree program is a five-year program.

Competencies

The MPH program has adopted the competencies published by the Association of Schools of Public Health. (ASPH Education Committee. "Master's Degree in Public Health Core Competency Development Project, Version 2.3." <http://www.asph.org/userfiles/version2.3.pdf>.)

The learning objectives for each course in the MPH curriculum are mapped to these ASPH competencies.

Admission

Admission to the MPH component of the dual M.D.-MPH degree program is open to any first-, second-, or third-year medical student in good standing attending the University of Louisville School of Medicine. There are two schedule options, M.D.1-MPH and M.D.3-MPH, presented in detail below. Briefly, in the M.D.1-MPH option, the MPH component begins in the summer following the first year of medical school; and in the M.D.3-MPH option, in the summer following the third year of medical school.

Application to the M.D.-MPH program can be made at any time before or during the first three years of medical school. Medical students are conditionally accepted on application; actual admission to the MPH component does not occur until completion of the first year of medical school for the M.D.1-MPH option or completion of the third year of medical school for the M.D.3-MPH option. Admission is contingent on being in good standing in medical school, which is defined as having successfully completed all medical school courses up to the start of the MPH component.

For information on the application process, please contact:

MPH Program
 School of Public Health and Information Sciences
 University of Louisville
 485 East Gray Street
 Louisville, KY 40202

sphismph@louisville.edu

Phone: 502-852-3289

Fax: 502-852-3294

Concentrations

Concentrations are offered in each of the five basic areas of public health by the department that focuses on the area. Each concentration is designed to develop the competencies needed by a public health worker in the corresponding area.

<i>Concentration</i>	<i>Department</i>
Biostatistics	Bioinformatics and Biostatistics
Environmental and Occupational Health	Environmental and Occupational Health Sciences
Epidemiology	Epidemiology and Population Health
Health Management	Health Management and Systems Sciences
Health Promotion and Behavior	Health Promotion and Behavioral Sciences

Requirements for acceptance to the concentrations in the MPH program are:

<i>Concentration</i>	<i>Concentration Acceptance Requirements</i>
All	<ul style="list-style-type: none"> • Student in good standing in MPH program • Successful completion of core courses
Biostatistics	<ul style="list-style-type: none"> • Grade from PHST-500 Introduction to Biostatistics • Other evidence of analytic ability, for example: <ul style="list-style-type: none"> - Quantitative score from at least one of these exams: GRE, GMAT or DAT - Transcripts showing other college-level mathematics or statistics course - Instructor recommendation - Participation in or successful completion of a research project with analytical component • Exceptions may be granted.
Environmental and occupational health	No additional requirements.

Concentration	Concentration Acceptance Requirements
Epidemiology	<ul style="list-style-type: none"> • Grade from PHEH-501 Introduction to Epidemiology • Grade from PHST-500 Introduction to Biostatistics • Exceptions may be granted.
Health management	No additional requirements.
Health promotion and behavior	No additional requirements.

Curriculum

The curriculum consists of courses in four areas: core (6 courses), concentration (5), practicum experience (2), and integrating experience (3). Core courses and two integrating experience courses are completed prior to taking courses in other areas. Toward the end of taking these courses, each student identifies his or her area of concentration and seeks admission to the department offering the concentration. Once admitted into the concentration, the student takes concentration course, completes the practicum experience, and takes the remaining integrating experience course, which includes a comprehensive written examination focused on the school's core MPH competencies.

M.D.-MPH students are expected to complete the dual degree program in five years.

M.D.1-MPH Schedule Option

<i>M.D.1-MPH Program Schedule by Semester</i>		
<i>Year 1</i>	<i>Summer</i>	May – early Aug: open early Aug: medical school orientation
	<i>Fall</i>	Medical school first year
	<i>Spring</i>	
<i>Year 2</i>	<i>Summer</i>	mid-May – late-Jun: MPH first semester late-Jun – mid-Aug: open
	<i>Fall</i>	Medical school second year
	<i>Spring</i>	
<i>Year 3</i>	<i>Summer</i>	M.D. Part 1 Board Exams (done by Jun 15) late-Jun – early-Aug: MPH second semester
	<i>Fall</i>	MPH third and fourth semesters
	<i>Spring</i>	
<i>Year 4</i>	<i>Summer</i>	May – late Jun: open/refresh clinical skills late Jun: Medical school third year begins
	<i>Fall</i>	Medical school third year
	<i>Spring</i>	
<i>Year 5</i>	<i>Summer</i>	
	<i>Fall</i>	Medical school fourth year
	<i>Spring</i>	

<i>M.D.1-MPH Program Schedule by Month</i>												
	<i>May</i>	<i>Jun</i>	<i>Jul</i>	<i>Aug</i>	<i>Sep</i>	<i>Oct</i>	<i>Nov</i>	<i>Dec</i>	<i>Jan</i>	<i>Feb</i>	<i>Mar</i>	<i>Apr</i>
<i>Yr 1</i>	open				Medical school first year							
<i>Yr 2</i>	MPH 1 st		open		Medical school second year							
<i>Yr 3</i>	Boards, Pt 1		MPH 2 nd		MPH third semester				MPH fourth semester			
<i>Yr 4</i>	refresher		Medical school third year									
<i>Yr 5</i>	Medical school fourth year											

M.D.1-MPH students who successfully complete the first three years are eligible to receive their MPH degree in May of their third year.

The content of the first two semesters of the MPH program is covered in two 6½-week sessions in successive summers. These sessions are not limited to M.D.-MPH students.

M.D.3-MPH Schedule Option

<i>M.D.3-MPH Program Schedule by Semester</i>		
<i>Year 1</i>	<i>Summer</i>	May – early Aug: open early Aug: medical school orientation
	<i>Fall</i>	Medical school first year
	<i>Spring</i>	
<i>Year 2</i>	<i>Summer</i>	mid-May – mid-Aug: open
	<i>Fall</i>	Medical school second year
	<i>Spring</i>	
<i>Year 3</i>	<i>Summer</i>	M.D. Part 1 Board Exams (done by Jun 15) Late Jun – mid-Aug: open
	<i>Fall</i>	Medical school third year (less last 6-week rotation, either family medicine or psychiatry)
	<i>Spring</i>	
<i>Year 4</i>	<i>Summer</i>	mid-May – late Jun: MPH first semester late Jun – early Aug: MPH second semester
	<i>Fall</i>	MPH third and fourth semesters
	<i>Spring</i>	
<i>Year 5</i>	<i>Summer</i>	May – late Jun: last 6-week rotation postponed from medical school third year
	<i>Fall</i>	Medical school fourth year
	<i>Spring</i>	

<i>M.D.3-MPH Program Schedule by Month</i>												
	<i>May</i>	<i>Jun</i>	<i>Jul</i>	<i>Aug</i>	<i>Sep</i>	<i>Oct</i>	<i>Nov</i>	<i>Dec</i>	<i>Jan</i>	<i>Feb</i>	<i>Mar</i>	<i>Apr</i>
<i>Yr 1</i>	open			Medical school first year								
<i>Yr 2</i>	open			Medical school second year								
<i>Yr 3</i>	Boards, Pt 1		open		Medical school third year							
<i>Yr 4</i>	MPH 1 st		MPH 2 nd		MPH third semester			MPH fourth semester				
<i>Yr 5</i>	MD 3 rd yr		Medical school fourth year									

M.D.3-MPH students who successfully complete the first four years are eligible to receive their MPH degree in May of their fourth year.

The content of the first two semesters of the MPH program is covered in two 6½-week sessions in a single summer. These sessions are not limited to M.D.-MPH students.

M.D.-MPH Summer Schedules

<i>MPH summer schedules by week</i>													
	<i>May</i>		<i>Jun</i>					<i>Jul</i>				<i>Aug</i>	
<i>Wk</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>	<i>9</i>	<i>10</i>	<i>11</i>	<i>12</i>	<i>13</i>
<i>1st sem</i>	C	C	C	C	C	C	F						
<i>2nd sem</i>								C	C	C	C	C	C F

Key: C = Classes, F= Finals

<i>MPH first semester summer schedules by day</i>					
	<i>Monday</i>	<i>Tuesday</i>	<i>Wednesday</i>	<i>Thursday</i>	<i>Friday</i>
<i>Morning</i> [†]	Issues 696		Issues 696		varies [†]
<i>Afternoon</i> [†]	HMgmt 501		HMgmt 501		varies [†]

Courses (11 credit hours):

Epi 501*: PHEP-501 Introduction to Epidemiology (3 credit hours)

HMgmt 501: PHMS-501 Introduction to Public Health Practice and Administration (3)

Biostat 500*: PHST-500 Introduction to Biostatistics (3)

Issues 696: PHPH-696 Issues in Public Health (2)

<i>MPH second semester summer schedules by day</i>					
	<i>Monday</i>	<i>Tuesday</i>	<i>Wednesday</i>	<i>Thursday</i>	<i>Friday</i>
<i>Morning</i> [†]	CTPE 614	PHI 618	HBehav 614	PHI 618	varies [†]
<i>Afternoon</i> [†]	EOH 500		EOH 500		varies [†]

Courses (12 credit hours):

HBehav 501*: PHPB-501 Introduction to Health Behavior (3 credit hours)

EOH 500: PHEH-500 Introduction to Environmental Health Sciences (3)

PHI 618: PHMS-618 Public Health Informatics (3)

CTPE 614: PHPH-614 Critical Thinking and Program Evaluation (3)

* Course is online.

[†] Days and times for courses are examples. Each course has two classes (or online equivalent) per week except two weeks with three classes (14 classes over 6 weeks). Three of the six Fridays

have classes in the morning and afternoon.

Faculty Advisor

On admission to the M.D.-MPH program, each student is assigned an MPH faculty advisor and is required to meet at least twice each semester with his or her advisor. Advisors are available to address general academic and public health questions and to assist the student in declaration of his or her area of concentration for the MPH degree.

After admission into a concentration, each student is assigned an MPH faculty advisor from the concentration department who serves as academic practicum advisor, academic mentor, and counselor on career and employment opportunities, professional development, and opportunities beyond graduate school.

Program of Study

The program of study is predetermined for courses in core, practicum experience, and integrating experience areas and the majority of the concentration area. Concentrations have one or two elective courses.

Degree Requirements

Requirements for the MPH degree are:

- Successful completion of core, concentration, practicum experience, and integrating experience coursework
- Completion of all deliverables for the practicum experience
- Minimum score of 80% on either of two tries of a comprehensive examination on MPH competencies (part of PPHP-697 Integrating Learning and Experience in Public Health) or successful completion of remediation project (part of PPHP-601)

Coursework

47 total credit hours:

- 18 credit hours of core coursework
- 6 credit hours of practicum experience
- 8 credit hours of integrating experience
- 15 credit hours of concentration coursework

<i>Required Coursework</i>			
<i>Semester</i>	<i>Course #</i>	<i>Course Title (and Area, as needed)</i>	<i>Credit Hours</i>
I (summer session)	PHEP-501	Introduction to Epidemiology (core)	3
	PHST-500	Introduction to Biostatistics (core)	3
	PHMS-501	Introduction to Public Health Practice and Administration (core)	3
	PHPH-696	Issues in Public Health (integrating experience)	2
	Semester Total		
II (summer session)	PHEH-500	Introduction to Environmental Health Sciences (core)	3
	PHPB-501	Introduction to Health Behavior (core)	3
	PHMS-650	Advanced Topics in Health Management and Systems Sciences (Data Management) (core)	3
	PHPH-614	Critical Thinking and Program Evaluation (integrating experience)	3
	Semester Total		
III		Concentration course	3
		Concentration course	3
		Concentration course	3
	PHPH-679	Public Health Practicum Experience	3
	Semester Total		
IV		Concentration course	3
		Concentration course	3
	PHPH-679	Public Health Practicum Experience	3
	PHPH-697	Integrating Learning and Experience in Public Health	3
	Semester Total		
MPH Degree Total			47

PHPH-696 Issues in Public Health

The Issues in Public Health course is part of the integrating experience and is a trans-disciplinary course designed to integrate what students learned in other coursework and experiences and the application of these lessons to the broader scope of public health. Working in teams and on selected public health projects or initiatives are the focus of the course.

PHPH-614 Critical Thinking and Program Evaluation

The Critical Thinking and Program Evaluation course is an integrating experience course and focuses on the identification of public health problems and planning appropriate responses and evaluations. Planning and evaluation skills are considered pivotal learning concepts for the MPH degree and for successful public health practice.

PHPH-679 Public Health Practicum Experience

The practicum experience places the student in a non-academic organization providing public health-related services. The practicum experience and its required deliverables must be completed to fulfill degree program requirements.

PHPH-697 Integrating Learning and Experience in Public Health

This course is designed to synthesize and integrate knowledge acquired in course work and other learning experiences and to apply this knowledge to situations that represent various aspects of professional public health practice. Through the evaluation of previous cases and the development of a new case from current and emerging areas of public health, students working in teams demonstrate their abilities in applying general and specific public health knowledge they have learned through their courses of study.

The course includes a comprehensive exam that assesses a student's grasp of core public health concepts prior to graduation. The exam uses the format of the National Board of Public Health Examiners and includes questions covering the five core and cross-cutting competencies from the Association of Schools of Public Health (ASPH). The exam format consists exclusively of multiple-choice questions. Some questions may be grouped in a series following a short vignette, but they remain in an objective, multiple-choice format.

The exam is given twice, once in the middle of the semester and once at the end of the semester. All students are required to take the exam the first time it is given. Students who pass the exam (a grade of 80% or better) the first time are not required to take the exam the second time unless they want to try to improve their score. The higher score is used to calculate the student's portion of the grade for the exam. Students not passing the exam the first time must retake the exam the second time.

A student failing to make a grade of 80% or better either time the exam is given receives an I (incomplete) for the course regardless of the scores on other evaluation components. The student is required to enroll in PHPH-601 for the next term or semester (usually summer term) and to successfully complete a remediation project as specified by the course instructors by the end of the term or semester in order to graduate. If the student successfully completes the project, the student's grade of I is replaced with one calculated using an 80% score on the individual comprehensive examination. If the project is not successfully completed, the student's grade for the course is F, which means the student does not graduate.

Biostatistics Concentration*Coursework*

<i>Biostatistics Concentration Coursework</i>			
<i>Semester</i>	<i>Course #</i>	<i>Course Title</i>	<i>Credit Hours</i>
III	PHCI-624	Clinical Trials I	2
	PHST-726	Clinical Trials Statistics Laboratory	1
	PHST-620	Introduction to Statistical Computing	3
		Concentration elective course	3
	PHPH-679	Public Health Practicum Experience	3
	Semester Total		
IV	PHST-640	Statistical Methods for Research Design in Health Studies	3
	PHST-681	Biostatistical Methods II	3
	PHPH-679	Public Health Practicum Experience	3
	PHPH-697	Integrating Learning and Experience in Public Health	3
	Semester Total		
Concentration Total			24

Electives

The elective course in the biostatistics concentration may be selected from any 3 credit-hour, graduate-level course in the University with approval of the student's faculty advisor and the program director.

Environmental and Occupational Health Concentration*Coursework*

<i>Environmental and Occupational Health Concentration Coursework</i>			
<i>Semester</i>	<i>Course #</i>	<i>Course Title</i>	<i>Credit Hours</i>
III	PHEH-610	Occupational Health and Safety	3
	PHEH-651	Advanced Environmental Health Sciences	3
	PHPH-630	Geographic Information Systems in Public Health	3
	PHPH-679	Public Health Practicum Experience	3
	Semester Total		

<i>Environmental and Occupational Health Concentration Coursework</i>			
<i>Semester</i>	<i>Course #</i>	<i>Course Title</i>	<i>Credit Hours</i>
IV	PHEH-620	Global Issues on Environmental and Occupational Health	3
		Concentration elective course	3
	PHPH-679	Public Health Practicum Experience	3
	PHPH-697	Integrating Learning and Experience in Public Health	3
	Semester Total		
Concentration Total			24

Electives

The elective courses in the environmental and occupational health concentration may be selected from any 3 credit-hour, graduate-level course in the University with approval of the student's faculty advisor and the program director.

*Epidemiology Concentration**Coursework*

<i>Epidemiology Concentration Coursework</i>			
<i>Semester</i>	<i>Course #</i>	<i>Course Title</i>	<i>Credit Hours</i>
III	PHEP-602	Epidemiologic Methods	3
	PHEP-616	Disease Surveillance	3
		Concentration elective course	3
	PHPH-679	Public Health Practicum Experience	3
	Semester Total		
IV	PHEP-617	Field Epidemiology	3
	PHEP-655	Emerging Issues in Epidemiology	3
	PHPH-679	Public Health Practicum Experience	3
	PHPH-697	Integrating Learning and Experience in Public Health	3
	Semester Total		
Concentration Total			24

Electives

The elective courses in the epidemiology concentration may be selected from any 3 credit-hour, graduate-level course in the University with approval of the student's faculty advisor and the program director.

Health Management Concentration*Coursework*

<i>Health Management Concentration Coursework</i>			
<i>Semester</i>	<i>Course #</i>	<i>Course Title</i>	<i>Credit Hours</i>
III	PHMS-603	Legal and Bioethical Aspects of Public Health	3
	PHMS-615	Introduction to Health Systems	3
		Concentration elective course	3
	PHPH-679	Public Health Practicum Experience	3
	Semester Total		
IV	PHMS-605	Governance and Management of Healthcare Organizations	3
	PHMS-607	Managing Healthy Communities	3
	PHPH-679	Public Health Practicum Experience	3
	PHPH-697	Integrating Learning and Experience in Public Health	3
	Semester Total		
Concentration Total			24

Electives

The elective course in the health management concentration may be selected from any 3 credit-hour, graduate-level course in the University with approval of the student's faculty advisor and the program director.

Health Promotion and Behavior Concentration*Coursework*

<i>Health Promotion and Behavior Concentration Coursework</i>			
<i>Semester</i>	<i>Course #</i>	<i>Course Title</i>	<i>Credit Hours</i>
III	PHPB-604	Health Decision and Risk Analysis	3
	PHPB-615	Public Health Program Evaluation	3
		Concentration elective course	3
	PHPH-679	Public Health Practicum Experience	3
	Semester Total		

<i>Health Promotion and Behavior Concentration Coursework</i>			
<i>Semester</i>	<i>Course #</i>	<i>Course Title</i>	<i>Credit Hours</i>
IV	PHMS-607	Managing Healthy Communities	3
	PHPB-612	Health Communication Campaigns	3
	PHPH-679	Public Health Practicum Experience	3
	PHPH-697	Integrating Learning and Experience in Public Health	3
	Semester Total		12
Concentration Total			24

Electives

The elective course in the health promotion and behavior concentration may be selected from any 3 credit-hour, graduate-level course in the University with approval of the student's faculty advisor and the program director.

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Master of Science (M.S.) in Epidemiology

Program Director: Richard N. Baumgartner, Ph.D.

Administrative Assistant: Paula K. Bossmeyer

Website: <http://louisville.edu/sphis/deph/academics.html>

Introduction

The M.S. program in Epidemiology is designed to prepare students for the Ph.D. program in Public Health Sciences with a concentration in epidemiology. The M.S. in epidemiology is offered by the Department of Epidemiology and Population Health.

Competencies

To graduate, students in the M.S. program in epidemiology must maintain a GPA of 3.0 or higher and demonstrate the following competencies:

1. Mastery of the principles of epidemiologic, observational study design, including:
 - a. The merits and limitations of cross-sectional, retrospective and prospective designs
 - b. Methods of disease surveillance and case ascertainment
 - c. Methods of population-based sampling
 - d. Sample size and statistical power calculation
 - e. Issues in the measurement of exposure and disease transmission
 - f. Identification and correct interpretation of potential biases in study design
2. Knowledge of the socioeconomic and geographic distribution, risk factors, and etiology of major acute, infectious and chronic morbidity and mortality.
3. Mastery of basic methods of analysis of epidemiologic data, including:
 - a. Measures of disease frequency, prevalence and incidence
 - b. Methods for adjusting rates for age, gender, etc.
 - c. Measures of association, odds ratio, relative risk
 - d. Control of confounding and effect modification through stratification and statistical control
 - e. Modeling in multiple logistic regression
 - f. Principles of survival analysis
 - g. Correct interpretation of results with regard to issues of error, bias and criteria for causality

These competencies are demonstrated through the successful completion of the coursework and the design, execution, documentation, and presentation of the research for the student's thesis.

Admission

Students with a prior baccalaureate or more advanced degree in an appropriate field of study, from a regionally accredited university or college are eligible for the M.S. program in epidemiology. Previous coursework in mathematics and/or statistics and biological or health

sciences (for example, biology, biochemistry, anatomy, physiology, microbiology) is strongly recommended. Applicants who are judged to not have sufficient prior coursework or experience in these areas may be required to take additional coursework.

The following are additionally required for admission:

- Undergraduate GPA at least 3.0 on 4.0 scale
- Official GRE scores taken within the past five years. Score greater than the 50th percentile on each of the quantitative and verbal sections is recommended.
- If applicable, Test of English as a Foreign Language (TOEFL) score in at least 60th percentile

Curriculum

The program is designed as a two-year program of coursework and thesis research and preparation. The student is expected to develop and plan his or her thesis research prior to the final semester in which the majority of the actual research is done.

Faculty Advisor

Upon admission to the M.S. program, each student is assigned a faculty advisor by the department chair or program director. Students and/or advisors who wish to change their assigned relationship must make a written request to the department chair or program director.

Program of Study

The student and his or her faculty advisor work together to develop a program of study that recognizes the student's research interests and core elements of modern epidemiology and its breadth and multidisciplinary nature.

Degree Requirements

Degree requirements include required coursework in epidemiology, elective coursework in biostatistics and in public health sciences, and a thesis.

Coursework

36 total credit-hours:

- 18 credit-hours of required coursework
- 6 credit-hours of elective coursework in biostatistics
- 6 credit-hours of elective coursework in public health
- 6 credit-hours of thesis research

<i>Required Coursework</i>			
<i>Semester</i>	<i>Course #</i>	<i>Course Title</i>	<i>Credit-Hours</i>
Fall I	PHEP-602	Epidemiologic Methods	3
	PHEP-619	Biology of Disease in Populations	3
	PHST-xxx	Biostatistics elective course	3
	Semester Total		9
Spring I	PHEP-618	Epidemiologic Methods II	3
	PHEP-604	Epidemiology of Acute and Infectious Diseases	3
	PHST-xxx	Biostatistics elective course	3
	Semester Total		9
Fall II	PHEP-607	Epidemiology of Cancer	3
	PHEP-609	Epidemiology of Chronic Diseases	3
	PHxx-xxx	Public health elective course	3
	Semester Total		9
Spring II	PHxx-xxx or PHEP-650	Public health elective course or Advanced Topics in Epidemiology	3
	PHEP-666	Thesis Research in Epidemiology	6
	Semester Total		9
	Degree Total		36

Electives

Program requirements include two elective courses in biostatistics and one or two in a public health area other than epidemiology and biostatistics.

Selection of electives for both requirements is done by the student and his or her faculty advisor with approval of the program director or chair of the department. In addition, selection of the biostatistics electives is done in conjunction with the chair of the Department of Bioinformatics and Biostatistics or his or her designee.

Students may petition to take courses not on these lists with approval of the instructor, the student's faculty advisor, and the program director or chair of the department or his or her designee.

<i>Approved Biostatistics Electives</i>		
<i>Course #</i>	<i>Course Title</i>	<i>Credit-Hours</i>
PHST-624	Clinical Trials I	3
PHST-650	Advanced Topics in Biostatistics	3

<i>Approved Biostatistics Electives</i>		
<i>Course #</i>	<i>Course Title</i>	<i>Credit-Hours</i>
PHST-680	Biostatistical Methods I	3
PHST-681	Biostatistical Methods II	3
PHST-661	Probability	3
PHST-662	Mathematical Statistics	3
PHST-683	Survival Analysis	3
PHST-684	Categorical Data Analysis	3
PHST-682	Multivariate Analysis	3

<i>Approved Public Health Electives</i>		
<i>Course #</i>	<i>Course Title</i>	<i>Credit-Hours</i>
PHEP-606	Genetic and Molecular Epidemiology	
PHEP-611	Nutritional Epidemiology	
PHEP-612	Epidemiology and Bioterrorism	
PHEP-613	Epidemiology of Aging	
PHEP-615	Epidemiology of Maternal and Child Health	
PHCI-671	Preventive Medicine I	
PHCI-672	Preventive Medicine II	
PHCI-605	Survey Research Methods	
PHCI-611	Introduction to Clinical Epidemiology	
PHEH-650	Advanced Topics in Environmental and Occupational Health	
PHPB-650	Advanced Topics in Health Promotion and Behavioral Sciences	
PHMS-650	Advanced Topics in Health Management and Systems Sciences	

Thesis

A thesis is required of a candidate for the degree of master of science in epidemiology. It is to be an original work of professional quality and the basis for one or more potentially publishable papers.

