



SCHOOL OF
PUBLIC HEALTH

Department of Epidemiology and Biostatistics

Master of Public Health (MPH) Programs

Student Manual

(SPH Integrated Core)

Department of Epidemiology and Biostatistics

2234 School of Public Health

College Park, MD 20742

June 2018

Table of Contents

- A. Overview of the Department of Epidemiology and Biostatistics**
- B. EPIB MPH Program Concentrations**
 - a. MPH Biostatistics Concentration Overview
 - i. Course Requirements
 - ii. Competencies
 - iii. Course Sequence
 - b. MPH Epidemiology Concentration Overview
 - i. Course Requirements
 - ii. Competencies
 - iii. Course Sequence
- C. MPH Internship (EPIB778)**
- D. MPH Capstone Project (EPIB786)**
- E. EPIB Advising**
- F. Minimum Requirements for Satisfactory Progress**
- G. EPIB Course Waiver Policy**
- H. Student Travel Policy & Funding**
- I. Student Forms**
- J. EPIB Faculty**
- K. School of Public Health (SPHL) MPH Core Courses**
- L. EPIB Graduate Courses**
- M. Authorship Policies**
- N. Graduate School and Graduate Catalog Links**
- Appendix 1: MPH Core-Specific Competencies**
- Appendix 2: Elective Courses**
- Appendix 3: Course-Planning Templates**

A. Overview of the Department of Epidemiology and Biostatistics

The fields of epidemiology and biostatistics provide the foundational logic, methodology, and tools for public health practice. Epidemiology is the study of the distribution and determinants of disease and injuries, and other health states in human populations. As the fundamental science of public health practice, epidemiology provides the conceptual and applied tools necessary for the study of public health problems. Biostatistics is a science that addresses theory and techniques for describing, analyzing, and interpreting health data. The discipline is primarily focused on applications to problems in the health, medical, and biological sciences.

The mission of the Department of Epidemiology and Biostatistics at the University of Maryland School of Public Health is to:

1. Conduct methodological and collaborative research to examine, develop, test, and apply established and novel epidemiological and biostatistical methods for the purpose of addressing the public health needs of populations at risk for chronic diseases through a social behavioral lens.
2. Offer educational programs, training, and mentoring in the design and analysis of public health programs through the application of epidemiological and biostatistical methods.
3. Provide services to the School, university, and community that further the mission of the Department and the School.

B. MPH Program Concentrations

Launching in the Fall 2018 semester, all University of Maryland School of Public Health MPH and MHA students will complete an integrated set of core courses of 14 credits over three semesters. These courses will provide innovative instruction in a number of areas of public health, including data collection and analysis, policy, health care systems, communication, ethics and leadership. Students will also complete internships unique to the Maryland/DC region (the "Maryland Experience") and capstone projects within their chosen concentration area.

The Maryland Experience highlights our School's "unfair advantage"—we are located within the Capital Beltway, with unparalleled access to the unique resources of Washington, D.C. From federal agencies, military organizations, and non-profits, to state and local agencies, MPH students at the University of Maryland indeed have the nation at their fingertips with the ability to engage in internship and practical experiences in areas with extraordinary potential to launch career paths.

The **MPH in Biostatistics** and the **MPH in Epidemiology** are 45-credit professional degrees that prepare graduates to work in public health services as practitioners, researchers, administrators, and consultants. A full-time student may complete our program in 2 years. Part-time students may take up to 4 years to complete the program. The majority of courses are offered in the evenings. In addition to coursework, all MPH students are required to complete a 240 hour internship and an independent project.

Our MPH degree programs use a competency-based format for instruction. Each student is expected to meet minimum requirements for a basic set of competencies through prior experience, course work, and field experience.

Prior to starting their first semester students should plan out their courses for the entire program. The MPH-core courses are offered during semesters 1, 2, and 3, students should take them in sequence. Students may take courses during the summer terms if that fits into their schedule. Summer courses also allow students to register for fewer credits during the semester. Student may also decide to take EPIB778 Internship in Public Health during the summer to take advantage of paid opportunities with U.S. government agencies. A list of common MPH electives is provided in Appendix 2.

a. MPH in Biostatistics Concentration Overview

The goal of the MPH in Biostatistics is to train students in the science that addresses theory and techniques for describing, analyzing, and interpreting health data. The discipline is primarily focused on applications to problems in health, medical, and biological sciences. Students are not only trained through formal coursework, but also through active engagement in research, departmental activities, research seminars, and through attendance at professional meetings at the state, regional, national, and international levels.

i. MPH in Biostatistics requirements

	Course Title	Credits
MPH Integrated Core (14 Credits)	SPLH 601 Core Concepts in Public Health	1
	SPHL 602 Foundations of Epidemiology and Biostatistics	4
	SPHL 603 Applied Data Laboratory	1
	SPHL 610 Program Planning and Evaluation	5
	SPHL 611 Public Health Ethics	1
	SPHL 620 Leadership in Public Health	2
Cognate Area (15 credits)	EPIB 651 Biostatistics II (Applied Regression Analysis)	3
	EPIB 652 Categorical Data Analysis	3
	EPIB 653 Applied Survival Data Analysis	3
	EPIB 655 Longitudinal Data Analysis	3
	EPIB 697 Public Health Data Management	3
Electives (9 Credits)	Choose 3 elective courses with advisement	9
Capstone (7 Credits)	EPIB 778 Internship in Public Health	4
	EPIB 786 Capstone Project in Public Health	3
	Total Credits MPH in Biostatistics Program	45

ii. MPH in Biostatistics Program Competencies

By the end of the MPH in Biostatistics, students will master the following competencies:

1. Meet the core-specific competencies for the MPH degree. (Appendix 1)
2. Describe and apply basic concepts of probability, random variables, and commonly used statistical probability distributions.
3. Distinguish among the different measurement scales or types of variables and select appropriate descriptive statistical methods for summarizing public health data.
4. Select appropriate inferential statistical methods to answer research questions relevant to public health research.
5. Conduct descriptive and inferential statistical analyses that are appropriate to different basic study designs used in public health research.
6. Critically evaluate statistical analyses presented in public health literature.
7. Perform appropriate sample size and power calculations to ensure that the study is sufficiently powered to achieve the scientific aims.
8. Use statistical analytical software packages (e.g. SAS, R, STATA) to describe, explore, and summarize data as well as perform statistical procedures.
9. Identify statistical approaches to address threats to validity in epidemiologic studies.
10. Demonstrate skills in public health data management
11. Communicate results of statistical analyses to lay and professional audiences.

iii. MPH in Biostatistics Course Sequence*

**Sample Full-Time MPH in Biostatistics Course Sequence – 45 Credits
2 years without summer courses**

Semester	Course		Credits
Fall (12 Credits)	SPLH 601	Core Concepts in Public Health	1
	SPHL 602	Foundations of Epidemiology and Biostatistics	4
	SPHL 603	Applied Data Laboratory	1
	EPIB 697	Public Health Data Management	3
	Elective	Selected with advisement	3
Spring (12 Credits)	SPHL 610	Program Planning and Evaluation	5
	SPHL 611	Public Health Ethics	1
	EPIB 651	Biostatistics II (Applied Regression Analysis)	3
	Elective	Selected with advisement	3
Fall (11 Credits)	SPHL 620	Leadership in Public Health	2
	EPIB 652	Categorical Data Analysis	3
	EPIB 655	Longitudinal Data Analysis	3
	Elective	Selected with advisement	3
Spring (10 Credits)	EPIB 653	EPIB 653 Applied Survival Data Analysis	3
	EPIB 778	Internship in Public Health	4
	EPIB 786	Capstone Project in Public Health	3

**Sample Part-Time MPH in Biostatistics Course Sequence – 45 Credits
2 ½ years with summer courses**

Semester	Course		Credits
Summer (3 Credits)	EPIB 697	Public Health Data Management	3
Fall (6 Credits)	SPLH 601	Core Concepts in Public Health	1
	SPHL 602	Foundations of Epidemiology and Biostatistics	4
	SPHL 603	Applied Data Laboratory	1
Spring (9 Credits)	SPHL 610	Program Planning and Evaluation	5
	SPHL 611	Public Health Ethics	1
	EPIB 651	Biostatistics II (Applied Regression Analysis)	3
Summer (3 Credits)	Elective	Selected with advisement	3
Fall (8 Credits)	SPHL 620	Leadership in Public Health	2
	EPIB 652	Categorical Data Analysis	3
	EPIB 655	Longitudinal Data Analysis	3
Spring (6 Credits)	EPIB 653	Applied Survival Data Analysis	3
	Elective	Selected with advisement	3
Summer (3 Credits)	Elective	Selected with advisement	3
Fall (7 Credits)	EPIB 786	Capstone Project in Public Health	3
	EPIB 778	Internship in Public Health	4