Thesis Committee

The thesis is read by a reading committee, chaired by the student's faculty advisor, and appointed by the dean of the school upon the recommendation of the chair of the department. This committee consists of three members and must include one representative of an allied department. The thesis must be approved by the committee and the chair of the department.

Thesis Proposal

The thesis proposal is to be developed in written form and presented to the thesis committee for approval. The thesis topic is to be one or more of the following:

- Critical review of the contemporary epidemiologic literature on a specific disease, risk factor, or health related condition.
- Meta-analysis of results from several epidemiologic studies of a specific disease.
- Research report on analysis of collected data.
- Evaluation of epidemiologic statistical methodology.

Thesis Preparation

The thesis is to be prepared in format and binding according to the guidelines established by the School of Interdisciplinary and Graduate Studies, available at <https://graduate.louisville.edu/pubs/theses-dissertations>.

Thesis Approval

The thesis is to be submitted in completed form to the chair of the thesis committee at least fifteen days before the end of the term in which the candidate expects to be graduated, and the candidate is not eligible for the final oral examination until the thesis has been accepted by the committee.

The thesis committee schedules an oral examination of the candidate. The thesis is approved by a majority vote of the committee.

Thesis Distribution

One unbound copy of the thesis, signed by thesis committee, must be deposited with the School of Interdisciplinary and Graduate Studies before graduation.

v2006.09.06-3

Master of Science (M.S.) in Biostatistics-Decision Science

Program Director: Dongfeng Wu, Ph.D.
Administrative Assistant: Paula K. Bossmeyer
Website: <http://louisville.edu/sphis/bb/academics.html>

Introduction

Biostatistics involves the development and application of statistical techniques to scientific research in health-related fields, including medicine, epidemiology, and public health. Students in the M.S. program will receive state-of-the-art training in the latest statistical methodologies in order to tackle the challenges associated with the study design and data analysis of modern research conducted in the health sciences.

Decision science (or formal decision analysis) is an emerging, cutting-edge discipline that provides researchers with additional tools with which to develop the clinical and healthcare policies and guidelines that affect public health.

The M.S. program in Biostatistics-Decision Science is in the Department of Bioinformatics and Biostatistics.

Competencies

To graduate, a student must be able to demonstrate mastery of the following competencies:

1. Read, interpret, and evaluate for optimality the biostatistics content of scientific and biomedical journal articles.
2. Analyze moderately complex research data using statistical methods involving common linear statistical models.
3. Manage data using spreadsheet and database software.
4. Use standard statistical and graphics computer packages including SAS, Microsoft Excel, and SPSS.
5. Keep abreast of statistical methods literature to evaluate and utilize new statistical methods.
6. Thoroughly understand the broad discipline of biostatistics, including its theoretic underpinnings, its history of development, current applications, and areas of active inquiry.
7. Understand advanced biostatistical operations.
8. Conduct independent research.
9. Advance the field of biostatistics through original research.
10. Read and critically evaluate decisions analyses published in the literature.
11. Understand and apply the concepts of public health and information sciences to clinical decision making and decision analysis.
12. Thoroughly understand the broad discipline of decision science including its theoretic underpinnings, its history of development, current applications, and areas of active inquiry.

13. Advance the field of decision science through original research.

Demonstration of competencies 1, 2, 3, 4, 5, 7, and 12 is achieved by successful completion of required coursework. Demonstration of competencies 6, 8-11, and 13 is achieved by successful development, execution, completion, and defense of the thesis.

Admission

The M.S. program is available to students who have completed an undergraduate degree in biostatistics, statistics, decision science, or a related discipline and competency in college-level calculus and statistics, as evidenced by transcripts from postsecondary institutions attended by the applicant.

The following are additionally required for admission:

- Graduate application (see www.graduate.louisville.edu) submitted to the School of Interdisciplinary and Graduate Studies (SIGS).
- Non-refundable application fee.
- At least two letters of recommendation written within past twelve months (can be submitted with form at <http://graduate.louisville.edu>).
- Submission of GRE Quantitative section score to SIGS (no minimum score required).
- All postsecondary transcripts (may require foreign credential evaluation if not from accredited U.S. institution).
- Statement of goals submitted to the department office (must include desired academic and degree program).

Curriculum

Faculty Advisor

Upon admission to the M.S. program, each student is assigned to work with the director of the program. The director assumes the role of faculty advisor until the student chooses a thesis advisor at which point this responsibility shifts to the thesis advisor.

Program of Study

Upon admission to the M.S. program, a program of study is developed for each student by the faculty advisor and approved by the program director. Decisions regarding additional coursework are made by the faculty advisor, and such courses become part of the program of study. This approach gives maximum flexibility for addressing differing student qualifications and interests.

Degree Requirements

The M.S. biostatistics-decision science is a 36 credit-hour program including the thesis. Additional hours may be needed for completion of the concentration program.

Coursework

36 total credit-hours of required coursework

24 credit-hours of core coursework

3-6 credit-hours of concentration coursework

6-9 credit-hours of thesis research

<i>Required Coursework</i>			
<i>Semester</i>	<i>Course #</i>	<i>Course Title</i>	<i>Credit-Hours</i>
Fall I	PHEP-501	Introduction to Epidemiology	3
	PHST-661	Probability	3
	PHST-680	Biostatistical Methods I	3
	Semester Total		9
Spring I	PHST-662	Mathematical Statistics	3
	PHST-681	Biostatistical Methods II	3
		Elective course	3
	Semester Total		9
Fall II	PHST-602	Biostatistics-Decision Science Seminar	1
	PHCI-624	Clinical Trials I	2
		Concentration course	3
		Concentration course	3
	Semester Total		9
Spring II	PHST-602	Biostatistics-Decision Science Seminar	1
	PHDA-603	Public Health Practicum I	2
		Concentration course(s)	6
	Semester Total		9
Degree Total			36

Electives

An elective course must be chosen from the following list or as approved by student's faculty advisor.

<i>Electives</i>		
<i>Course #</i>	<i>Course Title</i>	<i>Credit-Hours</i>
MATH 566	Nonparametric Statistics	3
PHCI 605	Survey Research Methods	3
PHCI 622	Case-Control Studies	3
PHCI 623	Cohort Studies	3
PHBI 750	Statistical Methods for Bioinformatics	3
PHEH 600	Introduction to Environmental Health	3

Biostatistics Concentration*Coursework*

<i>Biostatistics Concentration Coursework</i>			
<i>Semester</i>	<i>Course #</i>	<i>Course Title</i>	<i>Credit-Hours</i>
Fall II	PHST-683	Survival Analysis	3
	PHDA-666	Master's Thesis Research	3
	Semester Total		6
Spring II	PHST-684	Categorical Data Analysis	3
	PHDA-666	Master's Thesis Research	3
	Semester Total		6
Concentration Total			12

Decision Science Concentration*Coursework*

<i>Decision Science Concentration Coursework</i>			
<i>Semester</i>	<i>Course #</i>	<i>Course Title</i>	<i>Credit-Hours</i>
Fall II	PHDA-663	Analysis for Decision Making (cross-listed with IE-643)	3
	PHDA-666	Master's Thesis Research	3
	Semester Total		6
Spring II	PHDA-666	Master's Thesis Research	6
Concentration Total			12

Thesis

To successfully complete the M.S. degree, each student must successfully defend a master's thesis on a topic approved by his or her major professor and thesis committee.

Thesis Committee

Students choose a principal advisor (major professor) and at least two other committee members. One member of thesis committee must be from allied department in the university. The committee is appointed by the dean of the school upon the recommendation of the program director.

Thesis Preparation

The thesis is to be prepared in format and binding according to the guidelines established by the School of Interdisciplinary and Graduate Studies (SIGS), available at <https://graduate.louisville.edu/pubs/theses-dissertations>.

Thesis Approval

The thesis is to be submitted in completed form to the chair of the thesis committee at least fifteen days before the end of the term in which the candidate expects to be graduated, and the candidate is not eligible for the final oral examination until the thesis has been accepted by the committee.

The thesis committee schedules an oral examination of the candidate, which all faculty and students of the department are invited to attend. This defense is scheduled at the convenience of the members of the thesis committee. The thesis is approved by a majority vote of the committee.

Thesis Distribution

One unbound copy of the thesis, signed by the thesis committee, must be deposited with SIGS before graduation. A copy of the final, signed thesis must also be deposited with the department office.

Dual Master of Science (M.S.) in Biostatistics-Decision Science and Doctor of Philosophy (Ph.D.) in Applied and Industrial Mathematics

Dual degrees in Biostatistics-Decision Science and Applied and Industrial Mathematics are offered by the College of Arts and Sciences and the School of Public Health and Information Sciences. Upon completion of the program, students will receive a Ph.D. in Applied and Industrial Mathematics and an M.S. in Biostatistics-Decision Science.

Application Procedure

To be admitted to the program, the student is required to apply to and be accepted by both the Department of Mathematics and the Biostatistics-Decision Science Program. A student seeking admission into this program must submit letters to both the Department of Mathematics and the Department of Bioinformatics and Biostatistics stating the intent to take advantage of the dual degree program, and stating whether the student is interested in the Biostatistics or the Decision Science concentration. Students must submit 2 recent letters of recommendation with their letter of intent. Applicants will receive written notification stating whether their admission request has been approved or disapproved.

Degree Requirements

Required Courses

The required courses for the dual degree program consist of all non-overlapping core courses for both the Ph.D. in Applied and Industrial Mathematics and the M.S. in Biostatistics-Decision Science, as well as the requirements for either the Decision Science or Biostatistics concentration within the Biostatistics-Decision Science program.

Core Course Requirements for the Ph.D. in Applied and Industrial Mathematics (24 credit-hours)

Two sequences, each of six (6) credit-hours, chosen from

- Algebra - Mathematics 621 and 622
- Combinatorics - Mathematics 681 and 682
- Real Analysis - Mathematics 601 and 602

Two sequences, each of six (6) credit-hours, chosen from

- Mathematical Modeling - Mathematics 635 and 636
- Applied Statistics - Mathematics 665 and 667
- Probability and Mathematical Statistics - Mathematics 660 and 662

Courses taken in requirement of the mathematics component of the dual degree program can be used to satisfy the 6 to 9 credit-hours of electives required for the M.S. in Biostatistics-Decision Science.

Core Course Requirements for the M.S. in Biostatistics-Decision Science (12 to 18 credit-hours)

The following courses are required for both tracks.

- PHEP-511 Introduction to Public Health and Epidemiology (3 credit-hours)
- PHCI 631 Social and Behavioral Sciences in Health Care (2 credit-hours)
- Introduction to Environmental Health
- Health Economics
- PHDA 602 Biostatistics-Decision Science Seminar (4 credit-hours)
- PHST 661 and 662 Probability and Mathematical Statistics (6 credit-hours)*

* This requirement is waived if the student takes the Mathematics 660, 662 sequence listed above.

Concentration Courses Requirements for the M.S. in Biostatistics-Decision Science (5 to 6 credit-hours)

Biostatistics Concentration Requirements:

- Biostatistical Methods I and II - PHDA 680 and 681 (6 credit-hours)

Decision Science Concentration Requirements:

- Ethical Issues in Decision Making - PHDA 605 (2 credit-hours)
- Decision Analysis - PHDA 663 (3 credit-hours)

Courses taken to satisfy the Biostatistics-Decision Science component of the dual degree program can be applied to the 18 credit-hours of electives which are required for the Ph.D. in Applied and Industrial Mathematics.

Combined Industrial Internship, Practicum and Masters Thesis (6-8 credit-hours)

The Industrial Internship required by the Department of Mathematics, and the Public Health Practicum and Masters thesis required for the M.S. can be satisfied by a single internship and technical report which simultaneously satisfies the requirements for both degrees. Specifically, the internship must both focus on public health so that it satisfies the Public Health Practicum (PHDA-603), and contain advanced mathematical content, so that it satisfies the Ph.D.-level Industrial Internship (MATH-694). Likewise, the technical report must meet two requirements: it must satisfy the requirements for a Master's thesis for the M.S. degree (PHDA-666) and it must be written at an advanced mathematical level expected for the Ph.D.-level Industrial Internship. The six to eight credit-hours of the internship will be divided evenly between the Department of Mathematics and the Biostatistics-Decision Science Program.

This requirement cannot be replaced by a previous master's thesis. This requirement must be satisfied as previously described, meeting the specifications of both departments.

Dissertation and Qualifying Examinations

In order for the student to fulfill the Ph.D. requirements, the student must satisfy both the qualifying examination and dissertation requirements for the Ph.D. in Applied and Industrial Mathematics. Failure to complete these requirements will not jeopardize the M.S. degree, if all its requirements have been satisfactorily completed.

Special Considerations

- Students who have already completed a Master's degree in the Department of Mathematics
- Credit requirements

To preserve the spirit of a dual degree, such students need to complete 36 credit-hours of courses as required for the M.S. in Biostatistics-Decision Science. Six (6) credit-hours from the previous master's degree coursework can be applied to this requirement. The remaining credit-hours must be chosen from the list of approved electives for the Department of Bioinformatics and Biostatistics, with preference given to courses in the Departments of Mathematics and Bioinformatics and Biostatistics.

Master of Science (M.Sc.) in Clinical Investigation Sciences

Program Director: Susan Muldoon, Ph.D., MPH

Program Coordinator: Tammi Alvey Thomas

Website: <http://louisville.edu/sphis/academics/M.Sc.-in-clinical-investigation-sciences.html>

Introduction

The M.Sc. in Clinical Investigation Sciences is offered in the School's Clinical Research, Epidemiology and Statistics Training (CREST) Program. The M.Sc. can be pursued in combination with the M.D. degree from the School of Medicine.

The M.Sc. degree program provides physicians, dentists, nurses and other health professionals an opportunity to acquire the clinical research skills necessary for a career in an academic health center.

The CREST curriculum integrates biostatistical and epidemiologic methods in a problem-based learning format with additional instruction in bioethics, health economics, health services and outcomes research and social and behavioral science. Students pursuing the master degree take didactic courses while they engage in mentored and independent research that culminates in the preparation of a professional paper.

Competencies

The successful student is able to:

- Access and critique the scientific literature.
- Address and discuss methods and issues of clinical epidemiology.
- Identify important clinical research questions and state as testable hypotheses.
- Develop collaborative clinical research studies in accordance with appropriate epidemiologic and biostatistical methodologies.
- Apply the principles of data collection, monitoring, management and analysis within the context of a multidisciplinary team.
- Disseminate study results to professional and lay audiences through oral and written communication.
- Analyze human subjects issues and apply ethical principles in performing and disseminating clinical research.
- Discuss and respond to the legal issues in new drug and device development.

It is expected that prior to graduation, students in the program have demonstrated these competencies by completing the curriculum, participating in a collaborative research project, and successfully writing and defending the professional paper.

Admission

Applicants should have a minimum of 3.0 on a 4.0 scale and, in most cases, should have completed a professional doctoral degree (e.g., DM.D., D.O., M.D.) or academic degree from an accredited institution or its equivalent. Other applicants with research experience may be considered (e.g., research coordinator).

Application requirements are submitted to the Graduate School Office of Admissions and include:

- Formal application
- Curriculum vitae
- Personal statement, a one-page essay that discusses the student's background and his or her long-term goals in clinical research
- Application fee
- A minimum of two letters of recommendation
- official transcripts of all college work
- official scores on the Graduate Record Examination (GRE) General Test (if applicant does not have a doctoral degree)

For specific information about the degree program or the application process, students should contact Dr. Susan Muldoon, CREST Program Director, 502-852-8087.

Curriculum

The typical progression through the M.Sc. curriculum is:

- Develop program of study (Year 1 beginning).
- Take coursework (Year 1 and Year 2 Fall).
- Select research project and begin work (Year 2 Fall).
- Do research project and prepare thesis or professional paper (Year 2 Spring).
- Present and defend research project (Year 2 Spring).

Faculty Advisor

The program director serves as faculty advisor for each student until the student begins his or her research for the thesis or professional paper, at which time the student selects a mentor for his or her research with the approval of the program director. The mentor may be any member of the School's faculty and assumes the functions of faculty advisor.

Program of Study

Upon matriculation in the program, each student meets with the program coordinator and develops a program of study based on the student's time availability (e.g., typical two-year program or extended three-year program). The program of study may be modified as the student's needs change or course availability is altered.

Degree RequirementsCoursework

31 total credit-hours of required coursework

7 credit-hours of epidemiology coursework

11 credit-hours of coursework in research design and statistics

7 credit-hours of coursework in effectiveness and outcomes

6 credit-hours of mentored research

3 credit-hours of electives

<i>Required Coursework</i>			
<i>Semester</i>	<i>Course #</i>	<i>Course Title</i>	<i>Credit-Hours</i>
Summer I		Elective (optional)	0 or 1
	Semester Total		0 or 1
Fall I	PHCI-611	Introduction to Clinical Epidemiology	2
	PHST-600	Introduction to Biostatistics	3
	PHCI-631	Social and Behavioral Science in Health Care	2
	PHCI-610	New Drug and Device Development	2
	Semester Total		9
Spring I	PHEP-602	Epidemiological Methods	3
	PHCI-629	Special Topics: Epidemiological Methods	1
	PHCI-624	Clinical Trials I	2
	PHCI-632	Ethical Conduct of Research	2
	Semester Total		8
Summer II	PHCI-601	Evaluating Health Care Literature	1
	Semester Total		1
Fall II	PHCI-625	Clinical Trials II	2
	PHCI-650	Medical Decision Analysis	2
		Elective	3 or 2
	Semester Total		7 or 6
Spring II	PHCI-699	Mentored Research	6
	Semester Total		6
Degree Total			31

Electives

There are two options for the three elective credit-hours, given in the following table. The choice of elective option and courses must be approved by the faculty advisor and program director.

<i>Elective Options</i>			
<i>Semester</i>	<i>Course #</i>	<i>Course Title</i>	<i>Credit-Hours</i>
Summer I	PHCI-501	From Bench to Bedside	1
Fall II	PHCI-602	Health Services and Outcomes Research	2
Total			3
-- OR --			
Fall II		Elective	3
Total			3

Thesis or Professional Paper

A thesis or professional paper, based on original research conducted by the student, is required of a candidate for the degree of master of science in clinical investigation sciences. It is to be an original work of professional quality and a scholarly achievement that demonstrates the student's thorough understanding of research techniques in clinical research and the ability to conduct independent research.

Thesis or Professional Paper Committee

The thesis or professional paper is read by a reading committee, chaired by the student's mentor/faculty advisor, and appointed by the dean of the school upon the recommendation of the program director. This committee consists of three members, and must include one representative of an allied department. The thesis or professional paper must be approved by the committee and the program director.

Thesis or Professional Paper Proposal

The proposal for thesis or professional paper is to be developed in written form and presented to the committee for approval.

Thesis or Professional Paper Preparation

If the student prepares a thesis, it is to be prepared in format and binding according to the guidelines established by SIGS, available at <https://graduate.louisville.edu/pubs/theses-dissertations>. If the student prepares a professional paper, it is to have the format and style appropriate for its type and potential destination.

Thesis or Professional Paper Approval

The thesis or professional paper is to be submitted in completed form to the chair of the thesis committee at least fourteen days before the end of the term in which the candidate expects to be graduated, and the candidate is not eligible for the final oral examination until the thesis has been accepted by the committee.

The committee schedules an oral examination of the candidate during which the student presents his or her thesis or professional paper and is asked to defend it and the supporting research. The thesis or professional paper is approved by a majority vote of the committee and by the program director.

Thesis Distribution

If the student prepares a thesis, one unbound copy, signed by the thesis committee, must be deposited with SIGS before graduation.

v2009.07.20

Dual Doctor of Medicine (M.D.) and Master of Science (M.Sc.) in Clinical Investigation Sciences

Students admitted to the University of Louisville School of Medicine can pursue a dual M.D.-M.Sc. degree program with only one additional year of study beyond the traditional four-year medical school curriculum. Medical students pursuing the dual M.D.-M.Sc. degree begin the M.Sc. course work after completing one year of clinical training (i.e., the third year of medical school). Dual-degree students spend the fall and spring semesters of their fourth year and the summer and fall semesters of their fifth year completing the M.Sc. course work. They complete their professional paper or thesis for the M.Sc. degree and their clinical rotations for the M.D. degree in the spring semester of their fifth year. Graduates of the program can expect to be highly competitive for residency and fellowship positions at prestigious institutions.

<i>Required Coursework</i>			
<i>Semester</i>	<i>Course #</i>	<i>Course Title</i>	<i>Credit-Hours</i>
Fall IV	PHCI-611	Introduction to Clinical Epidemiology	2
	PHST-600	Introduction to Biostatistics	3
	PHCI-631	Social and Behavioral Science in Health Care	2
	PHCI-610	New Drug and Device Development	2
	Semester Total		
Spring IV	PHEP-602	Epidemiological Methods	3
	PHCI-629	Special Topics: Epidemiological Methods	1
	PHCI-624	Clinical Trials I	2
	PHCI-632	Ethical Conduct of Research	2
		M.D. clinical elective(s) (2-10 credit-hours)	
Semester Total			8
Fall V	PHCI-625	Clinical Trials II	2
	PHCI-601	Evaluating Health Care Literature	1
	PHCI-650	Medical Decision Analysis	2
		Elective	3
		M.D. clinical rotation(s)	
Semester Total			8
Spring V	PHCI-699	Mentored Research	6
		M.D. clinical rotation(s)	
	Semester Total		
Degree Total (for M.Sc.)			31

Electives

There are two options for the three elective credit-hours, given in the following table. The choice of elective option and courses must be approved by the faculty advisor and program director.

<i>Elective Options</i>			
<i>Semester</i>	<i>Course #</i>	<i>Course Title</i>	<i>Credit-Hours</i>
Fall V	PHCI-501	From Bench to Bedside	1
	PHCI-602	Health Services and Outcomes Research	2
Total			3
-- OR --			
Fall V		Elective	3
Total			3

PHCI-699 Mentored Research

The student has the choice of when to take these credit-hours based on how he or she arranges financial assistance. Options are take all of the credit-hours in Fall V, take all in Spring V, or split the credit-hours between the two semesters. If all credit-hours are taken in Fall V, the student must register for one credit-hour of master's candidacy in Spring V.

v2009.07.20

Certificate in Clinical Investigation Sciences

Program Director: Susan Muldoon, Ph.D., MPH

Program Coordinator: Tammi Alvey Thomas

Website: <http://louisville.edu/sphis/academics/certificate-in-clinical-investigation-sciences.html>

Introduction

The Certificate in Clinical Investigation Sciences is offered in the School's Clinical Research, Epidemiology and Statistics Training (CREST) Program.

The Certificate in Clinical Investigation Sciences provides individuals with skills required for a career in a clinical research setting. The CREST curriculum integrates biostatistical and epidemiologic methods in a problem-based learning format with additional instruction in health services and outcomes research and social and behavioral science.

Competencies

The successful student is able to:

- Access and critique the scientific literature.
- Address and discuss methods and issues of clinical epidemiology.
- Identify important clinical research questions and state as testable hypotheses.
- Apply the principles of data collection, monitoring, management and analysis within the context of a multidisciplinary team.
- Analyze human subject issues and apply ethical principles in performing and disseminating clinical research.

It is expected that prior to graduation, students in the program have demonstrated these competencies by completing the curriculum, participating in a collaborative research project, and successfully writing the professional paper.

Admission

Applicants should have a minimum of 3.0 on a 4.0 scale and, in most cases, should have completed a professional doctoral degree (e.g., DMD, D.O., M.D.) or academic degree from an accredited institution or its equivalent. Other applicants with research experience may be considered (e.g., research coordinator).