*A template for planning your full program is provided in Appendix 3

b. MPH in Epidemiology Concentration Overview

The goal of the MPH in Epidemiology is to train students for future careers in public health. Epidemiology is the study of the distribution and determinants of disease and injuries, and other health states in human populations. As the fundamental science of public health practice, epidemiology provides the conceptual and applied tools necessary for the study of public health problems. Students are not only trained through formal coursework, but also through active engagement in research, departmental activities, research seminars, and through attendance at professional meetings at the state, regional, national, and international levels.

i. Epidemiology MPH requirements

	Course Title	Credits
MPH Integrated Core (14 Credits)	SPLH 601 Core Concepts in Public Health	1
	SPHL 602 Foundations of Epidemiology and Biostatistics	4
	SPHL 603 Applied Data Laboratory	1
	SPHL 610 Program Planning and Evaluation	5
	SPHL 611 Public Health Ethics	1
	SPHL 620 Leadership in Public Health	2
Cognate Area (12 credits)	EPIB 611 Intermediate Epidemiology	3
	EPIB 651 Biostatistics II (Applied Regression Analysis)	3
	EPIB 612 Epidemiologic Study Design	3
	EPIB 697 Public Health Data Management	3
Electives (12 Credits)	Choose 4 elective courses with advisement	12
Capstone (7 Credits)	EPIB 778 Internship in Public Health	4
	EPIB 786 Capstone Project in Public Health	3
	Total Credits Epidemiology MPH Program	45

ii. Epidemiology MPH Program Competencies

By the end of the MPH in Epidemiology program, students will be able to:

1. Meet the core-specific competencies for the MPH degree (Appendix 1)
2. Investigate a public health problem in terms of magnitude, person, time and place.
3. Explain the importance of epidemiology for informing scientific, ethical, economic and political discussion of health issues.
4. Apply the basic terminology and definitions of epidemiology.
5. Define and calculate basic epidemiology measures of disease frequency and measures of association between risk factors and disease.
6. Define and calculate advanced epidemiology measures.
7. Differentiate among the criteria for causality.
8. Draw appropriate inferences from epidemiologic data.
9. Describe epidemiologic study designs and assess their strengths and limitations.
10. Evaluate the strengths and limitations of epidemiologic reports.
11. Demonstrate skills in public health data management.
12. Communicate epidemiologic information to lay and professional audiences.

iii. Epidemiology MPH Course Sequence

Sample Full-Time MPH in Epidemiology Course Sequence – 45 Credits 2 years without summer courses

Semester	Course		Credits
Fall (12 Credits)	SPLH 601	Core Concepts in Public Health	1
	SPHL 602	Foundations of Epidemiology and Biostatistics	4
	SPHL 603	Applied Data Laboratory	1
	EPIB 697	Public Health Data Management	3
	Elective	Selected with advisement	3
Spring (12 Credits)	SPHL 610	Program Planning and Evaluation	5
	SPHL 611	Public Health Ethics	1
	EPIB 611	Intermediate Epidemiology	3
	EPIB 651	Biostatistics II (Applied Regression Analysis)	3
Fall (11 Credits)	SPHL 620	Leadership in Public Health	2
	EPIB 612	Epidemiologic Study Design	3
	Elective	Selected with advisement	3
	Elective	Selected with advisement	3
Spring (10 Credits)	Elective	Selected with advisement	3
	EPIB 778	Internship in Public Health*	4
	EPIB 786	Capstone Project in Public Health	3

Sample Part-Time MPH in Epidemiology Course Sequence – 45 Credits 2 ½ years with summer courses

Semester	Course		Credits
Summer (3 Credits)	EPIB 697	Public Health Data Management	3
Fall (6 Credits)	SPLH 601	Core Concepts in Public Health	1
	SPHL 602	Foundations of Epidemiology and Biostatistics	4
	SPHL 603	Applied Data Laboratory	1
Spring (9 Credits)	SPHL 610	Program Planning and Evaluation	5
	SPHL 611	Public Health Ethics	1
	EPIB 611	Intermediate Epidemiology	3
Summer (3 Credits)	Elective	Selected with advisement	3
Fall (8 Credits)	SPHL 620	Leadership in Public Health	2
	EPIB 612	Epidemiologic Study Design	3
	EPIB 651	Biostatistics II (Applied Regression Analysis)	3
Spring (6 Credits)	Elective	Selected with advisement	3
	Elective	Selected with advisement	3
Summer (3 Credits)	Elective	Selected with advisement	3
Fall (7 Credits)	EPIB 786	Capstone Project in Public Health	3
	EPIB 778	Internship in Public Health	4

*A template for planning your full program is provided in Appendix 3

C. MPH Internship (EPIB778)

A public health internship is a 4-credit requirement for the Master of Public Health degree. It is a separate experience from the project requirement. The internship is an opportunity to apply classroom-learned skills in a supervised professional environment. All core program competencies must be met between both culminating experiences (internship and project).