Application requirements are submitted to the Graduate School Office of Admissions and include:

- Formal application
- Curriculum vitae
- Personal statement, a one-page essay that discusses the student's background and his or her long-term goals in clinical research
- Application fee

- A minimum of two letters of recommendation
- official transcripts of all college work
- official scores on the Graduate Record Examination (GRE) General Test (if applicant does not have a doctoral degree)

For specific information about the degree program or the application process, students should contact Dr. Susan Muldoon, CREST Program Director, 502-852-8087.

Curriculum

The typical progression through the Certificate curriculum is:

- Program of Study (Year 1)
- Complete research paper (Summer, Year 1)

Advisor/Program of Study

Upon matriculation in the program, each student will meet with the CREST Program Coordinator and develop a program of study based on the selection of the Certificate program curriculum. The program of study may be modified as the student's needs change or course availability is altered.

Certificate Requirements

Coursework

- 17 total credit-hours of required coursework
 - 5 credit-hours of epidemiology coursework
 - 7 credit-hours of coursework in research design and statistics
 - 4 credit-hours of coursework in outcomes and ethics
 - 1 credit-hours of mentored research

Required Coursework			
Semester	Course #	Course Title	Credit-Hours
Fall I	PHCI-611	Introduction to Clinical Epidemiology	2
	PHST-500	Introduction to Biostatistics	3
		Elective	2
	Semester Total		7

Required Coursework			
Semester	Course #	Course Title	Credit-Hours
Spring I	PHEP 602	Epidemiological Methods	3
	PHCI 629	Special Topics: Epidemiological Methods	1
	PHCI 624	Clinical Trials I	2
	PHCI 632	Ethical Conduct of Research	2
	Semester total		
Summer I	PHCI 601	Evaluating Health Care Literature	1
	PHCI 699	Mentored Research	1
	Semester total		
Certificate Total			17

PHCI-699 Mentored Research

Each student in the Certificate Program is required to prepare a research paper as part of the mentored research course. The research paper can be a literature review or a research project. Data collection is not required. The paper is to be submitted in completed form to the program coordinator at least two weeks before the end of the semester in which the candidate expects to graduate.

Electives

Electives		
Course #	Course Title	Credit-Hours
PHCI 631	Social and Behavioral Science in Health Care	2
PHCI 610	New Drug and Device Development	2
PHCI 602	Health Services and Outcomes Research	2

v2007.08.02

Doctor of Philosophy (Ph.D.) in Public Health Sciences

Program Director: Peter L. Walton, M.D.

Introduction

The School of Public Health and Information Sciences offers a doctor of philosophy degree in Public Health Sciences with concentrations in the following areas:

- Environmental Health
- Epidemiology
- Health Management
- Health Promotion

Concentration in Environmental Health

Program Director: David J. Tollerud, M.D., MPH

Administrative Assistant: Barbara J. Parker

Website: <http://louisville.edu/sphis/eohs/academics.html>

Introduction

The concentration in environmental health for the Ph.D. in public health sciences is designed to provide scholars with the tools to conduct in-depth research and provide advanced instruction in the discipline of environmental health at the college and university level. It also prepares researchers for governmental, private, and voluntary organizations involved in environmental protection and the prevention of disease and injury. In addition to understanding advanced concepts of environmental health, industrial hygiene, and toxicology, graduates of this concentration are expected to develop skills that enable them to identify and define questions of environmental and occupational health importance, design research studies to address these questions, and to complete a program of research that demonstrates abilities as an independent investigator.

The Ph.D. concentration in environmental health is in the Department of Environmental and Occupational Health and is part of the Ph.D. program in public health sciences in the School of Public Health and Information Sciences.

Competencies

To graduate, a student in the Ph.D. concentration in environmental health must demonstrate the following competencies:

- 1) In depth knowledge of the history of environmental health.
- 2) Mastery of experimental study designs and the ability to identify optimal designs for specific hypotheses.
- 3) Ability to critically evaluate published environmental health research.
- 4) Expertise in one or more environmental health specialty such as risk assessment, environmental management, environmental and occupational toxicology.
- 5) Practical knowledge of issues in research management including:
 - a) Formation and leadership of multidisciplinary teams.
 - b) Staffing, budgeting, tracking.
 - c) Subject recruitment and retention.
 - d) Data quality control and data safety management.
 - e) Funding mechanisms and grantsmanship.
 - f) Research ethics and regulations.
- 6) Professional quality peer-review, oral and poster presentation, report, grant, and manuscript writing.
- 7) Mentoring of junior peers.

Demonstration of competency 1 is achieved by passing the doctoral qualifying examination and by successful completion and defense of the dissertation. Demonstration of competencies 2 through 6, inclusive, is achieved by successful development, conduct, completion, and defense of the dissertation. Demonstration of competency 7 is achieved by successful completion of assignments to work with master's students on the latter's research, theses, presentations, and posters.

Admission

An applicant who has satisfactorily completed an appropriate M.S. degree or MPH with a concentration in environmental health is eligible for admission to the Ph.D. concentration in environmental health. An applicant with an advanced degree (M.D., Ph.D., D.O.) may also be accepted pending evaluation of appropriate training, experience, or coursework. The previous graduate work by such an applicant is reviewed on a case-by-case basis, and the applicant, if admitted, may be required to take additional course work prior to completing the minimum 34 credit-hours required for post-master's doctoral work.

The following are additionally required for admission:

Undergraduate and Graduate GPA > 3.0 on 4.0 scale

Minimum GRE > 500 Verbal; > 600 Quantitative

If applicable, Test of English as a Foreign Language (TOEFL) score > 60th percentile

Curriculum

Faculty Advisor

Upon admission to the Ph.D. concentration, each student is assigned a faculty advisor who works with the student to develop a program of study. The program of study recognizes core elements of environmental health as well as its breadth and multidisciplinary nature. At the Ph.D. level, this requires the selection of courses directly relevant to environmental health, such as biostatistics, epidemiology, molecular genetics, behavioral science, health policy/management, systems sciences, or other relevant areas of study.

Program of Study

Each doctoral student, in consultation with his or her academic advisor and the department chair, plans a program of study that uniquely fits the student's career goals. The design of a doctoral program of study that reflects each student's professional skills and research interest is the primary organizing principle of the proposed program.

Degree Requirements

The emphasis in doctoral training goes beyond accumulating course credit. Completion of the coursework is the prelude to sitting for the qualifying examination. Successful passage of the qualifying examination allows the student to enter doctoral candidacy. A doctoral candidate must then successfully develop and defend a dissertation proposal that describes an original and

independent research project. Upon successful defense of the proposal, a student may then proceed to dissertation research. Upon successful completion of the research, defense of the dissertation, and demonstration of the required competencies listed below, a student is awarded the Ph.D. degree.

The Ph.D. concentration in environmental health is designed as a 37 credit-hour program (minimum beyond a master's degree) including the dissertation. Additional hours may be needed for completion of the concentration program.

Coursework

37 total credit-hours

34 credit-hours of required coursework

3 credit-hours of environmental health seminars

<i>Required Coursework</i>			
<i>Semester</i>	<i>Course #</i>	<i>Course Title</i>	<i>Credit-Hours</i>
Fall I	PHST-620	Introduction to Statistical Computing	3
	PHEP-602	Epidemiological Methods	3
	BIOC-668	Molecular Biology	4
	Semester Total		10
Spring I	PHEP-620	Environmental and Occupational Epidemiology	3
	MBIO-658	Cellular and Molecular Immunology	3
		Elective course	3
	PHEH-750	Seminar 1 in Environmental and Occupational Health	1
	Semester Total		10
Summer I	PHEH-751	Seminar 2 in Environmental and Occupational Health	1
		Elective course	3
		Elective course	3
	Semester Total		7
Fall II	PHTX-661	Molecular Mechanisms in Toxicology	3
	PHEH-601	Environmental Risk Assessment	3
		Elective course	3
	PHEH-752	Seminar 3 in Environmental and Occupational Health	1
	Semester Total		10
Degree Total			37

PHEH-750, -751, -752 Seminars in Environmental and Occupational Health

A student in the Ph.D. concentration in environmental health is required to complete the three seminars in environmental and occupational health (PHEH-750, -751, and -752) for a total of 3 credit-hours. These group courses are jointly taught by the faculty of the department and are designed to provide a collegial experience that provides an opportunity to integrate learning from other courses, discuss hot topics, brain-storm about research ideas, and acquire professional skills in scientific manuscript and grant writing, oral and poster presentations, grantsmanship, and peer review.

Electives

As a part of the approved program of study, a student has the option to select nine credit-hours of elective coursework. Courses directly relevant to environmental health are preferred, including, but not limited to, biostatistics, bioinformatics, epidemiology, medical geography, molecular or population genetics, toxicology, microbiology, health services research, outcomes research, and health promotion and behavior. Courses may be selected from those offered within the School of Public Health and Information Sciences, other departments within the university, or from sources outside the university with permission and acceptance of credit by the program and dean.

Because the needs vary by research topic for which specific research methods and statistics skills, requirements in these area are difficult to define explicitly for all students. The student's program of study utilizes electives to provide the student with the courses needed in his or her particular case.

A student may petition to take courses not on this list with approval of the instructor and the chair of the department. The student must provide a written rationale for the choices of elective coursework in his or her program of study.

<i>Approved Electives</i>		
<i>Course #</i>	<i>Course Title</i>	<i>Credit-Hours</i>
PHEH-753	Independent Study in Environmental and Occupational Health	1-3
PHST-650	Advanced Topics in Biostatistics	3
PHST-680	Biostatistical Methods I	3
PHST-681	Biostatistical Methods II	3
PHPB-650	Advanced Topics in Health Promotion and Behavioral Sciences	3
PHMS-650	Advanced Topics in Health Management and Systems Sciences	3
GEOG-657	Geographic Information Systems	3
GEOG-656	Spatial Statistics	3
PHTX-601	Principles of Medical Pharmacology	3
PHTX-630	Toxicology: Principles and Application	3
PHTX-618	Topics in Pharmacology & Toxicology	3
PHTX-607	Seminar in Genetics and Molecular Medicine	3
BIOC-611	Biochemical and Molecular Methods	3

<i>Approved Electives</i>		
<i>Course #</i>	<i>Course Title</i>	<i>Credit-Hours</i>
BIOC-640	Principles of Biochemistry	3
BIOC-670	Protein Structure and Function	3
BIOC-660	Molecular Endocrinology	3
BIOC-641	Advanced Eukaryotic Genetics	3
BIOC-668	Molecular Biology	3
BIOC-675	Cancer Biology	3
BIOL-522	Aquatic Ecology	3
BIOL-563	Population and Community Ecology	3
BIOL-562	Ecosystem Ecology	3
BIOL-584	Interdisciplinary Frameworks in Environmental Science and Technology	3
BIOL-608	Ecological Instrumentation	3
BIOL-660	Advanced Ecology of Urban and Suburban Landscapes	3
BIOL-657	Advanced Industrial and Food Microbiology	3
CEE-509	Environmental Processes and Systems	3
CEE-534	Industrial Waste Management	3
CEE-535	Solid Waste Management	3
CEE-574	Water and Wastewater Treatment	3
CEE-581	Environmental Impact Analysis	3
CEE-674	Water Resources Systems	3
CEE-675	Surface Water Quality Modeling	3
CHE-509	Environmental Processes and Systems	3
CHE-533	Chemical Engineering Safety and Health	3
CHE-534	Industrial Waste Management	3
CHE-535	Pollution Prevention	3
EXP-600	Physiology of Exercise	3
EXP-605	Human Physiology	3
GEOG-522	GIS and Public Health	3
GEOG-531	GIS and Urban Demographic Analysis	3
GEOG-561	Urban Environmental Quality	3
GEOS-564	Hydrology	3
GEOS-565	Natural Hazards	3
MBIO-601	Molecular Microbiology (Introductory to Infectious Diseases)	3
MBIO-602	Introduction to Immunology	3
MBIO-670	Molecular Virology	3
MBIO-685	Microbial Physiology	3
MBIO-687	Microbial Pathogenesis	3
MBIO-618	Topics in Advanced Microbiology	3
MBIO-680	Genetics of Infectious Diseases	3
MBIO-667	Cell Biology	3
PHZB-605	Systemic Physiology I	3

<i>Approved Electives</i>		
<i>Course #</i>	<i>Course Title</i>	<i>Credit-Hours</i>
PHZB-611	Advanced Human Physiology	3
IE-530	Industrial Safety Engineering	3
UPA-678	Land Use and Planning Law	3
UPA-679	Environmental Policy	3
UPA-687	Environmental Policy and Natural Hazards	3

Qualifying Examination

Upon completion of the majority of the required coursework for the Ph.D., the student is eligible to sit for the doctoral qualifying examination. The timing and eligibility for the qualifying examination is determined by the student's faculty advisor and department chair. Successful completion of the examination admits the student to doctoral candidacy. A student who does not successfully complete the exam may be required to take additional or remedial coursework and is allowed one opportunity to retake the exam.

Dissertation

A dissertation is required of a candidate for the degree of doctor of philosophy in public health sciences with a concentration in environmental health. It is to be a scholarly achievement in research, and should demonstrate a thorough understanding of research techniques in environmental health and the ability to conduct independent research.

Dissertation Committee

The dissertation shall be read by a reading committee, chaired by the student's faculty advisor, and appointed by the dean upon the advice of the chair of the department. This committee shall consist of four members, and must include one representative of an allied department. The dissertation must be approved by the committee and the chair of the department.

Dissertation Proposal

A student who successfully completes the qualifying exam must submit a written dissertation proposal to all members of the dissertation committee. The student is then orally examined on the dissertation proposal.

Dissertation Preparation

The dissertation is to be prepared in format and binding according to the guidelines established by the School of Interdisciplinary and Graduate Studies (SIGS), available at <https://graduate.louisville.edu/pubs/theses-dissertations>.

Dissertation Approval

The dissertation is to be submitted in completed form to the chair of the department at least thirty days before the end of the term in which the candidate expects to be graduated, and the candidate is not eligible for final examination until the dissertation has been accepted by the committee and chair.

The dissertation committee schedules an oral defense by the candidate and notifies SIGS using the form available at <https://graduate.louisville.edu/pubs/theses-dissertations>. The time and place for the defense is published by SIGS to the general academic community, members of which are free to attend the defense. The dissertation is approved by a majority vote of the committee and the concurrence of the department chair.

Dissertation Distribution

One unbound copy of the dissertation, signed by the dissertation committee, must be deposited with the SIGS prior to graduation.

v2009.03.03-1

Concentration in Epidemiology

Program Director: Richard N. Baumgartner, Ph.D.

Administrative Assistant: Paula K. Bossmeyer

Website: <http://louisville.edu/sphis/deph/academics.html>

Introduction

The concentration in epidemiology in the Ph.D. program in public health sciences is designed to develop academic researchers in population-based epidemiology.

Competencies

To graduate, students in the Ph.D. concentration in epidemiology must demonstrate the following competencies *in addition to those for the MS degree*:

- In depth knowledge of the history and philosophy of epidemiology
- Mastery of experimental and observational study designs and the ability to identify optimal designs for specific hypotheses
- Ability to develop and apply:
 - Questionnaires
 - Biomarkers for health status, exposure and susceptibility
- Mastery of multivariable analytic methods for evaluating risk and prognosis
- Ability to critically evaluate the published epidemiologic research
- Expertise in one or more epidemiologic specialty such as nutritional, molecular, clinical, genetic, cancer, or chronic disease epidemiology
- Practical knowledge of issues in research management including:
 - Formation and leadership of multidisciplinary teams
 - Staffing, budgeting, tracking
 - Subject recruitment and retention
 - Data quality control and data safety management
 - Funding mechanisms and grantsmanship
 - Research ethics and regulations
- Professional quality peer-review, oral and poster presentation, report, grant, and manuscript writing
- Mentoring of junior peers
- Development, conduct, completion and defense of a dissertation on an original research project

Competencies are demonstrated by passage of the proficiency and candidacy examinations, by successful mentoring of master's students or doctoral students not yet in candidacy, and by successful completion and defense of the dissertation.

Admission

Students who have satisfactorily completed the M.S. degree in epidemiology are eligible for the Ph.D. concentration in epidemiology. Students with a master's degree in a related discipline or an advanced degree (for example, M.D., Ph.D., D.O.) may be accepted also pending evaluation of appropriate training, experience, and coursework. Previous coursework in mathematics and/or statistics and biological or health sciences (for example, biology, biochemistry, anatomy, physiology, microbiology) is strongly recommended. Students completing the M.Sc. in clinical investigation sciences or MPH with an epidemiology concentration may be required to complete additional coursework to be accepted into the epidemiology Ph.D. concentration.

Curriculum***Faculty Advisor***

Upon admission to the concentration, each student is assigned a faculty advisor who works with the student to develop a program of study.

Program of Study

The program of study recognizes core elements of modern epidemiology as well as its breadth and multidisciplinary nature. This requires the selection of a minor field of concentration, such as biostatistics, environmental science, molecular genetics, behavioral science, health management and systems sciences, clinical research, or another relevant area of study, and the completion of at least 6 credit-hours of coursework in this field.

Degree Requirements

The emphasis in doctoral training goes beyond accumulating course credit. The coursework is organized into two blocks of 24 credit-hours each. Completion of the first block of coursework is prerequisite for sitting for the proficiency examination. After passing the proficiency examination, the student can proceed with the second block of coursework. Successful completion of the second block is prerequisite to sitting for the candidacy examination. After passing the candidacy examination, the student is admitted to doctoral candidacy. A doctoral candidate must then successfully develop and defend a dissertation proposal that describes an original and independent research project. Upon successful defense of the proposal, the student may then proceed to dissertation research. Upon successful completion of the research, oral defense of the dissertation, and demonstration of the required competencies listed above, the student is awarded the Ph.D. degree.

The Ph.D. concentration in epidemiology is designed to consist of 48 credit-hours of coursework over a minimum of two years plus one to four years for completion of the dissertation. The coursework outlined below represents an ideal sequence for a full-time student. A part-time student may need to deviate from this sequence. As part of the first block, a student is expected to complete required courses in basic and advanced epidemiologic methods that cover core areas including study design, research management, and statistical analysis; the survey course in

disease biology and pathophysiology; and a minimum of 6 credit-hours of epidemiology seminars. The student must pass the proficiency examination before proceeding to minor electives and individual studies in the second block, which must include an additional 3 credit-hours of epidemiology seminars. Exceptions may be granted upon approval by the student's advisor and the department chair.

Coursework

48 total credit hours (beyond admission requirements) consisting of the following:

- 9 credit-hours of required courses
- 9 credit-hours of seminars in epidemiology
- 18-21 credit hours of epidemiology electives
- 6 credit hours of minor electives (outside of epidemiology)
- 3-6 credit-hours of mentored readings and research in epidemiology

<i>Required Coursework</i>			
<i>Semester</i>	<i>Course #</i>	<i>Course Title</i>	<i>Credit-Hours</i>
Block 1			
Fall I	PHEP 618	Epidemiologic Methods II	3
	-OR- PHEP-xxx	-OR if already taken - Epidemiology elective	3
	PHEP-619	Biology of Disease in Populations ^{B1}	3
	PHEP-xxx	Epidemiology elective	3
	PHEP-750	Seminars in Epidemiology ^{B1}	3
	Semester total		12
Spring I	PHEP-701	Advanced Epidemiologic Methods ^{B1}	3
	PHEP-702	Epidemiologic Research Management ^{B1}	3
	PHEP-xxx	Epidemiology elective	3
	PHEP-750	Seminars in Epidemiology ^{B1}	3
		Semester total	
Block 1 total			24

<i>Required Coursework</i>			
<i>Semester</i>	<i>Course #</i>	<i>Course Title</i>	<i>Credit-Hours</i>
Block 2			
Fall II	PHEP-xxx	Epidemiology elective	3
	PHEP-xxx	Epidemiology elective	3
	-OR- various	-OR- Minor elective	3
	various	Minor elective	3
	PHEP-750	Seminars in Epidemiology ^{B2}	3
	Semester total		12
Spring II	PHEP-xxx	Epidemiology elective	3
	Two of: PHEP-xxx various PHEP-778	Two of: Epidemiology elective Minor Elective Readings and Research in Epidemiology	3 3 3
	PHEP-778	Readings and Research in Epidemiology ^{B2}	3
	Semester total		12
	Block 2 Total		24
Degree Total		48	

Key: ^{B1} = required in Block 1
^{B2} = required in Block 2

Minor Elective Requirement

As a part of the approved program of study, the student is required to complete 6 credit-hours of coursework in a minor field of concentration. Areas directly relevant to the science of epidemiology are preferred, including, but not limited to, biostatistics, bioinformatics, medical geography, molecular or population genetics, environmental health, toxicology, microbiology, health management, health promotion and behavioral science, and clinical research. These courses may be selected from ones offered within the school, other departments within the university, or from sources outside the university with permission and acceptance of credit by the school and university.

Minor courses should be chosen by the student in consultation with his or her advisor and the respective course directors. Students may petition to take courses not on this list with approval of the instructor, program director, and the chair of the Department of Epidemiology and Population Health. The student must provide a written rationale for the choice of minor coursework in the program of study. The following is a partial list of approved minor courses. Some courses may have prerequisites, and the student is expected to either meet these or obtain permission from the instructor before registering.

<i>Approved Electives for Minor Requirement</i>		
<i>Course #</i>	<i>Course Title</i>	<i>Credit-Hours</i>
BIOC-641	Advanced Eukaryotic Genetics	3
BIOC-660	Molecular Endocrinology	3
BIOC 661	Molecular Mechanisms of Toxicology (cross-listed as PHTX-661)	3
BIOC-668	Molecular Biology	3
BIOC-675	Cancer Biology	3
EXP-600	Physiology of Exercise	3
EXP-605	Human Physiology	3
GEOG-656	Spatial Statistics	3
GEOG-657	Geographic Information Systems	3
MBIO-687	Microbial Pathogenesis	3
MBIO-618	Topics in Advanced Microbiology	3
MBIO-680	Genetics of Infectious Diseases	3
NURS-670	Cancer Epidemiology and Pathophysiology	3
PHBI-750	Statistical Methods for Bioinformatics	3
PHBI-751	High-throughput Data Analysis	3
PHCI-501	Bench to Bedside	1
PHCI-602	Health Services and Outcomes Research	2
PHCI-610	New Drug and Device Development	2
PHCI-624	Clinical Trials I: Planning and Design	2
PHCI-625	Clinical Trials II	2
PHCI-632	Ethical Conduct of Healthcare Research	2
PHCI-650	Medical Decision Analysis	2
PHEH-650	Advanced Topics in Environmental and Occupational Health	3
PHMS-650	Advanced Topics in Health Management and Systems Science	3
PHPB-650	Advanced Topics in Health Promotion and Behavioral Science	1-3
PHST-650	Advanced Topics in Biostatistics	3
PHST-680	Biostatistical Methods I	3
PHST-681	Biostatistical Methods II	3
PHST-661	Probability	3
PHST-662	Mathematical Statistics	3
PHST-683	Survival Analysis	3
PHST-682	Multivariate Analysis	3
PHST-684	Categorical Data Analysis	3
PHST-785	Nonlinear Regression	3
PHTX-607	Seminar in Genetics and Molecular Medicine	3
PHTX-618	Topics in Pharmacology & Toxicology	3
PHTX-630	Toxicology: Principles and Application	3
PHTX-661	Molecular Mechanisms of Toxicology (cross-listed as BIOC 661)	3
PHZB-605	Systemic Physiology I	3
PHZB-611	Advanced Human Physiology	3

Proficiency Examination

Upon successful completion of the first block of required coursework, the student is eligible to sit for the written proficiency examination, which is administered by a committee of departmental faculty appointed by the chair. The timing of the proficiency examination is determined by the student's faculty advisor and the department chair. The subject matter includes basic knowledge of disease biology and pathophysiology; theory and skills in epidemiologic research methods, including study design and management; and quantitative analytic methods. A student who does not successfully pass the proficiency examination is allowed a second opportunity to pass the exam. Failing the proficiency examination the second time results in dismissal from the program.

Candidacy Examination

After passing the proficiency examination and upon completion of the second block of coursework, the student is eligible to sit for the written and oral candidacy examination, which is administered by a committee appointed by the department chair and composed of graduate faculty. The subject matter includes knowledge of advanced epidemiologic methods; specialized knowledge pertaining to the minor field of concentration; disease biology and pathophysiology, which may be tailored to the student's special area of interest; and knowledge of the research process. Successful passage of the candidacy examination admits the student to doctoral candidacy. A student who does not successfully pass the candidacy examination may be required to take additional or remedial coursework and is allowed a second opportunity to pass the exam. Failing the candidacy examination the second time results in dismissal from the program.

Dissertation

A dissertation is required of every candidate for the degree of doctor of philosophy in public health sciences with a concentration in epidemiology. The dissertation is a scholarly achievement in research and presents an original contribution to knowledge and should demonstrate a thorough understanding of research techniques in epidemiology and the ability to conduct independent research. The following sections summarize the basic requirements for the dissertation committee, dissertation proposal, and defense. Additional details are available in the department's document "Student Advising, Thesis and Dissertation Committees."

Dissertation Committee

The dissertation is read by a dissertation committee, chaired by the student's faculty advisor and appointed by the dean of the school on the recommendation of the program director and chair of the department. The committee consists of at least four members and must include one representative of an allied department. The dissertation must be approved by the committee and the chair of the department.

Dissertation Proposal

After successful completion of the qualifying examination, a doctoral candidate must submit a written dissertation proposal to the members of the dissertation committee. The candidate is then orally examined on the dissertation proposal.

Dissertation Preparation

The dissertation is prepared with the format and binding according to the guidelines of the School of Interdisciplinary and Graduate Studies.

Dissertation Approval

The dissertation is submitted in completed form to the chair of the department at least thirty days before the end of the term in which the candidate expects to be graduated, and the candidate is not eligible for final examination until the dissertation has been received by the committee and chair.

The dissertation committee schedules an oral defense by the candidate. The time and place for the defense is published to the general academic community, members of which are free to attend the defense. The dissertation is approved by a majority vote of the committee and the concurrence of the department chair.

Dissertation Distribution

One unbound copy of the dissertation, signed by the dissertation committee, must be deposited with the School of Interdisciplinary and Graduate Studies before graduation.

v2008.05.14-1

Concentration in Health Management

Program Director: Raymond E. Austin, Ph.D.
Administrative Assistant: Kathie Sacksteder
Website: <http://louisville.edu/sphis/hmss/academics.html>

Introduction

The Ph.D. concentration in health management in the Department of Health Management and Systems Sciences is in the Ph.D. program in Public Health Sciences in the University of Louisville's School of Public Health and Information Sciences.

The concentration in health management is designed to prepare graduates for careers as researchers, teachers and practitioners, involved in the efforts to protect and promote the health and well-being of communities and populations. It provides graduates with the knowledge and skills necessary to attain academic positions involving scholarly research and instruction in the disciplines of public health management and key policy and management positions in governmental as well as private and voluntary organizations. In addition to an in depth understanding of the infrastructure and context of public health management, graduates of this concentration are expected to be able to identify issues and questions of importance with regard to the management of the resources of public health and to design and carry out a program of research designed to address these issues and questions. Graduates should be able to demonstrate abilities as an independent investigator as well as a team collaborator.

Competencies

To graduate, a student in the Ph.D. concentration in health management must demonstrate the following competencies:

- 8) In depth knowledge of the history of public health management
- 9) Mastery of experimental research study designs, including qualitative as well as quantitative, and the ability to identify optimal designs for specific hypotheses.
- 10) Ability to critically evaluate published research related to health management.
- 11) Expertise in one or more health management specialties such as information systems, planning and evaluation, human resource management, health policy analysis, development and implementation, budgeting and financial management, health economics, system dynamics, network science and social network analysis.
- 12) Practical knowledge of issues in research management including:
 - a) Formation and leadership of multidisciplinary teams.
 - b) Staffing, budgeting, tracking.
 - c) Data quality control and data safety management.
 - d) Funding mechanisms and grantsmanship.
 - e) Research ethics and regulations.
- 13) Professional quality peer-review, oral and poster presentation, report, grant, and manuscript writing.
- 14) Mentoring of junior peers.

Demonstration of Competency 1 is achieved by passing the doctoral qualifying examination and by successful completion and defense of the dissertation. Demonstration of Competencies 2 through 6, inclusive, is achieved by successful development, conduct, completion, and defense of the dissertation. Demonstration of Competency 7 is achieved by successful completion of assignments to work with master's students on the latter's research, theses, presentations, and posters.

Admission

An applicant who has satisfactorily completed a master of public health degree, or another relevant master degree or a health professional degree is considered for admission to the health management concentration. Applicants already holding an advanced degree are evaluated on the basis of appropriateness of previous coursework, training and experience. The graduate work by such applicants is reviewed on a case-by-case basis, and the applicant, if admitted, may be required to take additional course work prior to completing the minimum 48 credit hours required for post-master's doctoral work.

The minimum required documentation for full admission must include:

- Official transcript for each degree
- Official GRE score
 - If applicant has no degree from accredited US institution, then only the GRE is acceptable
 - Requirement is waived if applicant has doctoral degree.
- Three (3) letters of recommendation from individuals who have direct knowledge and experience with the applicant's academic or professional work experience.
- Official TOEFL score if applicant's native language is not English and applicant has no degree from accredited U.S. institution.
- Foreign credential evaluation for each degree not from an accredited U.S. institution

The following are recommended criteria for admission:

- Undergraduate and graduate GPA each ≥ 3.0 on 4.0 scale
- GRE performance in 50th percentile or above for verbal and quantitative scores (Comparable scores on the MCAT or DAT are considered.)
- If applicable, Test of English as a Foreign Language (TOEFL) score in 60th percentile or above

Curriculum

Each doctoral student, in consultation with his or her academic advisor, program director, and department chair, plans a course of study that uniquely fits the student's career goals. The design of a doctoral program of study that reflects each student's professional skills and research interest is the primary organizing principle of the proposed program.

The emphasis in doctoral training goes beyond accumulating course credit. Completion of the coursework is the prelude to sitting for the qualifying examination. Successful passage of this qualifying examination allows the student to enter candidacy. A doctoral candidate must then successfully develop and defend a dissertation proposal that describes an original and independent research project. Upon successful defense of the proposal, a student then proceeds to dissertation research. Upon successful completion of the research, defense of the dissertation, and demonstration of the required competencies listed below, a student is awarded the Ph.D. degree.

The Ph.D. concentration in health management is designed as a 48 credit-hour program (minimum beyond a master's degree) and the dissertation. Depending on the student's previous educational experience, additional hours may be needed for completion of the concentration program.

Faculty Advisor

Upon admission to the Ph.D. concentration, each student is assigned a faculty advisor who works with the student to develop a program of study.

Program of Study

The program of study incorporates a foundation of core courses intricate to health management as well as addresses its multidisciplinary nature. At the Ph.D. level, this requires the selection of courses directly relevant to health management, such as organizational theory, management and administrative processes, health policy, leadership, systems and network sciences, and another area of study related to providing in depth knowledge related to effectively managing the resources necessary to carrying out the mission of protecting and improving public health. The importance of understanding the contributions of the emerging field of complexity and network sciences, as it relates to public health management, is a focal point of emphasis within the Ph.D. concentration.

Degree Requirements

The emphasis in doctoral training goes beyond accumulating course credit. Completion of the coursework is the prelude to sitting for the qualifying examination. Successful passage of the qualifying examination allows the student to enter doctoral candidacy. A doctoral candidate must then successfully develop and defend a dissertation proposal that describes an original and independent research project. Upon successful defense of the proposal, a student may then proceed to dissertation research. Upon successful completion of the research, defense of the dissertation, and demonstration of the required competencies listed below, a student is awarded the Ph.D. degree.

The Ph.D. concentration in health management is designed as a 48 credit-hour program (minimum beyond a master's degree) and the dissertation. Additional hours may be needed for completion of the concentration program.

Coursework

48 total credit hours

30 credit hours of required coursework

15 credit hours of elective coursework

3 credit hours of public health management seminars

<i>Required Coursework</i>			
<i>Semester</i>	<i>Course #</i>	<i>Course Title</i>	<i>Credit Hours</i>
Fall I	PHMS-606	Complexity in Health Care Organization and Leadership	3
	UPA-621	Policy Analysis and Program Evaluation	3
	UPA-661	Public Administration and Organizational Theory	3
	PHMS-751	Seminar 1 in Public Health Management	1
	Semester Total		
Spring I	PHMS-616	Complexity and Health Systems	3
	PHMS-608	Managing Community Health with Policy Development	3
	PHEP-602	Epidemiology Methods	3
		Elective course	3
	PHMS-752	Seminar 2 in Public Health Management	1
Semester Total			13
Fall II	ECON-644	Health Economics	3
	PHMS-604	Advanced Topics of Legal, Ethical, and Policy Aspects of the Health System	3
		Elective course	3
		Elective course	3
	PHMS-753	Seminar 3 in Public Health Management	1
	Semester Total		
Spring II	PADM-602 or PHPB-655	Applied Research Methods or Systems Thinking and Dynamic Modeling in Public Health	3
	MBA-610	Organizational Behavior and Human Resource Management	3
		Elective course	3
		Elective course	3
	Semester Total		
Degree Total			48

Seminars in Public Health Management

A student in the Ph.D. concentration in health management is required to complete at least three credit hours of seminars in Public Health Management (PHMS-751, -752, -753). These group courses are jointly taught by the faculty of the department and are designed to provide a collegial experience that provides an opportunity to integrate learning from other courses, discuss hot topics, brain-storm about research ideas, and acquire professional skills in scientific manuscript and grant writing, oral and poster presentations, grantsmanship, and peer review.

Electives

As a part of the approved program of study, a student is able to select six credit hours of elective coursework. Courses directly relevant to health management are preferred including, but not limited to, biostatistics, bioinformatics, epidemiology, medical geography, molecular or population genetics, toxicology, microbiology, health services research, outcomes research, health knowledge and behavior. Courses may be selected from those offered within the school, other schools or colleges within the university, or from sources outside the university with permission and acceptance of credit by the school and university.

A student may petition to take courses not on this list with approval of the course instructor, the student's advisor, program director, and chair of the department. The student must provide a written rationale for the choices of elective coursework in his or her program of study.

<i>Approved Electives</i>		
<i>Course #</i>	<i>Course Title</i>	<i>Credit Hours</i>
<i>School of Public Health and Information Sciences</i>		
<i>Health Management and Systems Sciences</i>		
PHMS-702	Methods in Health Services and Outcomes Research	3
PHMS-761	Public Health and the Built Environment	3
<i>Epidemiology and Population Health</i>		
PHEP-501	Introduction to Epidemiology	3
PHEP-602	Epidemiology Methods	3
PHEP-604	Epidemiology Infectious Disease	2
PHEP-605	Research in Infectious Disease (Laboratory for PHEP-604)	1
PHEP-606	Genetic and Molecular Epidemiology	3
PHEP-611	Nutritional Epidemiology	3
PHEP-612	Epidemiology and Bioterrorism	3
PHEP-613	Epidemiology of Aging	3
PHEP-615	Epidemiology of Maternal and Child Health	3
PHEP-616	Disease Surveillance	3
PHEP-617	Field Epidemiology	3
PHEP-618	Epidemiologic Methods II	3
PHEP-619	Biology of Disease in Populations	3
<i>Bioinformatics and Biostatistics</i>		
PHST-500	Introduction to Biostatistics	3

<i>Approved Electives</i>		
<i>Course #</i>	<i>Course Title</i>	<i>Credit Hours</i>
PHST-610	Statistical Computing and Data Management for Public Health	3
PHST-620	Introduction to Statistical Computing	3
PHST-640	Statistical Methods for Research Design in Health Sciences	3
PHDA-601	Introduction to Medical Decision Analysis	3
PHDA-663	Decision Analysis	3
PHDA-690	Utility Theory and Assessment	3
PHDA-701	Advanced Medical Decision Making	3
<i>Environmental and Occupational Health Sciences</i>		
PHEH-500	Introduction to Environmental and Occupational Health	3
PHEH-610	Occupational Health and Safety	3
PHEH-620	Global Issues of Environmental and Occupational Health	3
<i>Health Promotion and Behavioral Sciences</i>		
PHPB-501	Introduction to Health Behavior	3
PHPB-604	Health Decision and Risk Analysis	3
PHPB-607	Population Health Management	3
PHPB-608	Public Health Program Evaluation	3
PHPB-612	Health Communications Campaigns	3
<i>Public Health</i>		
PHPH-614	Critical Thinking and Program Evaluation	3
<i>College of Business</i>		
MBA-625	Managerial Accounting	3
MBA-635	Managerial Finance	3
MBA-645	Leadership and Ethics	3
MBA-655	Strategic Management	3
ACCT-615	Advanced Financial and Governmental Accounting	3
<i>School of Urban and Public Affairs</i>		
PADM-601	Statistics for Public Affairs	3
PADM-604	Public Budgeting and Finance	3
PADM-605	Strategic Management and Planning	3
PADM-606	Public Policy	3
PADM-607	Planning Theory	3
PADM-608	e-Government	3
PADM-610	Administrative Law and Process	3
PADM-611	Financial Management for Public Administration	3
PADM-620	Intergovernmental Relations	3
PADM-630	Environmental Policy and Natural Hazards	3
PLAN-611	Human Resources Management	3
PLAN-612	Mediation and Dispute Resolutions	3

Qualifying Examination

Upon completion of the required coursework for the Ph.D., the student is eligible to sit for the qualifying examination. The components of the qualifying exam focus on the subject matter drawn from foundation courses, the student-selected minor area of study, as well as research methods and problem analysis. The timing and eligibility for the qualifying exams are determined by the student's faculty advisor, program director, and department chair. Successful completion of the exam admits the student to doctoral candidacy. A student who does not successfully complete the exam may be required to take additional or remedial coursework and is allowed one opportunity to retake the exam.

Dissertation

A dissertation is required of a candidate for the degree of doctor of philosophy in public health sciences with a concentration in health management. It is to be a scholarly achievement in research, and should demonstrate a thorough understanding of research techniques in health management and the ability to conduct independent research.

Dissertation Committee

The dissertation shall be read by a reading committee, chaired by the student's faculty advisor, and appointed by the dean of the school upon the advice of the program director and chair of the department. This committee shall consist of at least four members and must include one representative of an allied department. The dissertation must be approved by the committee and the chair of the department.

Dissertation Proposal

A candidate must submit a written dissertation proposal to all members of the dissertation committee. The candidate is then orally examined on the dissertation proposal.

Dissertation Preparation

The dissertation is to be prepared in format and binding according to the guidelines of the School of Interdisciplinary and Graduate Studies.

Dissertation Approval

The dissertation is to be submitted in completed form to the chair of the department at least thirty days before the end of the term in which the candidate expects to be graduated, and the candidate is not eligible for final examination until the dissertation has been accepted by the committee and chair.

The dissertation committee schedules an oral defense by the candidate. The time and place for the defense is published to the general academic community, members of which are free to

attend the defense. The dissertation is approved by a majority vote of the committee and the concurrence of the department chair.

Dissertation Distribution

One unbound copy of the dissertation, signed by dissertation committee, must be deposited with the School of Interdisciplinary and Graduate Studies before graduation.

v2007.04.24-7

Concentration in Health Promotion

Program Director: Richard W. Wilson, D.H.Sc.

Administrative Assistant: Kathie Sacksteder

Website: <http://louisville.edu/sphis/hpbs/academics.html>

Introduction

The Ph.D. concentration in health promotion in the Department of Health Promotion and Behavioral Sciences is in the Ph.D. in public health sciences degree program in the University of Louisville's School of Public Health and Information Sciences. The concentration is designed to prepare students for careers in higher education, upper level management positions in government and private nonprofit health agencies, and research positions with universities, government agencies and in the private sector. In addition to gaining a solid foundation in the theories and concepts of the discipline, students also achieve competency as independent researchers.

Competencies

The successful student is able to demonstrate:

- Advanced knowledge of behavioral and cognitive sciences related to public health education and promotion.
- Expertise in planning, implementing, and evaluating theory-driven health promotion interventions in a variety of community and clinical settings.
- Research, evaluation, scholarship and leadership skills that may be applied in higher education, government, and community health agencies.

It is expected that prior to graduation, students in the program have demonstrated these competencies by completing the curriculum, passing the qualifying exam, successfully defending the dissertation, participating in collaborative research and service projects with public health agencies, and serving as an instructor and mentor for master's level and beginning doctoral students.

Competency in the basic principles and application of epidemiology is a requirement for all students in the School. If a student has not had sufficient exposure to epidemiology prior to matriculation, he or she is required to take a course in epidemiology as part of the program of study.

Admission

Applicants should have a minimum of 3.0 on a 4.0 scale and, in most cases, should have completed a master's or other graduate degree related to the theme of the doctoral program. Applicants who have a master's degree in a different discipline may be admitted with the stipulation that they complete foundation course work during their enrollment for the doctoral

degree. This coursework is in addition to the outlined curriculum, and is negotiated with the student's academic advisor on a case-by-case basis.

The formal application, curriculum vitae, personal statement, application fee, at least two letters of recommendation, official transcripts of all college work, and official scores on the Graduate Record Examination (GRE) General Test must be submitted to the Graduate School Office of Admissions. The personal statement should be a one-two page essay which discusses the student's background in health promotion, why the student is attracted to the field, and how the degree helps the student reach his or her career goals. Students should score above the 50th percentile on the GRE. In addition, prior work experience relevant to the health promotion discipline is also considered as a factor in acceptance into the program. International students are required to submit TOEFL scores and a foreign credential evaluation of their transcripts. These are required no later than thirty days before the first day of classes of the semester in which the applicant plans to enroll.

For specific information about the degree concentration or the application process, students should contact Dr. Richard W. Wilson, Chair, Department of Health Promotion and Behavioral Sciences, 502-852-8040.

Curriculum

The typical progression through the health promotion curriculum is:

- Program of Study (year 1)
- Required and elective coursework of 48 credit-hours (years 1 and 2)
- Qualifying examination (year 2)
- Candidacy
- Dissertation research and preparation
- Oral examination

Faculty Advisor

The Department of Health Promotion and Behavioral Sciences appoints a director of the Ph.D. concentration program each year. The director assigns advisors for each doctoral student. The assignment process is negotiated with the student who has the option of requesting a specific advisor. The student's choice is contingent on the agreement of the desired advisor, his or her availability, and the overall faculty resources of the department.

Program of Study

Upon matriculation in the program, each student meets with his or her assigned advisor and develops a program of study that includes courses in research design and statistics as well as selected cognate courses. The program of study may be modified as the student's needs change or course availability is altered.

If a student has not had sufficient exposure to epidemiology prior to matriculation, he or she is required to take a course in epidemiology as part of the program of study. In addition the

program of study includes development of competencies in other areas of public health knowledge that are relevant to the student's are of interest.

Degree Requirements

Coursework

The Health Promotion concentration of the Ph.D. in Public Health Sciences consists of a minimum of 39 credit-hours, including the following requirements:

39 total credit-hours:

21 credit-hours of required coursework:

12 credit-hours of coursework in health promotion theory and principles

3 credit-hours of cognate coursework

3 credit-hours of research design and statistics

3 credit-hours of ELFH-683 College Teaching

18 credit-hours of elective coursework:

9 credit-hours of cognate coursework

9 credit-hours of research design and statistics

<i>Required Coursework</i>		
<i>Course #</i>	<i>Course Title</i>	<i>Credit-Hours</i>
PHPB-701	Theoretical Basis of Health Promotion	3
PHPB-704	Psycho-Social Foundations of Health Decision Making	3
PHPB-705	Community Organization and Health Policy Advocacy	3
PHPB-710	Community-Based Participatory Research	3
PHPB-722	Health Risk Communication	3
PHPB-724	Dissertation Methods Seminar	3
	Research design and statistics electives (with approval of advisor)	9
	Cognate electives (with approval of advisor)	9
ELFH-683 or ELFH-661 or other course	College Teaching or Adult Development and Learning or equivalent course (with approval of advisor)	3
Total		39

Research Design and Statistics Electives

Students work with their advisors to select appropriate courses to complete the twelve credit-hours required in this category. Selections are based on the research and statistics background of students and the anticipated research and statistics needs of the dissertation research projects.

The following is the list of approved electives for this category. Other courses may be considered with permission of the faculty advisor and the program director.

<i>Approved Research Design and Statistics Elective Courses</i>		
<i>Course #</i>	<i>Course Title</i>	<i>Credit-Hours</i>
PHEP-602	Epidemiological Methods	3
PHPB-615	Advanced Program Evaluation	3
PHEP-710	Community-based Participatory Research	3
PHPB-711	Qualitative Research Methods in Public Health	3
PHPB-724	Dissertation Methods Seminar	3
PHST-630	Applied Statistical Methods	3
PHST-640	Statistical Methods for Research Design in Human Studies	3
PHST-680	Biostatistical Methods I	3
PHST-681	Biostatistical Methods II	3
PHST-682	Multivariate Statistical Analysis	3
PHST-684	Categorical Data Analysis	3
PHST-725	Design of Experiments	3
PSYC-610	Advanced Statistics I	3
PSYC-611	Advanced Statistics II	3
PSYC-612	Advanced Statistics III	3
ECPY-793	Reviewing Scientific Literature [course in meta-analysis]	3
SOC-609	Seminar in Statistics I	3
SOC-609	Seminar in Statistics II	3
SOC-618	Qualitative Field Research Methods	3

Cognate Electives

Students work with their advisors to select appropriate courses to complete the twelve credit-hours required in this category. Selections are based on the research and professional interests of students and the career paths anticipated.

The following is the list of approved electives for this category. Other courses may be considered with permission of the faculty advisor and the program director.

<i>Approved Cognate Elective Courses</i>		
<i>Course #</i>	<i>Course Title</i>	<i>Credit-Hours</i>
PHPB-604	Health Decision and Risk Analysis	3
PHPB-612	Health Communication Campaigns	3
PHPB-650	Advanced Topics in Health Promotion and Behavioral Sciences	3
PHPB-655	Systems Thinking and Dynamic Modeling in Public Health	3
PHPB-721	Health Promotion and Healthcare-Associated Infection	3
PHPB-727	Culture and Public Health	3
PHPB-753	Independent Study in Health Promotion and Behavioral Sciences	3
GEOG-657	Geographic Information Systems	3
HSS-669	Administering Health Promotion and Disease Prevention Programs	3

<i>Approved Cognate Elective Courses</i>		
<i>Course #</i>	<i>Course Title</i>	<i>Credit-Hours</i>
HSS-675	Health Promotion and Disease Prevention at the Individual Level	3
HSS-676	Community Health Promotion and Disease Prevention	3
HSS-684	Program Planning in Health Education and Promotion	3
NURS-657	Health Promotion and Illness Prevention Across the Lifespan	3
PHCI-631	Social and Behavioral Sciences in Health Care	3
PHEH-620	Global Issues	3
PHMS-604	Legal and Bioethical Aspects of Public Health	3
PHPH-630	Geographic Information Systems in Public Health	3
PSYC-581	Introduction to Health Psychology	3

Qualifying Examination

Upon completion of all formal course work, typically at the end of the second year, students take a written qualifying exam to demonstrate their ability to synthesize and apply concepts from those courses. The exam is evaluated on a pass/fail basis; students who don't pass the exam at the first administration are given time to prepare to sit for the exam one additional time. Once the qualifying exam is successfully completed, students are admitted to candidacy for the doctoral degree.

Dissertation

A dissertation, based on original research conducted by the student, is required of a candidate for the degree of doctor of philosophy in public health sciences with a concentration in health promotion. The dissertation is to be a scholarly achievement that demonstrates the student's thorough understanding of research techniques in health promotion and the ability to conduct independent research.

Dissertation Committee

The student's dissertation research is guided by, and the final product approved by, a dissertation committee, chaired by the student's faculty advisor, and appointed by the dean of the school upon the advice of the program director and chair of the department. The dissertation committee consists of at least four members and must include one representative outside the department. The dissertation must be approved by the committee and the chair of the department.

Once the student has completed work on the dissertation, the dissertation committee schedules a date for the student's final examination during which the student is asked to defend the dissertation and the supporting research. The dissertation must be approved by the committee and by the chair of the department.

Dissertation Proposal

A candidate must submit a written dissertation proposal to all members of the dissertation committee. The candidate is then orally examined on the dissertation proposal.