The 240 hour internship is designed to enable students to gain practical experience as professionals under conditions conducive to educational development. The internship is a time-limited, supervised period of epidemiology and/or biostatistical activities carried out in a public health organization that works with epidemiologic studies and/or uses biostatistics methods. The internship provides students with the opportunity to integrate and apply knowledge and skills obtained in the MPH program.

Students may be interested in summer internships. There are many opportunities in the area for paid summer internships with the National Institutes for Health, Food and Drug Administration, and other governmental organizations. Applications are usually due in the fall so students should start applying as soon as they start in their programs. Some helpful links:

- Pathways at USAJOBS: <https://www.usajobs.gov/Help/working-in-government/unique-hiring-paths/students/>
- National Institutes of Health: https://www.training.nih.gov/trainees/summer_interns
- NIH Clinical Center: https://clinicalcenter.nih.gov/training/students/summer_internships.html,
- National Institute of Allergy and Infectious Diseases: <https://www.niaid.nih.gov/about/fellowships-internships-and-training>
- National Cancer Institute: <https://ccr.cancer.gov/training/summer-internships>
- Food and Drug Administration: <https://www.fda.gov/AboutFDA/WorkingatFDA/FellowshipInternshipGraduateFacultyPrograms/ucm395746.htm>

All students planning to do their internship must meet as a group with the faculty member coordinating the internship experience the semester prior to starting the internship. An e-mail will be sent to all EPIB students in the first 4 weeks of each semester to schedule the internship planning meeting. During this meeting students will go over the requirements and discuss progress on finding their internship and discuss potential sites.

EPIB students have found internships at a wide variety of organizations, including: National Center for Health Statistics, National Cancer Institute, National Institute of Mental Health, Food and Drug Administration, National Human Genome Institute, Centers for Medicare and Medicaid Services, Adventist HealthCare, Pan American Health Organization, IOWA Foundation for Medical Care, and Consortium Health Plans.

The full description, timeline, and instructions for the completion of the internship requirement can be found the [EPIB MPH Internship Handbook](#), which is to be reviewed carefully prior to the beginning your internship search.

D. MPH Capstone Project (EPIB 786)

All Master of Public Health students are required to complete a project (EPIB 786, 3 credits). The purpose of the project is to provide students with a culminating experience where he/she applies the knowledge and skills learned in the MPH program to a specific public health issue or problem. When designing the project students should review the specific MPH competencies for their program. Students must address each competency between the internship and project. All program competencies must be met between both culminating experiences (internship and project).

The project is 3 credits and is typically in the form of an analytical research report or a comprehensive literature review. Project committee chairs are typically the students' academic advisors, but this is not always the case. If

you think another faculty member would be more appropriate for your project, you should first discuss this with your advisor and the other faculty member before you begin work on your project. You may also discuss this process with the EPIB Director of Graduate Studies.

You should begin to discuss your project ideas with your advisor or project chair in the beginning of the semester before you will conduct your project so that you have time to get everything in order for your work in the last semester. The project includes one public presentation of their proposal, and students must follow the timeline requirements for the proposal defense outlined in the Project Handbook. The final proposal will be submitted to your project chair for committee review and approval. At the end of each semester, all students who are taking EPIB786 will give a 10 minute presentation of their research during a joint session with EPIB students and faculty.

The Graduate School has strict deadlines for when your final project must be completed by in order to graduate in a semester, please see the Graduate School deadlines when you are creating your timelines http://www.gradschool.umd.edu/current_students/deadlines_for_graduate_students.html.

Students should submit a PDF of their approved final project to the Director of Graduate Studies. The full description, timeline, and instructions for the completion of the project requirement can be found the [EPIB MPH Project Handbook](#), which is to be reviewed carefully as you begin to develop your research plan.

If you are interested in the thesis option for the capstone experience (EPIB799 – 6 credits) you must receive approval from your academic advisor by the end of your first year in the program.