Dissertation Preparation

The dissertation is to be prepared in format and binding according to university guidelines.

Dissertation Approval

The dissertation is to be submitted in completed form to the chair of the department at least thirty days before the end of the term in which the candidate expects to be graduated, and the candidate is not eligible for final examination until the dissertation has been accepted by the committee and chair.

The dissertation committee schedules an oral defense by the candidate. The time and place for the defense is published to the general academic community, members of which are free to attend the defense. The dissertation is approved by a majority vote of the committee and the concurrence of the department chair.

Dissertation Distribution

One unbound copy of the dissertation, signed by the dissertation committee, must be deposited with the School of Interdisciplinary and Graduate Studies prior to graduation.

v2008.12.01-1

Doctor of Philosophy (Ph.D.) in Biostatistics

Program Director: Somnath Datta, Ph.D.
Emphasis Coordinators: Susmita Datta, Ph.D. Bioinformatics
 Steven J. McCabe, M.D., M.Sc. Decision Science
Program Administrator: Paula K. Bossmeyer
Website: <http://louisville.edu/sphis/bb/academics>

Introduction

Biostatistics involves the development and application of statistical techniques to scientific research in health-related fields, including medicine, epidemiology, and public health. Students in the Ph.D. program receive state-of-the-art training in the latest statistical methodology in order to tackle the challenges associated with the study design and data analysis of modern research conducted in the health sciences. The Ph.D. program provides advanced training in biostatistical theory and methods, with the goal of enabling the student to carry out original research. In addition, students may elect to train with an emphasis on decision science or on bioinformatics.

Biostatistics involves the development and application of statistical methods in research in health-related fields, including public health, medicine, dentistry, and nursing. This program is designed to train students in biostatistics for carrying out research in biomedical fields and in statistical methods used in biomedical research.

Decision science, or formal decision analysis, is an emerging, cutting edge discipline that provides researchers with additional tools with which to develop the clinical and health-care policies and guidelines that affect public health. The decision science emphasis goes beyond traditional decision science programs by providing a mathematically rigorous, interdisciplinary approach to decision-making that is capable of adapting to the ever-changing health care environment. The decision science emphasis provides advanced training in the theory and methods of formal decision analysis, with the goal of enabling students to carry out original research. The focus of is on training a well-qualified biostatistician to work within the specialized field of decision science.

Bioinformatics requires the development and application of statistical methods for many of the areas covered by the field, including genomics, proteomics, statistical genetics, and metabolomics. Current biomedical research technologies generate high volumes of data that require extension of existing statistical methodologies and development of new methodologies in order to extract important information regarding biological processes. The emphasis on bioinformatics is designed to fulfill the expanding need for biostatisticians with advanced training in this area. Students in the bioinformatics emphasis gain a basic understanding of molecular and cellular biology, genetics, and bioinformatics and an in-depth knowledge of statistical theory and methods. Graduates are able to carry out original statistical research in genomics, proteomics, metabolomics, and evolving areas of systems biology.

Students who complete the M.S. program in biostatistics with the Department of Bioinformatics and Biostatistics or who already possess the equivalent of an M.S. in statistics, biostatistics, decision science, or a related discipline may apply for admission to the Ph.D. program.

The Ph.D. program in biostatistics is located in the Department of Bioinformatics and Biostatistics.

Competencies

To graduate, a student must be able to demonstrate mastery of the following competencies:

<i>Competency</i>	<i>Demonstration*</i>		
	<i>QE</i>	<i>SCP</i>	<i>Dsrt</i>
Read, interpret, and critically review the biostatistics content of scientific and biomedical journal articles	x		x
Analyze moderately complex research data using statistical methods involving common linear statistical models	x	x	
Analyze dichotomous, count, and time-to-event data using appropriate statistical methods, including logistic regression, log-linear models, Kaplan-Meier curves, and Cox proportional hazards models	x	x	
Assist researchers in planning research studies, proposing and evaluating statistical methods and computing power analyses		x	
Write statistical methods sections for grant proposals, clinical trial protocols, and journal articles	x		
Manage data using spreadsheet and database software	x		
Use standard statistical and graphics computer packages including SAS, R, and SPSS	x	x	x
Keep abreast of statistical methods literature to evaluate and utilize new statistical methods			x
Thoroughly understand the broad discipline of biostatistics, including its theoretic underpinnings, its history of development, current applications, and areas of active inquiry	x		x
Understand advanced biostatistical operations	x		x
Conduct independent research			x
Advance the field of biostatistics through original research			x

Students who elected to have an emphasis must demonstrate the following additional competencies, many of which represent specialization of competencies cited above:

<i>Additional Competency by Emphasis</i>	<i>Demonstration*</i>		
	<i>QE</i>	<i>SCP</i>	<i>Dsrt</i>
<i>Emphasis on Decision Science</i>			
Read and critically evaluate decision analyses published in the literature	X		X
Provide consultation with researchers and decision makers about decision analysis methods, problems, and results		X	
Understand and apply the concepts of public health and information sciences to clinical decision making and decision analysis	X	X	
Communicate the results of decision analysis and other clinical research to decision makers, peers, and to the community through written and oral presentations and publications		X	
Thoroughly understand the broad discipline of decision science including its theoretical underpinnings, its history of development, current applications, and areas of active inquiry	X		X
Advance the field of decision science through original research			X
<i>Emphasis on Bioinformatics</i>			
Analyze high-throughput, biological data, such as microarrays, SNP chips, and mass spectrometer data, and understand the special statistical considerations that such data require	X	X	
Retrieve and leverage various types of biological information from online repositories	X	X	
Understand the basic biological principles that underlie our biological knowledge, and how the various forms of high-throughput data are used to address specific biological questions and expand our knowledge	X		X
Advance the field of statistics in bioinformatics through original research			X

*Key for demonstration (method): QE = Qualifying examinations
 SCP = Statistical consulting practicum
 Dsrt = Dissertation

Admission

The Ph.D. program is available to students who are entering from the M.S. program or to students entering with a master's degree in biostatistics, statistics, decision science, or a related discipline.

The following are additionally required for admission:

- Graduate application (see www.graduate.louisville.edu)

- Non-refundable application fee
- At least two letters of recommendation written within past twelve months, which may be submitted with the form available at <http://graduate.louisville.edu/app/grad-rec.pdf>
- Submission of GRE Quantitative section score to graduate admissions (no minimum score required)
- All postsecondary transcripts (may require foreign credential evaluation if not from an accredited U.S. institution)
- Statement of goals submitted to the department office, including the desired emphasis, if any.

Curriculum

The curriculum consists of a minimum of 34 credit-hours of coursework and a doctoral dissertation. The student is eligible to sit for qualifying examinations upon completion of required coursework. Upon passing the qualifying examinations, the student enters candidacy to work on the dissertation. After the dissertation is submitted and approved, including an oral defense, the student is eligible to receive the Ph.D. degree in biostatistics.

Faculty Advisor

Upon admission to the Ph.D. program, each student is assigned to the graduate coordinator of the Ph.D. program for course advising. The graduate coordinator assumes the role of faculty advisor until the student chooses a dissertation advisor at which point this responsibility shifts to the dissertation advisor. If it becomes clear that a Ph.D. student will be working with a given faculty member prior to forming a dissertation committee, the student may request a change in course advisor by completing the form “Request to Change Academic Advisor.”

Program of Study

Upon admission to the Ph.D. program, a program of study is developed for each student by the faculty advisor and approved by the program director and department chair. Students who did not complete the M.S. program in biostatistics with the Department of Bioinformatics and Biostatistics may be required to complete additional coursework normally offered in the M.S. program. Decisions regarding additional coursework are made by the student’s assigned faculty advisor and such courses become part of the program of study. This approach gives maximum flexibility for addressing differing student qualifications and interests.

Degree Requirements

Completion of the coursework is the prelude to sitting for the qualifying examination. Successful completion of the qualifying examination allows the student to enter doctoral candidacy. A doctoral candidate must then develop and successfully defend a dissertation proposal that describes an original and independent research project. Upon successful defense of the proposal, a student may then proceed to continue dissertation research. Upon successful completion of the research, defense of the dissertation, and demonstration of the required competencies listed below, a student is awarded the Ph.D. degree.

The Ph.D. program in biostatistics is a 34 credit-hour program (minimum beyond a master's degree) including the dissertation. Additional hours may be needed for completion of the program.

Coursework

34 total credit-hours

25 credit-hours of required coursework

9 credit-hours of elective courses

<i>Required Coursework</i>			
<i>Emphasis (if any)</i>	<i>Course #</i>	<i>Course Title</i>	<i>Credit-Hours</i>
All	PHST-710	Advanced Statistical Computing I	3
	PHST-762	Advanced Statistical Inference	3
	PHST-781	Advanced Linear Models	3
	various	Electives	9
	PHST-703	Doctoral Practicum in Consulting	1
	Subtotal		
No emphasis	PHST-691	Bayesian Statistics	3
	PHST-724	Advanced Clinical Trials	3
	PHST-780	Advanced Nonparametrics	3
	PHST-782	Generalized Linear Models	3
	PHST-783	Advanced Survival Analysis	3
	Subtotal		
Emphasis on decision science	PHDA-690	Utility Theory and Assessment	3
	PHST-691	Bayesian Statistics	3
	PHDA-701	Advanced Medical Decision Making	3
	PHDA-663	Decision Analysis	3
	PHDA-705	Statistical Methods for Cost-Effectiveness Analysis	3
	Subtotal		
Emphasis on bioinformatics	PHBI-751	High-Throughput Data Analysis	3
	CECS-660	Introduction to Bioinformatics	3
	BIOC-545	Advanced Biochemistry I	3
	-OR- MBIO-667	Graduate Cell Biology	3
	PHBI-750	Statistics for Bioinformatics	3
	PHBI-752	Statistical Genetics	3
	Subtotal		
Degree Total			34

The student may be required to take one or more prerequisite courses for a required course if the student does not meet the prerequisites. These prerequisite courses become part of the program of study but are in addition to the number of coursework credit-hours presented above.

Electives

The student must take electives from the following list. The student's program of study specifies the particular courses to be taken.

<i>Electives</i>					
<i>Emphasis*</i>			<i>Course #</i>	<i>Course Title</i>	<i>Credit-Hours</i>
<i>--</i>	<i>D</i>	<i>B</i>			
x	x		PHBI-750	Statistics for Bioinformatics	3
x	x		PHBI-751	High-Throughput Data Analysis	3
x	x	x	PHST-682	Multivariate Analysis	3
x	x	x	PHST-711	Advanced Statistical Computing II	3
x	x	x	PHST-725	Design of Experiments	3
x	x	x	PHST-785	Nonlinear Regression	3
x	x	x	PHST-675	Independent Study in Biostatistics	1-3
x	x		PHBI-752	Statistical Genetics	3
x			PHDA-705	Statistical Methods for Cost-Effectiveness Analysis	3
	x		PHST-724	Advanced Clinical Trials	3
	x	x	PHST-782	Generalized Linear Models	3
		x	PHST-691	Bayesian Statistics	3
		x	PHST-780	Advanced Nonparametrics	3
x	x	x	PHST-704	Mixed Effect Models and Longitudinal Data Analysis	3
		x	CECS-632	Data Mining	3

*Key for emphasis: -- = no emphasis
 D = emphasis on decision science
 B = emphasis on bioinformatics

The student may be required to take one or more prerequisite courses for an elective course if the student does not meet the prerequisites. These prerequisite courses become part of the program of study but are in addition to the number of coursework credit-hours presented above.

Qualifying Examination

Upon completion of the required coursework for the Ph.D. degree, a student is eligible to sit for the doctoral qualifying examinations. Each student must take two qualifying exams.

- Exam 1 covers the following topics:
 - Statistical inference
 - Linear models

- Exam 2 covers the following topics, depending on the student's emphasis, if any:
 - No emphasis
 - Student choice of any two of the following:
 - Statistical computing
 - Clinical trials
 - Generalized linear models
 - Survival analysis
 - Emphasis on decision Science
 - Utility theory, assessment, and medical decision making
 - Student choice of one of the following:
 - Bayesian analysis
 - Cost-effectiveness analysis
 - Emphasis on bioinformatics
 - Statistical methods in bioinformatics (including high-throughput methods) and statistical genetics
 - Student choice of one of the following:
 - Bayesian analysis
 - Statistical computing

Dissertation

In order to complete the degree, a candidate must submit and successfully defend a dissertation on a topic approved by his or her major professor and the dissertation committee. Dissertation work may be started following successful completion of doctoral qualifying examinations.

Dissertation Committee

The dissertation committee is formed by the candidate's proposing a major professor (or principal advisor) and at least three other committee members. One member of the dissertation committee must be external to the Department of Bioinformatics and Biostatistics. The committee is appointed by the dean of the school upon the recommendation of the program director and chair of the department.

Dissertation Proposal (Pre-Dissertation Essay)

A dissertation proposal or pre-dissertation essay is submitted to the major professor and the dissertation committee. The proposal must be approved by a majority vote of the dissertation committee before the candidate undertakes further work on the dissertation.

The dissertation proposal is a typed document not exceeding 25 pages in length excluding topics (v) to (viii), below. The following formatting is used: Times New Roman 12-point font, margins of 1 inch on all sides and 1.5-line spacing throughout the body of the document. The Graduate School dissertation guidelines for citing references must be followed. The document is divided into the following sections and in the following sequence:

- (i) Introduction and Literature Reviews – general introduction to the area of proposed research and relevant literature reviews
- (ii) Specific Aims and Significance – short section describing the specific aims of the proposed research and their potential importance in the field
- (iii) Preliminary Results – summary of the research findings the student already has (e.g., simulation results) towards one or more of the specific aims. This is an important component of the proposal that demonstrates the feasibility of the proposed research by the student.
- (iv) Research Plan – detailed description of the research towards the specific aims to be undertaken during the rest of the doctoral study period
- (v) References – complete references to all the cited literature. Journal names should not be abbreviated
- (vi) Tables – including table headings
- (vii) Figures – one figure per page
- (viii) Appendix – copies (in PDF format) of published articles and preprints that are most relevant to the proposed research

Dissertation Preparation

The dissertation is to be prepared in format and binding according to the guidelines established by the School of Interdisciplinary and Graduate Studies.

Dissertation Approval

The dissertation is submitted in completed form to the dissertation committee at least thirty days before the end of the term in which the candidate expects to be graduated. A candidate is not eligible for the final oral examination until the dissertation has been accepted by the committee.

The dissertation committee schedules an oral examination of the candidate. All faculty and students of the school are invited to attend the presentation portion. The defense is scheduled at the convenience of the members of the dissertation committee. The dissertation must be approved by the full committee.

Dissertation Distribution

One unbound copy of the dissertation, signed by the dissertation committee members, must be deposited with the School of Interdisciplinary and Graduate Studies before graduation. A copy of the final, signed dissertation must also be deposited with the department office.

v2009.07.29

About the School of Public Health and Information Sciences

History

The University of Louisville traces its roots to April 3, 1798, when eight men declared their intention to establish the Jefferson Seminary in Louisville and called upon their fellow citizens to join them in pledging funds for land, buildings and teachers. It had been chartered with other academies in the new state a few weeks earlier by the Kentucky Legislature and became the origins of the first municipally operated American college or university west of the Allegheny Mountains.

Jefferson Seminary opened in the fall of 1813, but was closed in 1829. In 1844, Louisville College, chartered as the Louisville Collegiate Institute in 1833 and re-named in 1840, inherited the portion of the estate of Jefferson Seminary designated for the use of higher education in Louisville.

The Louisville Medical Institute, predecessor to the School of Medicine, admitted its first class in 1837 and is the longest continuously operating academic unit within the institution.

In 1846, the Kentucky Legislature created the University of Louisville proper, combining the Medical Institute and the Louisville College. The charter also provided for the creation of a new Law Department, which grew into today's Brandeis School of Law. Louisville College became the Academic Department of the new University of Louisville. Although governed by a common board of trustees, each division retained financial autonomy. The Academic Department is the direct predecessor of the modern university's largest unit, the College of Arts and Sciences.

During the 19th century, most of the professors in the medical and law schools were local physicians and attorneys who considered teaching a part-time vocation. By the end of the century, however, the university began to respond to educational reformers advocating full-time faculty and well enforced national education standards. This trend contributed to the 1907 revival of the liberal arts college that had been all but forgotten during the second half of the century. The medical school merged with four other medical schools in 1908 and adopted its present name as University of Louisville School of Medicine.

Expanded academic programs and the adherence to higher educational standards led to the appointment of full time administrators early in the 20th century and, in 1910, the City of Louisville and later Jefferson County began making regular appropriations to the university. For the next sixty years, the university operated as a private, municipally supported institution.

The Graduate School was added in 1907, the School of Dentistry in 1918 and the School of Public Health in 1919. The School of Public Health discontinued operations from 1923 until it was reconstituted in 2002 as the current School of Public Health and Information Sciences. The Speed Scientific School was added in 1925, Louisville Municipal College for Negroes in 1931, the School of Music in 1932 and the Kent School of Social Work in 1936. In 1950, the university began desegregating the university at all levels, and, in 1951, the Louisville Municipal College

History

was closed and its plant and some faculty were absorbed into other units. In 1953, the School of Business was created.

Municipal funding became inadequate for the continuing growth of the university, and, in 1965, a Governor's Task Force reviewed the available options. In July 1970, the University of Louisville officially entered the state university system of the Commonwealth of Kentucky, thus beginning a new era of service to the community, the state and the nation.

Throughout the late 1960s and the 1970s, the university continued to add new academic schools, including the School of Education in 1968, the School of Justice Administration in 1969, the School of Nursing in 1979 and the College of Urban and Public Affairs in 1983. Each of the university's schools is defined as an academic unit for administrative purposes.

Also during this period, the university began an ambitious development of the Health Sciences Center, beginning with the 1970 completion of the Quadrangle, consisting of the Medical School Tower, the School of Dentistry building, the Instructional Building and the Library and Commons Building. In 1981, the James Graham Brown Cancer Center was built with private money and donated to the University.

The 1980s saw the construction by the state of a new tertiary care medical center composed of the Ambulatory Care Building for faculty and clinics of the School of Medicine and the University of Louisville Hospital. These medical facilities and the Brown Cancer Center are managed and operated by University Medical Center, a consortium of the university and two regional, private, nonprofit hospital systems, Jewish and Norton Health Care Systems.

Subsequent development of the Health Sciences Center has included the construction of the Kosair Pediatric Center for the pediatric faculty and clinics, two new Biomedical Research Buildings and the renovation of existing buildings to house the Health Sciences Center and School of Medicine Administration, the School of Nursing and the new School of Public Health and Information Sciences.

In order to achieve its mandate of becoming a preeminent metropolitan research university, an Institute for Public Health Research (IPHR) was established in 1998. This research mission was expanded to include development of the professional public health degree when the Board of Trustees established the School of Public Health and Information Sciences (SPHIS) as the successor to the IPHR in 2002. In constituting SPHIS, the university accorded it equal status and autonomy relative to the other professional schools on the Health Sciences Campus, namely, the Schools of Medicine, Dentistry and Nursing.

In December 2008, the School of Public Health and Information Sciences moved into its newly renovated building at 485 East Gray Street. The school's new location is directly across the street from the Louisville Metro Department of Public Health and Wellness, the director of which is a full-time faculty member of the school. The close working relationship between the school and health department is unique in the nation and exemplifies the school's commitment to community service and partnership.

Vision and Mission

Vision

We will be an internationally recognized center of excellence for the creation, sharing, and application of *knowledge for the public's health*.

In achieving our vision:

- We will extend the domain of public health to include all factors in the public's health.
- We will pursue health information sciences as an inseparable aspect of public health.
- We will work for close integration of individual health, health care, and public health.

Mission

We advance *knowledge for the public's health* in the increasingly complex and interconnected world of the 21st century. We accomplish this through activities in the three cornerstone areas for advancing knowledge:

- Research. We create knowledge by seeking new discoveries and understanding through scientific exploration. We communicate our findings.
- Teaching. We share knowledge with students committed to and prepared for learning in a facilitated environment. Our learners are our students, our faculty, and our staff. We commit to preparing our learners for success.
- Service. We apply knowledge through quality services to the communities of which we are a part – the University, Louisville Metro, Kentucky, the United States, and their respective environs.

In fulfilling our mission:

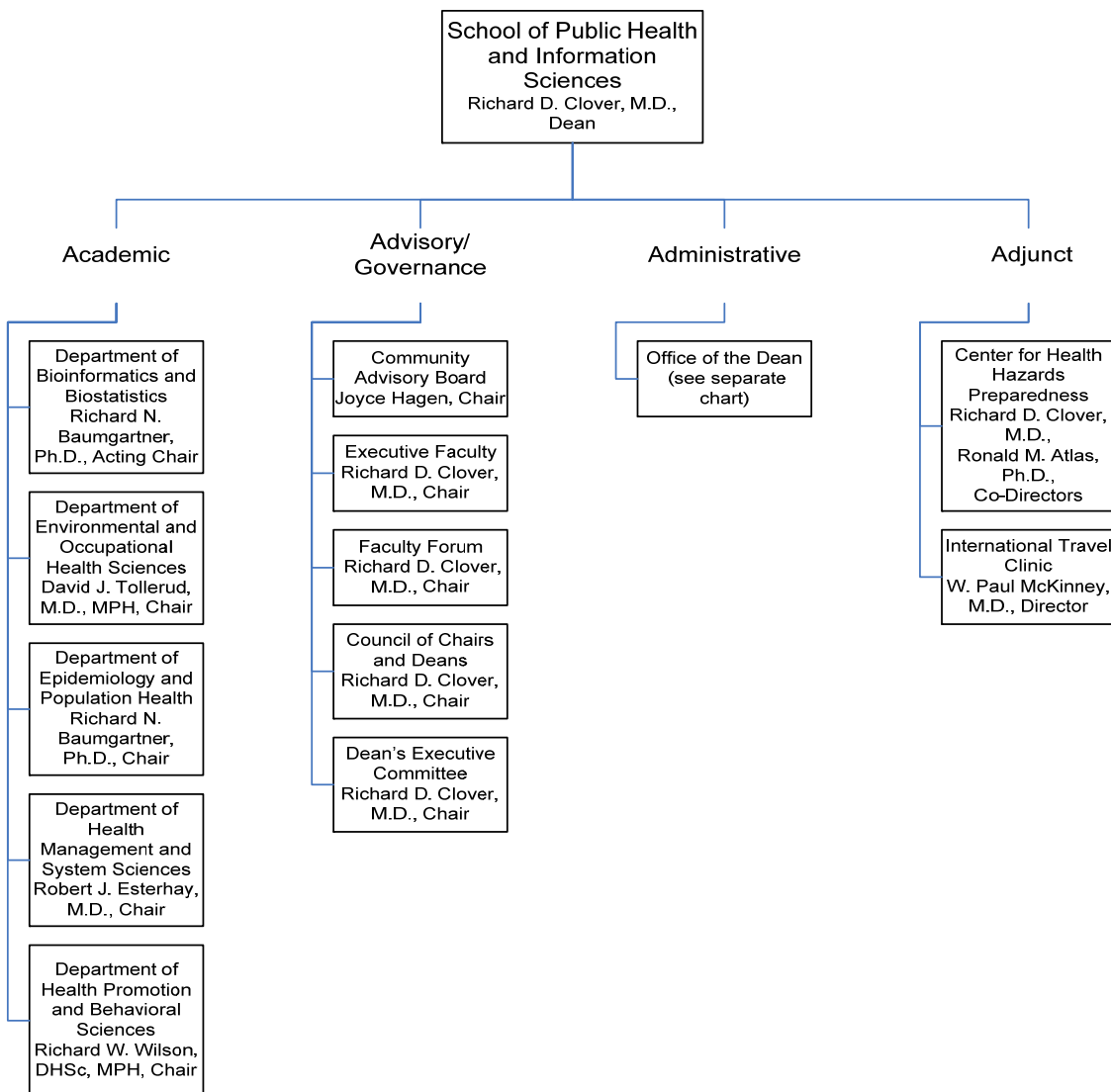
- We nurture an academic setting that fosters ethics, respect, diversity, cooperation, learning, and fun.
- We strive to improve our approach and performance through a program of active feedback and deliberate change.
- We embrace innovative ideas for advancing knowledge.
- We investigate new techniques and technologies for doing research, teaching, and service.
- We think globally and act locally.
- We collaborate with any who will join us in working for the public's health.
- We recognize that public health starts with the individual.
- We advocate for the public's health.

www.louisville.edu/sphis

Organization

The SPHIS is organized into the Dean’s Office, five departments (Bioinformatics and Biostatistics, Environmental and Occupational Health Sciences, Epidemiology and Population Health, Health Management and Systems Sciences, and Health Promotion and Behavioral Sciences), and the Center for Health Hazards Preparedness.