E. EPIB Advising

All EPIB graduate students are assigned an academic advisor. Advisors will provide students with approval to register each semester, assist students in determining elective courses, and work with students to identify internship sites. Advisors also typically supervise the project experience and act in the role of the chair of the committee. If a student would like a different EPIB faculty member to be their project chair, they should first discuss this with the EPIB faculty member to see if they agree to be your project committee chair. The student should then discuss the proposed change with their advisor. This should all take place prior to starting work on your project.

Every semester students must complete an [MPH Program Plan](#) for their specific program detailing the courses they have taken and the courses they will register for the next semester. This form must be discussed with and approved by the student's academic advisor. Once the approval has been given students should give the signed form to the EPIB Director of Graduate Studies who will give you permission to register for courses. If a student is interested in taking a course offered in another SPH department, the EPIB Director of Graduate Studies will receive approval for you. If you want to register for a course offered by another school (e.g. Anthropology), you must seek permission from the course instructor and their department's Director of Graduate Studies.

Each year students must complete a [Student Degree Progress Report](#) and should meet with their advisor to review their progress in the program. This form should be completed, reviewed with the advisor, and given to the EPIB Director of Graduate Studies by May 1 each year.

If at any point you encounter difficulty during your time in the program (e.g., death in the family, housing issues, other emergencies, illness, etc.) please reach out to your advisor or the Director of Graduate Studies for support and advice. The sooner we know about these issues the better able we may be to assist you.

F. Minimum Requirements for Satisfactory Progress

Students must meet *minimum* requirements for “satisfactory progress” each year in the master’s program to be allowed to continue. Students must meet all the degree *Milestones* within the time requirements and must maintain a 3.0 GPA throughout their program (See Graduate School policy on Academic Standing). All graduate students must register for at least 1 credit hour each semester until graduation. Students should register for the number of credits that will, in the judgment of the graduate program faculty, accurately reflect their involvement in graduate study (Graduate School Requirements).

Students must receive at least a “B-” in individual MPH program cognate courses for satisfactory progress. If a student receives a “C+” or lower in an Epidemiology or Biostatistics MPH program cognate course, the student must repeat the course and receive a satisfactory grade (at least a B-). If the student does not receive a satisfactory grade the second time, they will not be allowed to continue in the program.

G. EPIB Course Waiver Policy & Inclusion of Credit

MPH students may request a waiver of a required course in their program if they can demonstrate that they have achieved the competencies through another course. The EPIB MPH programs are 45 credits, so if a student waives out of a course they must make sure they complete 45 credits in their program by taking an additional elective or independent study. Courses not eligible for waivers are the integrated MPH core courses (SPHL), EPIB611, EPIB612, EPIB786 and EPIB778. If you would like to request waiver you must submit an **SPH Request for Waiver or Substitution of a Graduate Course Requirement** form, transcripts, a copy of the course syllabi, and possibly letters of support from faculty. The approved waiver form should be given to the EPIB Director of Graduate Studies.

If you have taken an EPIB or other SPH course as an Advanced Special Student or another graduate level course in public health and want to have these added to your degree transcript, you must complete the Graduate School’s **Request for Transfer or Inclusion of Credit for the Master’s Degree** form (https://gradschool.umd.edu/sites/gradschool.umd.edu/files/uploads/request_for_transfer_or_inclusion_of_credit_for_masters_degrees_0.pdf). Only 9 credits as an Advanced Special Student may be applied to a degree program and will be calculated in the GPA. Only 6 credits from another institution may be transferred. These credits may not have been used to satisfy a previous degree. Please see the form for additional requirements.

H. Student Travel Policy & Funding

If you have the opportunity to present your research at a professional conference, there are a number of funding opportunities for conference travel which include forms and requirements to follow.

Students must complete a “Travel Authorization Request (TAR)” if traveling for academic purposes. The TAR is also required for reimbursement of travel expenses. The TAR should be completed as soon as you know you will be traveling to a conference so that your information can be entered into the system (<http://sph.umd.edu/department/epib/facultystaff>). Students should keep copies of all receipts from their trip in order to request reimbursement. Alcohol should not be included on any receipts.