School of Public Health and Information Sciences



August 11, 2009

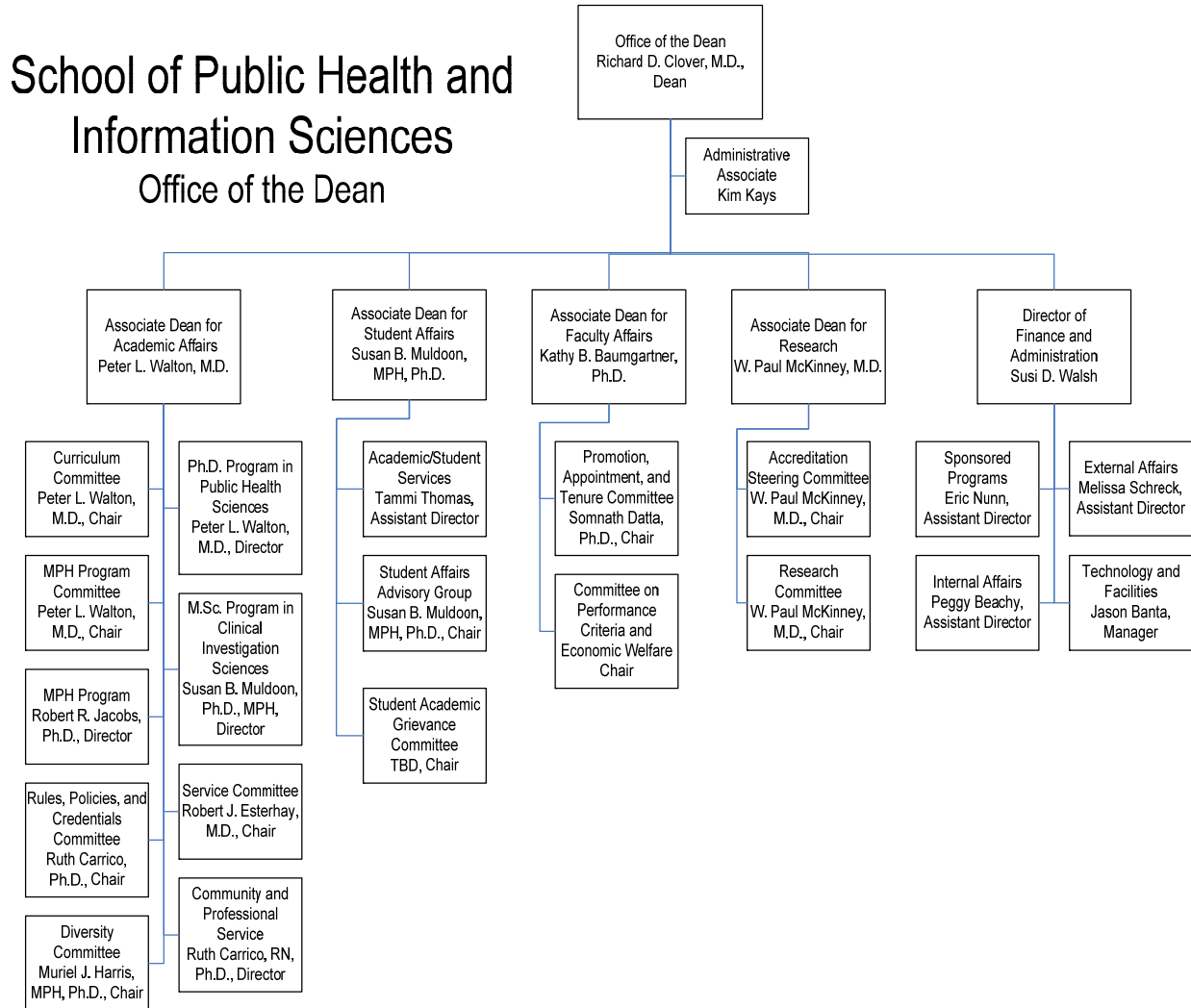
Figure 1: SPHIS Organization Chart

Office of the Dean

Richard D. Clover, M.D., Dean
 W. Paul McKinney, M.D., Associate Dean for Research
 Susan B. Muldoon, MPH, Ph.D., Associate Dean for Student Affairs
 Susi D. Walsh, Director of Finance and Administration
 Peter L. Walton, M.D., Associate Dean for Academic Affairs

Contact

Contact: Kim Kays, Administrative Associate
 Phone: 502-852-3297



August 11, 2009

Figure 2: Dean’s Office Organization Chart

Department of Bioinformatics and Biostatistics

The Department of Bioinformatics and Biostatistics engages in education and research activities in the statistical sciences. Educational offerings feature a doctoral program in biostatistics with optional emphases on decision science and bioinformatics, a master's degree programs in biostatistics-decision science, an MPH concentration in biostatistics, and courses for the developing interdisciplinary program in bioinformatics. Methodological and applied research activities provide students with unique opportunities to participate in quantitative research in all aspects of public health sciences, including such areas as medicine, dentistry, nursing, and cancer research. Faculty and staff in the department work collaboratively with researchers from many other disciplines, bringing essential expertise in biostatistics and thereby promoting and adding value to research initiatives. One of our primary goals is to contribute to UofL research efforts in a manner that serves to boost potential for extramural research funding. The department is home to award-winning faculty, biostatisticians, and students.

Students in biostatistics learn advanced statistical methodology and computational techniques utilized in basic, translational, clinical, and epidemiological research. Decision science students develop quantitative decision analysis skills for evaluating the utility of medical, public health, and health policy interventions. Students with an emphasis on bioinformatics learn statistical, computational, and mathematical techniques associated with computational biology.

Our vision is to become internationally recognized in biostatistics research and education, serving both Kentucky and the nation.

Academic Programs

Master of Public Health (MPH) Concentration in Biostatistics

Master of Science (M.S.) in Biostatistics-Decision Science

Dual Master of Science (M.S.) in Biostatistics-Decision Science and Doctor of Philosophy (Ph.D.) in Applied and Industrial Mathematics

Doctor of Philosophy (Ph.D.) in Biostatistics

Department Faculty

Richard N. Baumgartner, Ph.D., Acting Chair

Guy Brock, Ph.D., Assistant Professor

Somnath Datta, Ph.D., Professor

Susmita Datta, Ph.D., Associate Professor

L. Jane Goldsmith, Ph.D., Associate Professor

Seongho Kim, Ph.D., Assistant Professor

Maiying Kong, Ph.D., Assistant Professor

Steven J. McCabe, M.D., M.Sc., Assistant Professor

John A. Myers, Ph.D., Assistant Professor

Rudolph S. Parrish, Ph.D., Professor

Shesh Rai, Ph.D., Associate Professor

Dongfeng Wu, Ph.D., Associate Professor

Department of Bioinformatics and Biostatistics

Department Faculty (cont.)

Jae Keun Yoo, Ph.D., Assistant Professor

Contact

Contact: Paula K Bossmeyer, Administrative Assistant

Phone: 502-852-3003

Fax: 502-852-3294

Website

<http://louisville.edu/sphis/bb>

Department of Environmental and Occupational Health Sciences

The Department of Environmental and Occupational Health Sciences focuses on regional, state and global environmental issues affecting our community, the nation and the world. Through community-oriented education and research, faculty members strive to understand, impact and improve the health of the public. As the world changes, emergent themes in environmental health research have created new areas of focus, including how to improve the health of susceptible populations.

Research conducted in the department includes health effects of air pollution, asthma, airborne particulates and hazardous chemicals, environmental justice, environmental stress, environmental health effects, environmental health education in schools, asthma absenteeism in the schools, protecting the health of workers, and health effects of nanoparticles. Other susceptible populations include children, the elderly, disabled and underserved minority communities.

The School of Public Health and Information Sciences offers MPH and Ph.D. degrees with a concentration in environmental health. The Department of Environmental and Occupational Health Sciences is chaired by David J. Tollerud, M.D., MPH, Distinguished University Scholar and Professor.

Academic Programs

Master of Public Health (MPH) Concentration in Environment and Occupational Health
Doctor of Philosophy (Ph.D.) in Public Health Sciences Concentration in Environmental Health

Department Faculty

Gary Hoyle, Ph.D., Professor
Robert R. Jacobs, Ph.D., Professor
Rachel E. Neal, Ph.D., Assistant Professor
Irma N. Ramos, M.D., Assistant Professor
David J. Tollerud, M.D., MPH, Professor and Chair
Qunwei Zhang, M.D., MPH, Ph.D., Assistant Professor

Contact

Contact: Barbara Parker, Administrative Assistant
Phone: 502-852-3290
Email: Barbara.Parker@louisville.edu

Website

<http://louisville.edu/sphis/eohs>

Department of Epidemiology and Population Health

The Department of Epidemiology and Population Health seeks to identify the determinants of health, disease, disability, and death in populations for the purposes of promotion, control and prevention. As a core discipline for public health, it provides much of the information necessary to develop, implement and evaluate public health intervention, policy and law. The Department of Epidemiology and Population Health offers an MPH concentration and M.S. and Ph.D. degrees in Epidemiology. The department is also planning a Ph.D. concentration in Outcomes Research.

The mission of the Department of Epidemiology and Population Health is to:

- Provide the highest possible quality education and training in the philosophy, principles and practice of modern epidemiology;
- Conduct innovative, interdisciplinary research on the causes and consequences of disease in populations using state-of-the-art methods;
- Conduct translational research;
- Help build epidemiologic capacity and infrastructure at local, state and federal levels;
- Promote interdisciplinary teaching and health research within the school and across the university; and
- Become recognized as a major provider of education, research and service throughout the region.

Academic Programs

Master of Public Health (MPH) Concentration in Epidemiology

Master of Science (M.S.) in Epidemiology

Doctor of Philosophy (Ph.D.) in Public Health Sciences Concentration in Epidemiology

Department Faculty

Kathy B. Baumgartner, Ph.D., Associate Professor

Richard N. Baumgartner, Ph.D., Professor and Chair

Frank Groves, M.D., Assistant Professor

Carlton A. Hornung, Ph.D., MPH, Professor

Richard A. Kerber, Ph.D., Associate Professor

Susan B. Muldoon, Ph.D., MPH, Assistant Professor

Elizabeth O'Brien, Ph.D., Assistant Professor

Chenxi Wang, M.D., M.Sc., Ph.D., Assistant Professor

Katrina Zierold, Ph.D., Assistant Professor

Contact

Contact: Paula Bossmeyer, Administrative Assistant

Phone: 502-852-3003

Email: pkboss01@gwise.louisville.edu

Department of Epidemiology and Population Health

Website

<http://louisville.edu/sphis/deph>

Department of Health Management and Systems Sciences

Administration and management of public health projects, organizations and networks are becoming ever more complex due to the increasing flow of information in today's society. The Department of Health Management and Systems Sciences aims to advance knowledge of how to think and act in this increasingly complex, interconnected and rapidly changing world. Our vision is to become a nationally recognized center of excellence in understanding health organizations and networks from the perspective of complexity sciences, sometimes referred to as systems or network sciences.

The department has created a dynamic, collaborative and transdisciplinary learning environment, involving simultaneous teaching and learning by both faculty and students. Emphasis is on health systems and processes for understanding and managing health systems and networks under conditions of complexity, examining current issues and challenges. As a result, students are better prepared to navigate the complexity of 21st century health administration and management and make a measurable contribution to improving the health of the public.

Students gain cutting-edge knowledge in the following subject areas:

- Systems structures, properties and behaviors
- Health law and ethics
- Health regulations and policies
- Health economics
- People and organizational issues
- Organization management
- Health information and information technology management
- Health services management
- Population health management

Academic Programs

Master of Public Health (MPH) Concentration in Health Management

Doctor of Philosophy (Ph.D.) in Public Health Sciences Concentration in Health Management

Department Faculty

Susan Olson Allen, Ph.D., Assistant Professor

Raymond E. Austin, Ph.D., Assistant Professor

Robert J. Esterhay, M.D., Associate Professor and Chair

Rob P. Steiner, M.D., MPH, Ph.D., Professor

Adewale Troutman, M.D., MPH, Associate Professor

Barry L. Wainscott, M.D., MPH, Assistant Professor

Department of Health Management and Systems Sciences

Contact

Contact: Kathie Sacksteder, Administrative Assistant

Phone: 502 852-8040

Email: sphishmss@louisville.edu

Website

<http://louisville.edu/sphis/hmss>

Department of Health Promotion and Behavioral Sciences

Health promotion and interventions have a strong influence on health-related behavior as well as the economic, environmental, organizational and policy supports necessary for long-term health improvement. The Department of Health Promotion and Behavioral Sciences offers instruction, conducts research and provides community service to advance public health education and health promotion competencies.

The department's focus is on health information utilization and its effects on individuals and communities. Coursework is designed to help students develop critical thinking skills and to use these skills to understand and address public health issues. The department uses instructional styles such as online enhancement, team learning and community engagement, allowing student to broaden their knowledge and interact effectively with local, state and federal agencies, individuals and communities.

Academic Programs

Master of Public Health (MPH) Concentration in Health Promotion and Behavior
Doctor of Philosophy (Ph.D.) in Public Health Sciences concentration in Health Promotion

Department Faculty

Ruth Carrico, Ph.D., Assistant Professor
Muriel Harris, Ph.D., MPH, Assistant Professor
A. Scott LaJoie, Ph.D., MSPH, Assistant Professor
Peter L. Walton, M.D., Assistant Professor
Richard Wilson, D.H.Sc., MPH, Professor and Chair

Contact

Contact: Kathie Sacksteder, Administrative Assistant
Phone: 502 852-8040
Email: kathie.sacksteder@louisville.edu

Website

<http://louisville.edu/sphis/hpbs>

Center for Health Hazards Preparedness

The Center for Health Hazards Preparedness (CHHP), formerly the Center for Deterrence of Biowarfare and Bioterrorism, coordinates research, education and service focusing on the early recognition and response to potential acts of terrorism and natural disasters. Housed within the offices of the University of Louisville School of Public Health and Information Sciences, CHHP is part of the network of Centers for Public Health Preparedness (CPHP), established in 2002 through a cooperative agreement with the Centers for Disease Control and Prevention (CDC).

The center's activities aim to bring together the information resources, human expertise and research infrastructure to improve the local, regional and national response to outbreaks of infectious diseases and the defense against potential biological, chemical and radiation threats and natural disasters.

<http://louisville.edu/sphis/chhp>

About the University of Louisville

The University of Louisville (UofL) is a state supported urban university located in Kentucky's largest metropolitan area. It was a municipally supported public institution for many decades prior to joining the state university system in 1970. The University's mission is to serve the specific educational, intellectual, cultural, service, and research needs of the greater Louisville region (more than one million people) and to help serve those needs statewide, particularly in the areas of public health, medicine, dentistry, law, and urban affairs. Eight of UofL's 12 colleges, schools and divisions are housed on the 169-acre Belknap Campus, the primary location for UofL's centralized services and academic programs. The Schools of Medicine, Nursing, Dentistry, and Public Health and Information Sciences, all part of the Health Sciences Center (HSC), are located three miles north, close to downtown Louisville on the Health Sciences Campus.

UofL enrolls nearly 4500 graduate students and offers master's degrees in more than 50 areas and doctoral degrees in more than 20 disciplines. It also grants professional degrees in public health, medicine, dentistry, nursing, law, and engineering.

www.louisville.edu

Health Sciences Center

The University of Louisville Health Sciences Center (HSC) is located just east of downtown Louisville on the Health Sciences Campus and is contiguous to the main properties of three separate hospital systems – the University of Louisville Hospital, Jewish Hospital and St. Mary’s HealthCare, and Norton Healthcare. Collectively this area, which totals 24 city blocks, is known as the Louisville Medical Center. It is easily accessible from all residential areas of the city.

The quadrangle of the HSC includes the Schools of Medicine and Dentistry, the Instructional Building, and the Commons Building, which houses the Kornhauser Health Sciences Library, an auditorium, and cafe. A building adjacent to the quadrangle houses the School of Nursing, the Children and Youth Health Clinic, the campus Bookstore, and the School of Public Health and Information Sciences. Conference facilities and administrative offices of the Executive Vice President for Health Affairs and the School of Medicine are housed in the beautifully renovated Abell Administration Building.

Other facilities within the Health Sciences complex include the Ambulatory Care Building, an outpatient care facility housing many of the University’s clinical departments and teaching practices as well as the Primary Care Center, and the James Graham Brown Cancer Center, a cancer care and research facility. The Donald E. Baxter Biomedical Research Building, a multi-million dollar facility, opened in October 1999. The 115,000 square foot building was funded by \$14 million in state funds, \$5.5 million from Jewish Hospital and St. Mary’s HealthCare, \$3.5 million from Norton Healthcare and \$5 million raised by the University of Louisville. In August 2000, ground was broken for the Delia B. Baxter Building, which is 17,000 square feet larger than the Donald E. Baxter Building. It consists of four floors and a basement with 48 labs, 12 on each floor, and opened in spring 2003. It also contains a 40-seat conference room located in an underground connector between the two buildings.

www.louisville.edu/hsc

Course Descriptions

Department of Biostatistics and Bioinformatics (PHBI/PHDA/PHST)

PHBI-750 Statistics for Bioinformatics (3 credit hours)

Development of high throughput technologies has changed the face of biological sciences. The high dimensional complicated data generated from DNA sequences, amino acid sequences, genetic maps and polymorphic marker data etc. help to unravel the mysteries of many biological processes. However, sophisticated statistical methods and computational tools are needed to analyze these data. This course will introduce basics of genetics and introduction of such data, knowledge of statistical inference and probability, Introduction to stochastic processes, Analysis of DNA and protein sequences, Hidden Markov models, Evolutionary models etc. This course is developed for individuals interested in pursuing research in computational biology, genomics and bioinformatics. Students are expected to be familiar with some elementary statistics and probability concepts.

PHBI-751 High throughput data analysis (3 credit hours)

High-throughput technology has changed the dimension of biotechnology. The array of high-speed, highly automated biotechnical equipment DNA sequencers, microarray (DNA, Protein), proteomic analyzers (mass spectrometers) and cell sorters are all designed to capture and process vast amounts of biological data at high speeds. We will briefly discuss some of these technologies. Secondly, this course will concentrate with the process of microarray data mining (analysis) from beginning to end. In particular, this course will provide the researchers and practitioners guidelines to use appropriate statistical methodology for experimental design, image processing, normalization, identifying differentially expressed genes, clustering and classification techniques etc. Introduction to S-PLUS/R library for the data analysis will also be attempted

PHBI-752 Statistical Genetics (3 credit hours)

This course covers modern methods used for mapping genes associated with diseases and other complex traits, including parametric and nonparametric linkage analysis, quantitative trait analysis, association and haplotype analysis, and linkage disequilibrium mapping. Students will learn the methods used for linkage and association analysis, the issues and considerations that go into study design in each case, and how to analyze genetic data and interpret results using software which is freely available. Additionally, students will become familiar with the type of genetic markers that are used for gene mapping and online databases that contain information relevant to designing gene mapping studies. No background in molecular genetics is assumed, but a basic knowledge of statistics (linear regression, analysis of variance) is needed.

PHDA-601 Introduction to Medical Decision Analysis (3 credit hours)

Introduction to decision analysis in health care. Students will learn the principles and application of decision analysis and to use decision analysis software. Topics: identification of problems suitable for decision analysis, utility theory and measurement, importance and estimation of

probability, creation/analysis of decision trees including sensitivity analysis, advanced methods of decision modeling, and illustration and presentation of results.

PHDA-603 Biostatistics-Decision Science Public Health Practicum I (1-2 credit hours)

A student is assigned to a health care agency and works with the staff of that agency on a policy issue facing that agency.

PHDA-604 Biostatistics-Decision Science Public Health Practicum II (1-2 credit hours)

A student is assigned to a health care agency and works with the staff of that agency on a policy issue facing that agency.

PHDA-605 Ethics and Bioethical Decision Making (3 credit hours)

A study of ethical issues in contemporary bioethics. Ethical dilemmas in medical science will be analyzed for the philosophical assumptions, interplay of facts and values, the role of rules and principles, and the contextual factors involved. Such topics as abortion, elective death, genetic engineering, organ transplants, and health care reform will be explored.

PHDA-606 Health, Law & Policy (3 credit hours)

Introduce students to the broad legal and policy context of health care, with diverse topical areas that are useful for demonstrating the broad range of legal and policy responses.

PHDA-663 Decision Analysis (3 credit hours)

This course teaches methods for making decisions in complex situations especially those involving conflicting values, uncertainty, or risk. Thinking from the early foundations in economics through current methods is covered. Included are methods of value or utility elicitation and probability assessment. Analysis methods covered include decision trees, conjoint measurement, and multiattribute utility theory. Also covered are findings from psychology on cognitive errors, which are common in decision making.

PHDA-666 Master's Thesis Research (1-6 credit hours)

Mentored research; Thesis Preparation.

PHDA-673 Biostatistics-Decision Science Research (3 credit hours)

A doctoral student rotates through at least two research projects of the Biostatistics-Decision Science Program faculty, conducting research and learning the details of the design, implementation, and analysis of the project. PHDA-673 must be taken initially during the first year of residence in the doctoral program. PHDA-673 may be repeated once, focusing on one research project of the Program Faculty, with the consent of the Graduate Studies Director or the student's major professor.

PHDA-690 Utility Theory and Assessment (3 credit hours)

A seminar course to study the theory, assessment, and use of utility in health care measurement and research.

PHDA-701 Advanced Medical Decision Making (3 credit hours)

A course to study advanced features of Medical Decision Making including theory, applications, model building, and analysis in health care research.

PHDA-705 Statistical Methods for Cost-Effectiveness Analysis in Health and Medicine (3 credit hours)

The primary objective of this course is to prepare students to perform, read, and interpret cost-effectiveness studies. The students are first introduced to basic economic concepts that are needed in order to understand the recommendations from the United States Panel on Cost Effectiveness in Health and Medicine. One example is the distinction between opportunity costs and budgetary costs. The recommendations are then reviewed, particularly as they apply to what students should expect to read in cost-effectiveness research reports. Next, the relationship between cost-effectiveness results and other elements of the health care policy decision-making process is discussed. Information is provided on several aspects of how to conduct cost-effectiveness analyses. A critical discussion of several current articles demonstrating cost-effectiveness analyses is an integral part of this course.

PHST-500 Introduction to Biostatistics (3 credit hours)

An introduction to descriptive and inferential statistics including descriptive methods and graphing, binomial and Gaussian probability theory, estimation, confidence intervals, hypothesis testing, correlation, and regression. One-, two- and multi-group parametric and nonparametric methods will be introduced. Sampling distributions covered include the Z, t, F, and Chi-squared distributions. Multivariate methods will be introduced. Taught at the graduate level.

PHST-602 Biostatistics-Decision Science Seminar (1 credit hour)

Students are given an evaluation protocol for each semester and must turn in a written evaluation of the presentation. The protocols will vary according to the presentation topic, but each will focus on a critical component of research design or analysis.

PHST-610 Statistical Computing and Data Management for Public Health (3 credit hours)

This course addresses data processing, data management and statistical computing tools utilized most often in the field of public health. Additionally, this course will allow the public health student to master skills in preparing and analyzing public health research data through the use of software packages such as Excel, EPI DATA and SPSS. Emphasis will be on storing and manipulating research data, along with elementary and moderate level data analyses.

PHST-620 Introduction to Statistical Computing (3 credit hours)

This course addresses fundamentals of statistical computing with special emphasis on software tools employed most often in biostatistics. This course will develop essential skills associated with the preparation and statistical analysis of research data through the use of statistical software packages, such as SAS, SPSS and other software. Emphasis will be on research data management, implementation and interpretation of basic statistical procedures, and documentation of coding and other work.