Students may apply for a travel grant from the Graduate School to fund a portion of their conference travel (http://www.gradschool.umd.edu/current_students/travel_awards.html), including the “International Conference Student Support Awards” and “Jacob K. Goldhaber Travel Grant”. These grants are received by the Graduate School on a rolling basis. The Goldhaber Travel Grants may not exceed the amount contributed by a college, department, or other source regardless of funds available or destination. A student may receive a Goldhaber Travel Grant twice during their tenure at the University regardless of degrees earned. Instructions for how to apply for the Goldhaber award are at <http://www.gradschool.umd.edu/images/uploads/goldhaberapplication.pdf>. The EPIB department will match the funds received by the Goldhaber travel award. Students should submit their application to the EPIB Director

of Graduate Studies for departmental funding approval prior to submitting an application to the Graduate School.

I. Student Forms

MPH program related forms can be found on the EPIB website (<http://sph.umd.edu/department/epib/information-and-forms>). Graduate School forms are located on the Graduate School website (<http://www.gradschool.umd.edu/>).

J. EPIB Faculty

Information on Department of Epidemiology and Biostatistics faculty can be found at <http://sph.umd.edu/department/epib/faculty>.

Core Faculty:

Biostatistics

Raul Cruz-Cano, PhD, Associate Research Professor: Computational statistics, bioinformatics, data analysis

Xin He, PhD, Associate Professor: Longitudinal data analysis and survival analysis

Mei-Ling Ting Lee, PhD, Professor: Statistical and bioinformatics methods with applications in genomic research, time-to-event analysis, epidemiological studies, cancer clinical trials, environmental research, and infectious diseases

Tianzhou Ma (Charles), PhD, Assistant Professor: Statistical methods and its applications in genomics and bioinformatics, meta-analysis and data integration, statistical machine learning, Bayesian analysis, high-dimensional variable selection, cancer and psychiatry research.

Jing Zhang, PhD, Assistant Professor: Meta-analysis, clinical trials, diagnostic tests, Bayesian Analysis, and missing data.

Epidemiology

Olivia Carter-Pokras, PhD, Professor: Translation of epidemiologic research into policy and practice, health disparities, Latino health, cultural competency

Cher Dallal, PhD, Associate Professor: Epidemiology of breast, endometrial and ovarian cancer, hormonal and lifestyle factors, molecular epidemiology, cancer prevention

Typhanye Penniman Dyer, PhD, Assistant Professor: HIV/AIDS, women's health, disparities, substance use, infectious disease, mental health, sexual minorities, incarceration, social networks

Sunmin Lee, ScD, Professor: Social determinants of health, health disparities, Asian American health, cancer prevention and survivorship

Hongjie Liu, PhD, Professor and Chair: Social and behavioral aspects of HIV/AIDS, social networks, research methodology

Quynh Nguyen, Assistant Professor: Social epidemiology, big data, social media data, neighborhood characteristics and health, chronic conditions, health disparities

Brit Saksvig, PhD, Associate Research Professor, Associate Chair, Director of Graduate Studies: Nutrition and physical activity, school-based interventions, social networks

Natalie Bea Slopen, PhD, Assistant Professor: Social influences on health, health disparities, and psychological and biological mechanisms

K. School of Public Health (SPHL) MPH Core Courses

SPHL601 Cores Concepts in Public Health (1) Introduces students to the history, functions, systems, policies, and models of public health practice in the United States and globally. The course offers seminars, interactive activities, and assessments aimed at establishing a baseline understanding of public health necessary for higher level and integrative learning in subsequent public health courses. Offered in Fall.

SPHL602 Foundations of Epidemiology and Biostatistics (4) Prerequisite: SPHL603 is a co-requisite course. An introduction to conceptual and practical tools from epidemiology and biostatistics that are necessary for the study of public health problems. Students learn epidemiologic concepts and methods, and basic statistical concepts and procedures used in public health research through applications, hands-on experience, and interpretations of statistical findings. Offered in Fall.

SPHL603 Public Health Data Laboratory (1) An introduction to the statistical software necessary to implement the epidemiology and biostatistics concepts covered in the course EPIB 602, Foundations of Epidemiology and Biostatistics through hands-on exercises. Offered in Fall.

SPHL610 Program Planning and Evaluation (5) Prerequisite: Completion of SPHL601, 602, and 603 with a grade of B- or better in each. This second course in the MPH/MHA integrated core sequence will prepare students to engage in the important tasks of assessing population and patient needs, implementing and evaluating culturally appropriate public health programs, policies, and interventions, and pursuing appropriate resources to support activities through the policy process and via effective use of power in the face of competing interests. Offered in Spring.

SPHL611 Public Health Ethics (1) Prerequisite: SPHL601. Overview and discussion of ethical issues that face public health practitioners. Offered in Spring.