PHST-630 Applied Statistical Methods (3 credit hours)

Topics will include linear and multiple regression, analysis of variance, analysis of covariance,

logistic regression, survival analysis using Cox regression, and repeated measures. These will be addressed from an applications standpoint, without derivations or other theoretical development. Emphasis will be placed on appropriate use of the different models and interpretation of parameter estimates, etc. Students completing this course will develop the ability to apply statistical methods as implemented in commonly used statistical software and facilitate communication between health sciences researchers and statisticians with regard to interpretation of data analyses and research findings.

PHST-640 Statistical Methods for Research Design in Human Studies (3 credit hours)

Statistical methods for clinical research and interpretation of the literature. Course includes basic features of design and analysis of clinical research studies looking at cause and effect relationships, surveys, case control studies, cohort studies, and randomized controlled trials. Topics include sampling, sample size calculations, matching, confounding, and methods for analysis of simple and complex studies.

PHST-650 Advanced Topics in Biostatistics (3 credit hours)

A treatment of one or more topics in advanced biostatistics not usually covered in a regularly offered course. May be repeated under different subtitles.

PHST-660 Mathematical Tools (4 credit hours)

This course focuses on the basic techniques of analytic geometry, differential and integral calculus, and matrix algebra; topics include limits, the chain rule, higher-order derivatives, partial derivatives, integration by parts, improper integrals, multiple integrals, sequences and series, vector and matrix arithmetic, and eigenvalues

PHST-661 Probability (3 credit hours)

This course in introductory probability theory; includes probability spaces, random variables, probability distributions, moments, moment generating functions, mathematical expectation, joint distribution, transformations of random variables, sampling distributions.

PHST-662 Mathematical Statistics (3 credit hours)

This course in introductory statistical theory; includes limiting distributions, central limit theorem, point estimation, maximum likelihood estimation, least squares, sufficiency and completeness, confidence intervals, Bayesian estimation, Neyman-Pearson theory of hypothesis testing, statistical power, uniformly most powerful tests, likelihood ratio tests, non-central distributions, advanced topics as time permits.

PHST-671 Special Topics in Biostatistics and Decision Science (1 credit hour)

A treatment of one or more topics in advanced Biostatistics and /or Decision Science not usually covered in a regularly offered course. May be repeated under different subtitles.

PHST-675 Independent Study in Biostatistics (1-3 credit hours)

The course provides students with the opportunity to develop a research project or investigation of biostatistics topic under the supervision of a faculty mentor. The student identifies an academic advisor and develops a proposal that includes a detailed syllabus with methods to evaluate the proposed work and criteria for assigning a grade. Both the student and advisor sign

documents describing their respective duties, and the proposed study is to be completed within 90 days after approval of the proposal.

PHST-680 Biostatistical Methods I (3 credit hours)

A mathematically sophisticated presentation of principles and methods of: exploratory data analysis; statistical graphics; point estimation; interval estimation; hypothesis testing of means, proportions and counts; chi square analysis; rate ratio; and Mantel- Haensel analysis. Matrix algebra is required. Data sets will be analyzed using statistical computer packages; examples will be drawn from the biomedical and public health literature. Emphasis will be placed on methods and models most useful in clinical research.

PHST-681 Biostatistical Methods II (3 credit hours)

A mathematically sophisticated introduction to: general linear models; regression; correlation; analysis of covariance; one and two-way analysis of variance; and multiple comparisons. Matrix algebra is required. Data sets will be analyzed using statistical computer packages; examples will be drawn from the biomedical and public health literature. Emphasis will be placed on methods and models most useful in clinical research.

PHST-682 Multivariate Statistical Analysis (3 credit hours)

Focuses on the multivariate statistical methods; topics include the multivariate normal distribution, inference for mean vectors; inference for covariance and correlation matrices, analysis of covariance structure, analysis of serial measurements, factor analysis, and discriminant analysis. Instruction will also be given in the proper use of software to carry out these analyses. Emphasis will be placed on methods and models most useful in clinical research.

PHST-683 Survival Analysis (3 credit hours)

Focuses on statistical methods for analyzing survival data, including both parametric and nonparametric methods. Topics include life-table analysis, proportional hazard models, log-rank tests, parametric survival distributions, graphical methods, and goodness- of -fit tests. Emphasis will be placed on methods and models most useful in clinical research.

PHST-684 Categorical Data Analysis (3 credit hours)

Focuses on statistical methods for analyzing survival data, including both parametric and nonparametric methods. Topics include life-table analysis, proportional hazard models, log-rank tests, parametric survival distributions, graphical methods, and goodness- of -fit tests. Emphasis will be placed on methods and models most useful in clinical research.

PHST-691 Bayesian Inference and Decision (3 credit hours)

Focus on the use of Bayesian probability and statistics in both scientific inference and formal decision analysis. The frequency and subjective interpretations of probability are explored, as well as probability and decision making.

PHST-703 Biostatistical Consulting Practicum (1-3 credit hours)

This course consists of practical experience in a biostatistical consulting environment. Students address new and ongoing projects with biomedical researchers. Project responsibilities include meeting with clients, formulating approaches to problems posed by clients, analyzing data,

writing reports to summarize results, making recommendations, and making oral presentations to clients.

PHST-704 Mixed Effect Models and Longitudinal Data Analysis (3 credit hours)

Longitudinal data and clustered data are often collected in biomedical research and clinical settings. To analyze such data appropriately, the correlations among observations need to be considered. One of the important techniques is to use mixed effects models. The course focuses on theory and application of mixed effects models, particularly, with the application to longitudinal data analysis. The implementation of these methods is illustrated using standard statistical software SPLUS or R. Topics covered include an introduction to mixed models and longitudinal/clustered data analysis, linear mixed effects models, and nonlinear mixed effects models.

PHST-710 Advanced Statistical Computing I (3 credit hours)

This course will cover modern/classical statistical/biostatistical methods like smoothing techniques and data summaries, linear models, generalized linear models, modern nonlinear regression techniques, multivariate statistics using S-PLUS/R and SAS. Several real data examples will be analyzed following the 4th Edition of the book titled "*Modern Applied Statistics with S*" by Venables and Ripley.

PHST-711 Advanced Statistical Computing II (3 credit hours)

The course covers advanced topics in statistical computing, with an emphasis on biostatistical applications. Topics include matrix factorization methods, numerical optimization, the EM algorithm, random number generation, Monte Carlo techniques, simulation, randomization and resampling methods, bootstrapping, and recursive partitioning. Computer programming will be conducted using MATLAB, R, and SAS IML.

PHST-724 Advanced Clinical Trials (3 credit hours)

Advanced statistical methods for design and analysis of clinical trials. Content includes analysis of complex clinical trial designs, including post-stratification, cross-over, and phases I, II, and III clinical trials. Sample size calculations will be covered. Interim analysis methods and sample size re-estimation methods will be developed.

PHST-725 Design of Experiments (3 credit hours)

The course introduces experimental design principles and covers specific designs in detail. Topics include the completely randomized design, the randomized complete block design, cross-over designs, nested and hierarchical designs, factorial treatment arrangements, incomplete block designs, response surface methodology, and optimal designs. Concepts will be illustrated using examples from the health sciences.

PHST-726 Clinical Trials Statistics Laboratory (1 credit hour)

Statistical methods laboratory to accompany PHCI-624: Clinical Trials I, a.k.a. Design of Clinical Trials. Statistical methods described in Clinical Trials I will be demonstrated and taught with hands-on examples and homework problems. Methods covered include randomization methods, sample size calculations, post-stratification, Phase II early-stopping designs, repeated-measures analysis, survival analysis, and methods to avoid or reduce multiplicity.

PHST-762 Advanced Statistical Inference (3 credit hours)

This course is a mathematically sophisticated introduction to the theory and methods of statistical inference. Students will learn fundamental technical tools that are essential to carry out methodological research in the field of Biostatistics. Emphasis will be placed on how to correctly propose statistical methods in a general setting including concepts such as asymptotic unbiasedness, robust variance estimation and efficiency.

PHST-780 Advanced Nonparametrics (3 credit hours)

A mathematically advanced introduction to theory and methods of nonparametric statistical methods. Course will be useful to students planning to analyze data that do not follow a standard parametric distribution.

PHST-781 Advanced Linear Models (3 credit hours)

An introduction to the theory of linear models, with an emphasis on health sciences applications. Topic coverage includes projections, distributions of quadratic forms under normality, estimation procedures, general linear hypotheses, estimating and testing linear parametric functions, simultaneous inference, multifactor ANOVA models, hierarchical linear models, mixed effects models, and covariance parameter estimation methods. Examples will be illustrated using advanced statistical software.

PHST-782 Generalized Linear Models (3 credit hours)

Advanced statistical methods using inference based on the exponential family of distributions. Relationship to linear and non-linear regression. Theoretical development of link functions. Model-building and assessment of goodness-of-fit. Estimation and hypothesis testing. Correlated response methods using generalized estimating equations.

PHST-783 Advanced Survival Analysis (3 credit hours)

This course is a mathematically advanced introduction to the theory and methods of survival analysis. This course will be useful for students planning to analyze complex event time data including multivariate survival and multistate data. Also it will be useful for students who are planning to carry out research in the general area of survival analysis.

PHST-785 Non-Linear Regression (3 credit hours)

Advanced statistical methods for non-linear models. Review of linear models and intrinsically linear models. Survey of generalized linear models. Development of nonlinear models, with emphasis on uses in Phase I clinical trials, relationship to differential equations. Estimation and goodness-of-fit. Sample size methods.

Department of Environmental and Occupational Health Sciences (PHEH)

PHEH-500 Introduction to Environmental and Occupational Health (3 credit hours)

This course will provide students the basic concepts and principles of environmental health, including environmental agents in water, air and soil, such as chemicals, biological, and physical agents and other important factors that may constitute a risk to humans. It will also provide basic principles and methods of risk assessment and risk management. This course is designed for all public health practitioners and meets the environmental health requirement for all professional master's degree programs. Taught at the graduate level.

PHEH-610 Occupational Health and Safety (3 credit hours)

This course will focus on the prevention of work-related injuries and illnesses as well as the management and control of workplace hazards. Information on the identification of workplace hazards, governmental regulations and issues pertaining to specific industries, and safety management programs will also be presented. The course will also include discussion of principles of ergonomics, including the role of job design in maximizing productivity and injury prevention.

PHEH-620 Global Issues in Environmental and Occupational Health (3 credit hours)

This course will focus on the nature, impact and determinants of health problems among disadvantaged populations in developing countries. A review of the history of international health and key contemporary issues involving global policies will be discussed. This course provides an overview of the physical, chemical, and biological determinants of global environmental change and of potential consequences of these changes on human health.

PHEH-640 Environmental Risk Assessment (3 credit hours)

This course introduces students to the nomenclature, concepts, and basic skills of quantitative environmental risk assessment (QRA). The goal is to provide an understanding necessary to read and critically evaluate QRA. Emphasis is on the intellectual and conceptual basis of risk assessment, particularly its dependence on toxicology and epidemiology, rather than its mathematical constructs and statistical models. Specific cases consider the use of risk assessment for setting environmental exposure limits and quantifying the hazards of environmental exposures to chemicals in air and drinking water.

PHEH-650 Advanced Topics in Environmental and Occupational Health (3 credit hours)

This course will build upon principles acquired in the introductory course entitled Introduction to Environmental Health Science (course number) by presenting advanced concepts of environmental and occupational health sciences and novel factors that may constitute a risk to humans in industrialized and developed countries. Policy required for regulation and alternative strategies for prevention and control of environmental and occupational hazards will be discussed. This course provides in depth examination of current scientific literature on environmental and occupational health published articles.

PHEH-651 Advanced Environmental Health Sciences (3 credit hours)

This course provides an in-depth evaluation of the chemical, physical, and biological factors affecting human health and well-being. Through student-directed presentations and faculty-led discussions, students explore the core environmental health issues of air, land, and water pollution in relation to public and ecosystem health. The overall goal is to provide students with in-depth knowledge about the relationship between people and environment, the major environmental factors that contribute to the development of health problems or illnesses in populations, and the application of controls and regulations to prevent disease and maximize environmental quality.

PHEH-750 Seminar 1 in Environmental and Occupational Health (1 credit hour)

In a series of three seminar courses over three semesters, doctoral students engage as junior peers with faculty to: 1) critically review the current environmental health literature, 2) prepare at least one publication quality manuscript, 3) develop skills in preparing and making oral and poster presentations, and 4) develop an NIH-formatted research proposal.

PHEH-751 Seminar 2 in Environmental and Occupational Health (1 credit hour)

In a series of three seminar courses over three semesters, doctoral students engage as junior peers with faculty to: 1) critically review the current environmental health literature, 2) prepare at least one publication quality manuscript, 3) develop skills in preparing and making oral and poster presentations, and 4) develop an NIH-formatted research proposal.

PHEH-752 Seminar 3 in Environmental and Occupational Health (1 credit hour)

In a series of three seminar courses over three semesters, doctoral students engage as junior peers with faculty to: 1) critically review the current environmental health literature, 2) prepare at least one publication quality manuscript, 3) develop skills in preparing and making oral and poster presentations, and 4) develop an NIH-formatted research proposal.

PHEH-753 Independent Study in Environmental and Occupational Health (1-3 credit hours)

The course provides students with the opportunity to develop a research project or investigation of an environmental or occupational health topic under the supervision of a faculty mentor. The student identifies an academic advisor and develop a proposal that includes a detailed syllabus with methods to evaluate the proposed work and criteria for assigning a grade. Both the student and advisor sign documents describing their respective duties, and the proposed study is to be completed within 90 days after approval of the proposal.

Department of Epidemiology and Population Health (PHEP)

PHEP-501 Introduction to Epidemiology (3 credit hours)

This is an introductory course in the basic science of public health and preventive medicine. Epidemiology is taught from a conceptual as well as practical perspective. The emphasis of the course is for understanding fundamental concepts of disease occurrence in human populations. This class provides a broad synopsis of disease in the United States and around the world; it includes a survey of major causes of death and leading health challenges. In the process of discussing these global, national, regional and local disease patterns, basic epidemiological methods are presented, specifically focusing on terminology, study design, and issues of contemporary practice. This class will instruct non-statistical or non-epidemiological staff in the basic skills for conversing with epidemiologists, reading the professional disease control literature, and drawing upon epidemiological concepts. The course provides instruction in the fundamentals of epidemiological research; both observational approaches and structured methods (e.g., study designs). There is a small amount of calculation involved with the course [calculators should be brought to the class]. The class is taught through lectures, in-class exercises in reading the professional literature, and on-line exercises. This course aims to provide a familiarization with principles of epidemiological reasoning and research methods while surveying trends and patterns for disease in contemporary settings. Taught at the graduate level.

PHEP-602 Epidemiological Methods (3 credit hours)

This is a methods course in the design, conduct, and analysis of epidemiologic research studies (a.k.a. case-control, and cohort). Classes will be conducted as lectures. The course will provide in-depth training with skills for the design and conduct, but especially the analysis of epidemiologic research studies. The course aims to provide a thorough orientation to these fundamental epidemiological research designs in their use for hypothesis generation, hypothesis testing, and with investigations of chronic disease risks in particular. Students are expected to have a basic understanding of epidemiological and biostatistical concepts, and methods. Likewise, students are expected to have professional-caliber writing and verbal communication skills. The course will not require extensive memorization, but will involve analytic calculations and a grasp of statistical software for their graded assignments. As an advanced skills class, timeliness and product quality will be graded.

PHEP-604 Epidemiology of Infectious Disease (2 credit hours)

This course will discuss the epidemiology and prevention of infectious disease, focusing on diseases of major impact to world health and emerging diseases, emphasizing the interrelationships of biology and behavior and infectious agents. It will focus on new techniques for research and changes in understanding of disease biology, susceptibility, and pathogens. It will include discussion of the social burden of disease and impact of intervention strategies.

PHEP-605 Research in Infectious Disease (1 credit hour)

Student in course must be enrolled in the School of Public Health and Information Sciences or obtain permission of instructor. This course provides students with an opportunity to expand the content of epidemiology of infectious disease with a research project.

PHEP-606 Genetic and Molecular Epidemiology (3 credit hours)

The purpose of this course is to examine basic principles of Mendelian inheritance in humans and the fundamentals of gene actions, cytogenetics, biochemical genetics and population genetics.

PHEP-607 Epidemiology of Cancer (2 credit hours)

This is a survey course of the descriptive epidemiology and clinical studies in practice nationally for research on cancer outcomes in the United States and Europe. The course opens with conventional training in carcinogenesis and progresses to cancer biology. Next is the litany of ‘cancer of...’ epidemiological profiles: incidence, prevalence, mortality, distribution, risk factors, high risk populations, key biological markers, priority populations, treatments, history of clinical studies/advances, active clinical trails, etc. From this foundation the class focuses on federal agency documents announcing emerging research programs, and priorities for research. The National Cancer Institute, American Cancer Society, Centers for Disease Control and select other agencies will be highlighted. The course will examine specific published literature related to the design and conduct of these studies. Attention will be given to evaluations of preventive services, clinical care and assessments of disparities related to cancer management outcomes.

PHEP-608 Research in Cancer (1 credit hour)

This course provides students with an opportunity to expand the content of epidemiology of cancer with a site-specific, directed research experience.

PHEP-609 Epidemiology of Chronic Disease (2 credit hours)

This course provides an opportunity for students to address the epidemiology and prevention of cardiovascular disease, focusing on coronary heart disease, stroke, and end stage renal disease, emphasizing the interrelationships of biological and behavioral aspects. It focuses on established major modifiable risk factors for cardiovascular diseases, putative risk factors, and genetic susceptibility. It describes the social and economic burden of disease and prevention strategies.

PHEP-610 Research in Cardiovascular Disease (1 credit hour)

Students must be enrolled in the School of Public Health and Information Sciences or obtain permission of instructor. This course provides students with an opportunity to expand the content of epidemiology of cardiovascular disease with a research project.

PHEP-611 Nutritional Epidemiology (3 credit hours)

The purpose of this course is to examine epidemiologic methodology in relation to nutritional measures, and to review the current state of knowledge regarding diet and other nutritional indicators as etiologic factors in disease. This course is designed to enable students to better conduct nutritional epidemiologic research and/or to better interpret the scientific literature in which diet or other nutritional indicators are factors under study.

PHEP-612 Epidemiology and Bioterrorism (3 credit hours)

This course provides an opportunity for students to address specific methodological approaches to the detection and response to outbreaks of illness linked to biothreat agents. Topics covered depend upon student interest and faculty availability.

PHEP-613 Epidemiology of Aging and Disability (3 credit hours)

The objective of this course is to familiarize students with major concepts and issues in geriatric epidemiology, providing an overview of research in the epidemiology of aging and disability using an ecological approach. This approach demonstrates how age-associated patterns of health, functional status, and longevity in human populations are associated with a dynamic interplay of biological, behavioral, social and physical environmental factors. The course describes important aspects of the health of the elderly and identifies priorities for possibilities of preventing disease, disability and dependency. This course examines concepts including: trends in aging and the health of aging populations; health transition and explanations and consequences of mortality decline; determinants of health and survival; distinctions between healthy aging, disease and disability; the epidemiology of selected diseases, syndromes and conditions common to old age; and the aged health care continuum and how different types of care/ health care systems are used in prevention, intervention and treatment, and supportive care. Special concepts and key methodological considerations for conducting epidemiologic studies of older persons (e.g., cohort effects, use of proxies, adjusting for comorbidities, and longitudinal analyses) are covered. Practical and ethical issues in the aged as research subjects are presented and discussed.

PHEP-615 Epidemiology of Maternal and Child Health (3 credit hours)

Concentrating on women of childbearing age, pregnant women, infants and children from one through 21 years, this course provides an introduction to the epidemiology of the health of women and children. The course will allow students to identify the public health basis of maternal and child health, and will provide an introduction to the epidemiology of maternal and child health, data-based needs assessment, and program evaluation.

PHEP-616 Disease Surveillance (3 credit hours)

This course will review issues and methods in the design and implementation of disease surveillance systems. The history of public health surveillance, existing surveillance systems, national and international, for reportable infectious diseases and cancer registries will be reviewed. The course will consider novel approaches to monitoring for sentinel events, linking multiple data systems, surveillance of syndromes and other health-related conditions, and applications to bioterrorism.

PHEP-617 Field Epidemiology (3 credit hours)

This course will focus on the practical aspects of doing field epidemiology, including topics such as: the organization of teams and methods for detecting and investigating disease outbreaks; data collection methods, including the collection, transport, and storage of biological and environmental samples; data analysis using Epi Info, GIS, and other statistical packages; interpretation and communication of findings to public health authorities, the press and general public; intervention, follow-up and evaluation methods; and ethical and legal issues.

PHEP-618 Epidemiologic Methods II (3 credit hours)

This course reviews epidemiologic methods including stratified and logistic regression analysis, survival and proportional hazards modeling and strategies for model building in multivariate analysis.

PHEP-619 Biology of Disease in Populations (3 credit hours)

This course provides an overview of the biology and basic pathophysiology of common acute and chronic diseases and conditions from the epidemiologic perspective.

PHEP-620 Environmental and Occupational Epidemiology (3 credit hours)

Epidemiologic methods for studying environmental and occupational determinants of disease will be presented in the context of studies of specific health outcomes, such as cancer, non-malignant respiratory diseases, adverse reproductive outcomes, and neurological diseases. Emphasis will be placed on the most suitable epidemiologic approaches to characterize exposure-response associations for various environmental and occupational diseases.

PHEP-650 Advanced Topics in Epidemiology (1-6 credit hours)

The purpose of this course is to provide an opportunity for students to address specific issues in epidemiology.

PHEP-655 Emerging Issues in Epidemiology (3 credit hours)

This course introduces students to emerging public health issues that epidemiologists in health departments, consulting companies, and government agencies are likely to be involved with, covering a wide array of topics, problems and projects.

PHEP-666 Thesis Research (1-6 credit hours)

This course is for mentored thesis research in the M.S. program in epidemiology. Students are required to complete 6 credit hours of research that culminates in a minimum 30-page original master's thesis manuscript.

PHEP-701 Advanced Epidemiologic Methods (3 credit hours)

This course provides hands-on experience with advanced statistical methods in epidemiologic analysis under complex study designs and methods for critical analysis of published results and research proposals. Upon completion of this class, students will be able to:

- Describe multiple epidemiologic study designs, including matched case-control, cohort, longitudinal, family and sib designs, and clinical trials.
- Apply and appropriately interpret results from multivariate Cox Proportional Hazards analyses with time-dependent covariates
- Apply and appropriately interpret results from polytomous and ordinal logistic regression models
- Apply and appropriately interpret results from statistical analyses of familial and sib study designs, including tests of linkage and association.
- Demonstrate understanding of the principles and methods of application of meta-analysis of results from several epidemiologic studies
- Provide thorough, critical analyses of three or more published epidemiologic studies to be selected by the instructor
- Demonstrate understanding of the principles for critical review of an NIH-format epidemiology research proposal
- Demonstrate understanding of disease biology in study design, analysis, and critical review

PHEP-702 Epidemiologic Research Management (3 credit hours)

This course provides a comprehensive introduction to the practical methods necessary for conducting epidemiologic research including regulations, databases, sampling, recruitment and tracking, instrument design, and data quality control. Upon completion of this class, students will be able to:

- Describe various methods and sources for ascertaining cases of specific diseases or health related conditions for epidemiologic research, and their respective strengths and limitations
- Describe various methods and sources for sampling or selecting healthy controls, and their respective strengths and limitations
- Describe methods for recruiting and enrolling participants in population-based observational studies and clinical trials, and their respective strengths and limitations
- Describe methods for tracking subjects for follow-up in prospective studies, retention, and compliance with procedures in both observational studies and clinical trials
- Explain the consequences of problems in each of the above with regard to internal and external validity of study findings
- Develop and pilot test a questionnaire for participant or interviewer administration
- Design forms for tracking, recording, and monitoring quality control in the collection of study data from different sources, including questionnaire, physical exam, medical record, and laboratory, using computer systems
- Develop a manual of procedures for a specific study design
- Demonstrate understanding of human subjects research regulations, privacy laws, and research ethics

PHEP-750 Seminars in Epidemiology (3 credit hours)

Doctoral students engage with faculty as junior-peers to develop skills such as research proposal writing, grant budgeting, peer review, manuscript preparation, oral and poster presentation. The content of this course will vary from semester to semester based on the instructor and needs of the students. In general, upon completion of this class, students will be able to:

- Demonstrate ability to interact with faculty and peers in an professional manner
- Display accurate and appropriate understanding of human research ethics and regulations
- Form a research team with 2 or more students and develop a complete NIH-formatted “mock” research proposal, including budget, personnel, research environment, and research plan
- Provide one publication-quality research manuscript that provides: (1) a useful review of epidemiologic literature for a disease; (2) a critical review of epidemiologic methods; or, (3) results from a primary or secondary analysis of data
- Present one poster or oral presentation
- Discuss and critically review recently published research on “hot topics” in epidemiology

PHEP-778 Readings and Research in Epidemiology (1-3 credit hours)

This course gives students the opportunity to explore in greater depth selected, specialized topics in epidemiology, to conduct readings and research on these under the supervision of a faculty

mentor, and to develop ideas that may lead to a dissertation proposal. Students must identify a faculty mentor and develop a course proposal that includes a detailed syllabus with defined deliverables, a timeline, and methods of evaluation and grading. Both the student and advisor must sign contracts describing their specific expectations and duties and the proposed course must be completed within 90 days after approval by department chair.