SPHL620 Leadership in Public Health (2) Prerequisite: SPHL610. Students will learn team building, leadership, and advocacy skills through the development and presentation of a policy brief on an urgent health issue. Offered in Fall.

L. EPIB Graduate Courses

EPIB 611 Intermediate Epidemiology (3 credits) Prerequisite: SPHL602/EPIB610. Analysis of epidemiologic methods as applied to epidemiologic research, analysis of bias, confounding, effect modification issues, overview of design, implementation, and analysis of epidemiologic studies. Offered in Spring.

EPIB 612 Epidemiologic Study Design (3 credits) Prerequisite: SPHL602/EPIB610, EPIB611, and SPHL602/EPIB650. Application of epidemiologic study designs, analytic methods used for analysis of cohort, case-control, cross-sectional, and clinical trials research. Offered in Fall.

EPIB 620 Chronic Disease Epidemiology (3 credits) Prerequisite: SPHL602/EPIB610. Overview of prevalence and risk factors for major chronic diseases. Discussion of methodological issues unique to specific chronic disease. Offered in Online in Summer

EPIB 621 Infectious Disease Epidemiology (3 credits) Prerequisite: SPHL602/EPIB610. Overview of the unique aspects of infectious diseases and the epidemiological methods used in their study, prevention, and control. Offered in Fall.

EPIB 622 Social Determinants of Health (3 credits) Prerequisite: SPHL602/EPIB610. Overview of the major social variables that affect public health, including socioeconomic status, poverty, income distribution, race, social networks/support, community cohesion, psychological stress, gender, and work and neighborhood environment. Offered in Fall.

EPIB 623 Epidemiology of Health Disparities (3 credits) Prerequisite: SPHL602/EPIB610. Determinants that influence health outcomes of the most disadvantaged populations in the United States. Focus on social factors contributing to health disparities and inequities in the US. Offered in Spring.

EPIB 626 Epidemiology of Obesity (3 credits) Prerequisite: SPHL602/EPIB610. Overview of the epidemiological, prevention, and treatment of obesity, its causes and consequences, and energy balance issues; application of epidemiologic methods to the study of obesity epidemiology. Offered in Fall (every other year).

EPIB 630 Epidemiologic Methods in Sexual and Reproductive Health Research (3 credits) Prerequisite: SPHL602/EPIB610 or permission from instructor. Examination of epidemiologic methods (quantitative and qualitative) for collecting and analyzing data on sexual and reproductive health. The emphasis will be to introduce students to the appropriate methods used for challenging and sensitive research topics such as sexual behavior, HIV/STI, drug use, sexual abuse. Offered in Fall.

EPIB 631 Cancer Epidemiology (3 credits) Prerequisite: EPIB610 or permission from instructor. This course will combine public health disciplines including epidemiological methods, molecular biology, pathology, clinical and social/behavioral sciences to explore modern cancer epidemiology, prevention and control in the United States and internationally. Emphasis will be placed on those cancers of high prevalence or unique biological characteristics that illustrate interesting epidemiological or etiological characteristics. Offered in Fall.

EPIB633 Health Survey Design and Analysis (3 credits) Prerequisites: SPHL602/EPIB610. An overview of types of survey designs, questionnaire design, measurement issues, and techniques for recruiting and interacting with participants. Students will discuss and implement a variety of health survey analysis techniques, including how to utilize SAS statistical software to estimate descriptive statistics and implement regression models, while accounting for complex survey designs.

EPIB 651 Biostatistics II (Applied Regression Analysis) (3 credits) Prerequisite: SPHL602/EPIB650. Recommended: EPIB697 Public Health Data Management. Introduction to a variety of statistical tools with applications in public health, including one- and two-sample inference, nonparametric methods, categorical data, ANOVA, simple and multiple regression. Offered in Fall and Spring.

EPIB 652 Categorical Data Analysis (3 credits) Prerequisite: EPIB651. Recommended: EPIB698C (SAS Basics) or EPIB697 Public Health Data Management. Methods for analysis of categorical data as applied to public health research, including contingency tables, logistic regression, multcategory logic models, loglinear models, and models for matched-pairs. Offered in Fall.

EPIB 653 Applied Survival Data Analysis (3 credits) Prerequisite: EPIB651. Overview of statistical methods for analyzing censored survival data, including the Kaplan-Meier estimator and the log-rank test. Offered in Spring.