Department of Health Management and Systems Science (PHMS)

PHMS-501 Introduction to Public Health and Administration (3 credit hours)

This course emphasizes the practical application of the principles of health care organization to public health at the national, state, and local levels. Course objectives reflect an overview of the principles of managing a public health organization: legal basis of public health, organization and delivery of public health services, health planning and community needs assessment, epidemiological approach to diseases, methods for chronic and infectious disease control, future changes that can impact the provision of public health services, etc. This is a hybrid web-based and face-to-face course. Taught at the graduate level.

PHMS-603 Legal and Bioethical Aspects of Public Health (3 credit hours)

This introductory course will focus on the legal and bioethical principles and constraints (including case law, regulations and policy) that are applicable to public health services and the public health professions. How these principles and constraints developed over time, and how they operate in public health practice—based upon in-depth review of case studies—will be examined. Special attention will be directed towards analyzing significant legal cases, current legislation, and public policy, including their bioethical underpinnings and frames of reference, that pertain to the government’s public health authority, the obligations of public health professionals and public health facilities, the interests of the community and society, and the rights and interests of individuals. Students will explore a broad range of current and historically relevant legal, ethics, political, and social topics and issues that bear upon matters such as disease and injury prevention; surveillance; health promotion and access to health services; public health emergencies; standards of practice; regulation of health facilities and the licensing of health professionals; special populations (e.g., children, prisoners, decision- incapacitated); and public health research.

PHMS-604 Advanced Topics in the Legal, Ethical and Policy Aspects of the Health System (3 credit hours)

This course seeks to engage students in the fundamental issues of how law, ethics, and policy influence the health system. The course increases students’ understanding of the complexity of the policy system and develops a framework for policy development through an analysis of how various institutional structures—for instance, legislatures, courts, administrative agencies or “the market”—are used to optimize a myriad of social values or goals. Public health sciences, broadly defined, are the background evidence used to make policy choices. However, various actors in the policy process treat scientific or public health derived data as one of many factors used in decision making. Administrative agencies, legislators, and courts have different rules for analyzing the relevance of particular kinds of scientific evidence, particularly new scientific knowledge. “Health Education and Promotion”—one of the traditional hallmarks of public health—now includes new concepts derived from the social sciences such as “social marketing” and “community-participatory action research.” Courts may, however, be more reluctant to consider such new knowledge in deciding a lawsuit than public health agencies might be when writing regulations. Managers in the health system must have a framework that takes account of the variety of actors in the policy system and must be prepared to engage in discussion of four foundational issues:

- What is law?

- What is public health law and how is it distinct from health law?
- What is public health ethics?
- What is health policy?

PHMS-605 Governance and Management of Healthcare Organizations (3 credit hours)

This course is designed to provide an understanding of how the multiple dimensions and facets of healthcare result in highly complex and problematic governance and management that is unique to healthcare organizations. Course participants will study the broad and complex nature of consumer demand in healthcare and how it drives organizational purpose and value propositions. Governance and management of healthcare organizations representing the full continuum of care across life span and treatment approaches will be covered. Governance and management of the array of functions within healthcare organizations will be studied, including leadership, resource acquisition and allocation, operations and marketing. The critical nature of transactions with the external system in which healthcare organizations operate and how to manage them will be studied. A systems-theory based approach, informed by complexity theory, will be used to understand healthcare organizations as complex adaptive systems.

PHMS-606 Complexity in Healthcare Organizations and Leadership (3 credit hours)

Students will read and discuss literature that seeks to consider organizations and leadership from a complexity perspective. Extensive use will be made of the students' experiences inside and outside of class. Invited speakers with relevant experience will provide additional source material.

PHMS-607 Managing Healthy Communities (3 credit hours)

"Managing Healthy Communities" will be defined from perspectives of various stakeholders but primarily from the perspective of the community and its constituents. Broad questions will be addressed during the course.

PHMS-608 Managing Community Health with Policy Development (3 credit hours)

The social gradient for the determinants of health will be examined in detail. Value propositions and policy options will be explored in depth, including assessments of effectiveness of existing health policies in USA and Europe. Broad questions will be addressed during the course, including:

- What is health from the community perspective?
- Who are the communities- or populations-of-interest?
- How are their wants and needs for maintaining and attaining good health assessed? 4) What resources are currently used to meet perceived health needs?
- How are health policies developed and implemented to address these health needs?
- How is progress in health policies measured, evaluated and disseminated?
- How can the PRECEDE-PROCEED model for health policy development and evaluation be applied in specific content areas?
- How is leadership manifest for managing health policy development?
- How does the new science of complexity influence management and leadership in health policy development?

PHMS-615 Introduction to Health Systems (3 credit hours)

This course is designed to provide an introduction to the health sector as it currently operates in the US. A systems-theory based approach, informed by complexity theory, will be used to present health systems as complex adaptive networks. Through a review of the history of the health sector the student will learn how the industry has evolved (adapted) to where it is today, and where it may be going in the future. The complex structure of the health sector will be explored, looking at dynamic interrelationships between patients, government, employers, payers, vendors, educators, institutional providers, practitioners and other participants in the health sector. Health sector financing and cost, in both the public and private sectors, will be reviewed. Additionally, ways in which both money and information move through the complex structure of the health sector will be considered. The impacts of different structures and processes of health on access to and quality of care will be explored. Finally, impacts of new technologies on the future of the health sector will be explored, with an emphasis on information technology.

PHMS-616 Complexity and Health Systems (3 credit hours)

This course is designed to provide an introduction to the health sector as it currently operates in the US. A systems-theory based approach, informed by complexity theory, will be used to present health systems as complex adaptive networks. (A health system, as used in this course, refers to a collection of health organizations in a geographically-defined area. The health organizations in the collection may have any number of physical locations or wholly-owned subsidiaries under the parent organization.) Through a review of the history of the health sector the student will learn how the industry has evolved (adapted) to where it is today, and where it may be going in the future. The complex structure of the health sector will be explored, looking at dynamic interrelationships between patients, government, employers, payers, vendors, educators, institutional providers, practitioners and other participants in the health sector. Health sector financing and cost, in both the public and private sectors, will be reviewed. Ways in which both money and information move through the complex structure of the health sector will be considered. The impacts of different structures and processes of health on access to, quality of and cost of care will be explored. Finally, impacts of new technologies on the future of the health sector will be explored, with an emphasis on information technology.

PHMS-618 Public Health Informatics v2009.11.03 (3 credit hours)

This course is designed to provide students with the basic knowledge and skills for the systematic application of information and computer technology to meet the information needs of public health. Related legal, ethical, technological, and data issues are explored in class discussions. Students use information technology and public health databases in team projects, with oral presentations and written reports to demonstrate achievement of the course objectives.

PHMS-650 Advanced Topics in Health Management and Systems Science (3 credit hours)

This course will usually focus on one topic in advanced health management and systems sciences, not usually covered in a regularly offered course (or if offered in a regularly offered course, not covered in depth). This course will be repeated under different subtitles.

PHMS-751 Seminar I in Public Health Management (1 credit hour)

Doctoral students will interactively engage with the Health Management and Systems Sciences faculty to critically review important literature relevant to key factors influencing the context of public health management and will develop at least one quality manuscript on a topic related to the context of public health management. Students will be expected to develop and demonstrate presentation skills by making an effective oral presentation of this research effort. This seminar is the first of three one-hour seminars required of all Ph.D. students in the Health Management concentration and is intended to provide students with a unifying prospective for the Ph.D. concentration curriculum.

PHMS-702 Methods in Health Services and Outcomes Research (3 credit hours)

This course is about methods for measuring varieties of quality in healthcare: methods to assess the quality of published research, examining context and quality of standardized questionnaires for health-related quality of life (HRQL) assessments, and investigating effectiveness of programs / applications / policies to improve the quality of care, health status of populations, etc. We examine quality from multiple perspectives – individuals in the context of their daily social roles, for example, and examining quality perspectives through the lens of organizations with intentions to change the healthcare system, focusing on case studies of the Wagner's chronic illness care model, models for pay-for-performance and other current topics.

Hands-on computer applications in quantitative research methods are present during the last hour, including skills for hypothesis testing, mathematical modeling and interpretation of common statistical tests, using analytic softwares like SPSS and Excel on existing datasets.

PHMS-752 Seminar II in Public Health Management (1 credit hour)

Doctoral students will interactively engage with the Health Management and Systems Sciences faculty to critically review important literature relevant to key factors influencing the context of public health management and will develop at least one quality manuscript on a topic related to the context of public health management. Students will be expected to develop and demonstrate presentation skills by making an effective oral presentation of this research effort. This seminar is the second of three one-hour seminars required of all Ph.D. students in the Health Management concentration and is intended to provide students with a unifying prospective for the Ph.D. concentration curriculum.

PHMS-753 Seminar III in Public Health Management (1 credit hour)

Doctoral students will interactively engage with the Health Management and Systems Sciences faculty to critically review important literature relevant to key factors influencing the context of public health management and will develop at least one quality manuscript on a topic related to the context of public health management. Students will be expected to develop and demonstrate presentation skills by making an effective oral presentation of this research effort. This seminar is the third of three one-hour seminars required of all Ph.D. students in the Health Management concentration and is intended to provide students with a unifying prospective for the Ph.D. concentration curriculum.

PHMS-755 Independent Study in Health Management and Systems Sciences**(1-3 credit hours)**

The course provides students with the opportunity to develop a research project or investigation of a health management and systems topic under the supervision of a faculty mentor. The student identifies an academic advisor and develop a proposal that includes a detailed syllabus with methods to evaluate the proposed work and criteria for assigning a grade. Both the student and advisor sign documents describing their respective duties, and the proposed study is to be completed within 90 days after approval of the proposal.

PHMS-761 Public Health and the Built Environment**(3 credit hours)**

This course explores the relationship between the built environment and its influence on a community's health. It is thus interdisciplinary in its approach, touching especially on the fields of public health and urban planning. Historically the two fields were considered one, but today they are practiced in near-total exclusivity. This seminar examines such issues as theories and concepts of behavior and design, health disparities, social capital, physical activity, air, water and transportation.

Department of Health Promotion and Behavioral Sciences (PHPB)

PHPB-501 Introduction to Health Behavior (3 credit hours)

This course reviews theoretical constructs of the causation of health-related behavior, including preventive, early diagnosis, treatment, and rehabilitation behavior. The course then follows a systematic analysis of the theories as they apply to important public health problems. In addition, discussion of the national Healthy People project will be an important component of the course. Taught at graduate level.

PHPB-602 Cognitive Issues in Health Communication (3 credit hours)

Addresses health communication from the standpoint of the various cognitive factors involved in the process of communicating health information, both at the receiving end of the communication and the sending end. The cognitive issues considered include, but are not limited to: selection and transmission of the health information by the sender; reception and filtering of the information by the receiver; storage and retrieval of the information, and principles of dialogue and exchange between two or more communicators. The foundation principles of this course lie in basic cognitive and communication theories; however they are specifically applied to health issues, topics, situations, and roles.

PHPB-604 Health Decision and Risk Analysis (3 credit hours)

This course is a study of how patients, practitioners, researchers, educators, and policy makers understand risk and approach complex decision problems in health, recognizing that multiple outcomes are possible from any given health situation, with variations in the likelihood and desirability of those outcomes. Complex health decisions are approached from the standpoint of the values placed on various health states, the potential for cascading events (both desirable and undesirable), sources of risk and bias, effectiveness of diagnosis and/or treatment decisions, and the allocation of resources. Attention is given to risk analysis and decision making by health care providers, policymakers, payers, researchers, educators, society as a whole, and patients, recognizing that differences in values, expectations, and informational inputs can vary significantly with role and can have a major effect on both the decision making process and result. Specific focus is placed on the ability of individuals to analyze and ameliorate their own health risks, including the impact of social networks, trusted advisors, and societal factors. Formal decision analysis is also addressed, including an introduction to the use of expected value decision making tools such as decision trees and Markov modeling.

PHPB-606 Health Knowledge Diffusion (3 credit hours)

In this course, the spread of health knowledge into populations, the acceptance of new information, and its integration into practices among health care professionals and the general public will be examined. Theories of innovation and communication will be used as a framework for examination of deliberate and accidental knowledge acquisition and dissemination.

PHPB-608 Public Health Program Evaluation (3 credit hours)

This graduate level course presents the application of program theory, principles and methods in the evaluation of health programs.

PHPB-612 Health Communications Campaign: Theory and Practice (3 credit hours)

Health Communications Campaigns: Theory and Practice will review principles and concepts of health communication campaigns, with a specific emphasis on application and competency in using health communications to solve public health problems.

PHPB-615 Public Health Program Evaluation (3 credit hours)

The course establishes basic skills for public health evaluation. Students learn critical thinking regarding evaluation purpose, procedures and findings, terminology, specific techniques, and the application and dissemination of evaluation results.

PHPB-650 Advanced Topics in Health Knowledge and Cognitive Sciences (1-3 credit hours)

This course is an in-depth treatment of one or more advanced topics in Health Knowledge and Cognitive Sciences, not usually covered in a regularly offered course and intended to significantly advance the student's understanding in the field.

PHPB-655 Systems Thinking and Dynamic Modeling (3 credit hours)

This course is designed to give students basic skills for applying the tools (conceptual and simulation) of system dynamics to a broad range of daunting, and growing, public health problems that involve multiple, overlapping, and interacting subsystems encompassing biological, environmental, social and behavioral factors. Competence will be developed using a process ("Ladder of Engagement") that teaches (1) a productive sequencing of systems thinking and dynamic modeling tools (to convert "knowledge" of behaviors, to a conceptually-structured systemic "understanding," to a final use of computer models to test and assess possible policies with which to "influence" the system); and (2) generating new and better questions and broadening our perceived system boundaries.

PHPB-701 Theoretical Basis of Health Promotion (3 credit hours)

The course will explore the historical developments in the health promotion field, up to the current state of the health promotion discipline. Main emphases in the course are the Healthy People project, PRECEDE/PROCEED and other planning models, and research issues for the future of health promotion.

PHPB-704 Psycho-Social Foundations of Health Decision Making (3 credit hours)

Practitioners in the health sciences, including those in public health, medicine, nursing, and psychology, must often make decisions under situations that involve uncertainty, conflicting values and preferences, and societal and time pressures. To succeed, the practitioner must understand the psychological and social factors that influence judgment and decision making. Specifically, this class will apply a bio-psycho-social model to decision making in order to gain a richer understanding of judgment and decision making.

PHPB-705 Community Organizing and Health Policy Advocacy (3 credit hours)

The course will provide a thorough review of the extent and nature of community health problems requiring community-based solutions, as opposed to solutions for individuals. Included in the course will be concepts of community organizing, empowerment, and processes of policy advocacy and formation. The course will develop practitioner competencies as well as a research agenda.

PHPB-706 Introduction to Public Health Disasters and Response (3 credit hours)

The course is an introduction to the agencies, processes, and basic skills necessary for public health disaster response. Core elements include assessment, planning, evaluation, mental health, and risk communication.

PHPB-710 Community Based Participatory Research (3 credit hours)

This course presents concepts and approaches in community-based participatory research. Students will complete a needs assessment and design a project applying theory, principles, and methods in participatory research.

PHPB-711 Qualitative Research Methods in Public Health (3 credit hours)

The course presents theories and methods in qualitative research design and inquiry. Students will apply qualitative data collection, coding, and analysis skills to public health problems.

PHPB-721 Health Promotion and Healthcare-Associated Infection (3 credit hours)

This course is a thorough exploration of the social, financial, public health, and behavioral impacts of healthcare-associated infection and key intervention strategies.

PHPB-722 Health Risk Communication (3 credit hours)

The communication of health messages take on special importance when the message conveys information about risk. In this course, students will learn about risk communication principles and theory and will develop proficiency in developing risk communication messages. Attention will be given to understanding how a receiver of a health risk message cognitively and affectively responds to the message. Students will critique existing risk communications and hear from risk communication experts from the FBI, the Louisville Metro Department of Public Health and Wellness, and local public health preparedness professionals.

PHPB-724 Dissertation Methods Seminar (3 credit hours)

The course is an interactive seminar on the processes and strategies of dissertation research and writing, usually taken in the semester prior to sitting for the candidacy qualifying exam.

PHPB-727 Culture and Public Health (3 credit hours)

This course focuses on US and international perspectives on culture and health. It presents a public health approach to intercultural communication and provides opportunities for building cultural competency skills.

PHPB-753 Independent Study in Health Promotion and Behavioral Sciences (1-3 credit hours)

The course provides students with the opportunity to develop a research project or investigation of a health promotion and behavioral health topic under the supervision of a faculty mentor. The student identifies an academic advisor and develop a proposal that includes a detailed syllabus with methods to evaluate the proposed work and criteria for assigning a grade. Both the student and advisor sign documents describing their respective duties, and the proposed study is to be completed within 90 days after approval of the proposal.

CREST Program (PHCI)

PHCI-501 From Bench to Bedside: Introduction to Clinical Research (1 credit hour)

Designed to introduce students in health professions to the intellectual challenges and rewards of clinical research.

PHCI-601 Evaluating Health Care Literature (1 credit hour)

A review of formal methods for evaluating the medical literature including those of the University of Rochester Clinical Pharmacology Group; and the Evidence Based-Medicine Group. Meta-Analysis: sources of information, using medical informatics, selection of trails, pooling of data, analyzing pooled data and interpreting results, problems and limitations of meta analysis will be covered.

PHCI-602 Health Services and Outcomes Research (2 credit hours)

Understanding the multiple dimensions of health status and conceptual basis for measuring health status and outcomes; review and evaluation of the strengths and weaknesses of common measures. Formalization of research questions and design of appropriate methodology including sample selection, measurement, data, collection and statistical analysis.

PHCI-610 New Drug & Device Development (2 credit hours)

This course introduces the rationale for, practical aspects of, and new issues in drug and device development as well as the relevant industry and government policies and regulations.

PHCI-611 Introduction to Clinical Epidemiology (2 credit hours)

A comprehensive introduction to public health with an emphasis on population-based approaches to health issues. Both classical and clinical epidemiology will be presented. The course will cover health status indicators, including morbidity, mortality, vital statistics and measures of quality of life. The global applications of epidemiology and international health through investigations of the leading causes of morbidity and mortality in developed, developing and under developed nations. Epidemiological concepts will be linked with computer exercises to reinforce learning and practical applications

PHCI-624 Clinical Trials I: Planning and Design (2 credit hours)

Phases of trials, experimental designs, inclusion and exclusion criteria, randomization and blinding, the general linear model and mixed and fixed effects repeated measures analysis of variance, intention to treat methods, survival analysis.

PHCI-625 Clinical Trails II (2 credit hours)

Protocol development; patient recruitment and retention; safety and efficacy; benefit to risk assessment; monitoring and auditing trials; terminating or extending clinical trials; and, regulatory, patent and legal considerations.

PHCI-629 Special Topics in Epidemiologic Research Methodology (1-6 credit hours)

Provides an opportunity for students to address specific methodological issues such as bias or confounding or specific statistical problems in clinical research. Topics covered depend upon student interest and faculty availability.

PHCI-631 Social and Behavioral Sciences in Health Care (2 credit hours)

This course introduces public health students to social science perspectives and research on selected topics in health and health care. The course is organized into the following units: the sociology of knowledge and health behavior modeling; the social distribution of health, disease and utilization by social variables; social problems (e.g., violence and substance abuse) as public health concerns; health care industry and policy health behavior and the psychology of illness; international health and health care systems; and genetics and public health.

PHCI-632 Ethical Conduct of Health Care Research (2 credit hours)

An introduction to the ethical principles and topics of medical research and data collection and evaluation. The basic ethical principles to be covered include autonomy, beneficence, rights and justice. Specific topics include: the ethics of treatment of patients versus research on human subjects; informed consent including proxy consent; subject confidentiality in research and publication; and the special problems of pediatric research.

PHCI-650 Introduction to Medical Decision Analysis (2 credit hours)

Introduction to decision analysis in health care. Students will learn the principles and application of decision analysis and to use decision science software. Topics: identification of problems suitable for decision analysis, utility theory and measurement, importance and estimation of probability, creation/analysis of decision trees, including sensitivity analysis, advanced methods of decision modeling, and illustration and presentation of results.

PHCI-699 Mentored Research-Thesis Preparation (1-6 credit hours)

MPH Program (PHPH)

PHPH-614 Critical Thinking and Program Evaluation (3 credit hours)

The course establishes basic skills for public health evaluation. Students learn critical thinking regarding evaluation purpose, procedures and findings, terminology, specific techniques, and the application and dissemination of evaluation results.

PHPH-630 Geographic Information Systems in Public Health (3 credit hours)

One of the emerging technologies being adopted by health researchers and public health professionals is geographic information systems (GIS). With GIS, one can manage large quantities of information; map the distribution of diseases and health care resources; analyze relationships among environmental factors, socioeconomic variables, and disease outcomes; identify potential areas for the location of a new hospital or clinic; and even make decisions about the development or implementation of health policies. This course provides public health students with hands-on GIS experience, using Environmental Systems Research Institute's (ESRI's) ArcGIS software and other software packages. The course is taught in a computer lab, where students have access to GIS software. Topics covered include an introduction to geographic information systems; management and use of health, census, and spatial data; mapping health information; spatial clustering of health events; analysis of environmental hazards; risk and spread of infectious and vector-borne diseases; and location of health services and access to care.

PHPH-679 Public Health Practicum Experience (1-6 credit hours)

The practicum experience is designed to bridge the gap between academia and public health practice by providing field experience at a public health worksite. Each MPH student identifies a practice site, develops a learning agreement in consultation with the practice site mentor and faculty mentor, works at the site to address the components of the learning agreement and to gain experience within the organization, prepares a written characterization of the practice site, and prepares written and oral reports describing the practicum experience.

PHPH-696 Issues in Public Health (2 credit hours)

This course will provide students with several broad topical concepts encountered within the field of public health. This course is meant to serve as an introductory course, providing a framework upon which to build all other subsequent core courses. It will also serve as a venue to introduce students to the five core areas of public health (epidemiology, biostatistics, health management and policy, health knowledge and environmental health) through various presentations and activities.

PHPH-697 Integrating Learning and Experience in Public Health (3 credit hours)

This course is designed to integrate knowledge acquired in course work and other learning experiences and to apply this knowledge to situations that represent various aspects of professional public health practice. Through the evaluation of previous cases and the development of a new case from current and emerging areas of public health, students working in teams demonstrate their abilities in applying general and specific public health knowledge they have learned through their courses of study.

School-Based Courses (PHPH)

PHPH-601 Directed Study for Master's Students (1-9 credit hours)

The course provides students with the opportunity to do independent study under the supervision of a faculty mentor. The student identifies an academic advisor and develops with the advisor a course of study and deliverables.

The course may not be a requirement or elective in a curriculum and may not be counted toward the required credit hours of coursework for a degree.

PHPH-701 Directed Reading for Qualifying Examinations (1-9 credit hours)

The course provides students with the opportunity to prepare for qualifying examinations under the supervision of a faculty mentor. The student identifies an academic advisor and develops with the advisor a program of reading and study for the examinations.

The course may not be a requirement or elective in a curriculum and may not be counted toward the required credit hours of coursework for a degree.