EPIB 654 Clinical Trial Analysis (3 credits) Prerequisite: EPIB651. Principles of clinical trial design, including randomization strategies, design and analytic issues to minimize threats to validity, sample size and power calculations, intention to treat analyses. (TBD)

EPIB 655 Longitudinal Data Analysis (3 credits) Prerequisite: EPIB651. Statistical models for drawing scientific inferences from longitudinal data, longitudinal study design, repeated measures and random effects to account for experimental designs that involve correlated responses, handling of missing data. Offered in Fall.

EPIB 656: Applied Bayesian Data Analysis (3 credits) This course is intended as an introduction to spatial statistics and aims to provide students with the background necessary to investigate geographically represented data. Lectures will cover the three main areas of spatial statistics: geostatistical data, lattice (areal) data, and point patterns. (TBD)

EPIB 657: Spatial Statistics for Public Health Data (3 credits) Prerequisite: EPIB651, EPIB652, or permission of instructor. Overview of the three main areas of spatial statistics: point patterns, geostatistical data, and lattice (areal) data. Application of spatial statistical models including CSR, k-function, kriging, semivariogram, CAR, SAR, GWR, spatial GLM, and multilevel model to public health and environmental data analysis. (TBD)

EPIB 663: SAS Programming (3 credits) Designed for students who want to learn how to analyze and summarize data using SAS. It begins by introducing the students to basic SAS programming and data manipulation techniques. More advanced themes, such as preliminary data analysis and graphs, are explored later in the semester. Finally, the class covers the implementation of several advanced statistical concepts in SAS, including T-tests, ANOVA, non-parametric tests, regression and normality tests. (TBD)

EPIB697: Public Health Data Management (3 credits)

This course is designed to provide students with the expertise needed to effectively manage research data using SAS as the statistical programming language. Offered in Fall and Summer.

EPIB 710 Grantsmanship for Epidemiologic Research (3 credits) Prerequisite: SPHL602/EPIB610, EPIB611, EPIB612, SPHL602/EPIB650 and EPIB651. In-depth study of the knowledge and skills needed to design, conduct, and evaluate an epidemiologic research study. Development of a complete research project. Offered every other year.

EPIB 740 Advanced Methods in Epidemiology (3 credits) Prerequisite: EPIBSPHL602/610, EPIB611, EPIB612, EPIB650, and EPIB651. In-depth investigation of epidemiologic methods for making causal inferences and solving complex methodological problems. Multivariate models emphasized. Offered every other year in Spring.

EPIB 778 Internship in Public Health (4 credits) Prerequisite: Permission of SPHL-Epidemiology & Biostatistics department Internship and seminar providing an opportunity to apply previously acquired knowledge and skills in a health or allied health organization. Setting of the internship will depend upon the student's background and career goals. Offered in Fall, Spring and Summer.

EPIB 786 Capstone Project in Public Health (3 credits) Prerequisite: Permission of SPHL- Epidemiology & Biostatistics department. Capstone experience providing opportunity to apply knowledge and skills to a specific public health problem or issue. Completion of project relevant to public health under the direction of an advisor. Offered in the Fall and Spring.

EPIB 788 Critical Readings in Epidemiology and Biostatistics (1-3 credits) Prerequisite: Must have completed or be concurrently enrolled in EPIB610. Repeatable to 6 credits if content differs. Open to master and doctoral students to discuss critical readings in Epidemiology and Biostatistics. Offered in the Fall.

EPIB 798 Independent Study (1-6 credits) Prerequisite: Permission of SPHL-Epidemiology and Biostatistics department. Repeatable to 9 credits if content differs. Master or doctoral students who desire to pursue special research problems under the direction of a faculty member of the department may register for 1-6 hours of credit under this number. Offered in the Fall and Spring.

M. Authorship Policies

The Department of Epidemiology and Biostatistics has developed authorship guidelines for students and faculty. These guidelines will help students who are working on manuscripts with faculty, may prepare a manuscript for publication through a course, or plan to submit their project for publication.

Authorship has professional benefits such as for promotion and tenure, fulfilling PhD requirements, and professional recognition.¹ The 1995 report of HHS Commission on Research Integrity strongly encouraged that institutions develop practice guidelines regarding “data management and retention, authorship, and on supervision of students, fellows, and technicians.”² However, uncertainty regarding authorship and concerns about potential authorship abuse persist among epidemiology trainees. In our disciplines, few papers are published with a single author.

The University of Maryland College Park considers **improprieties of authorship as an example of scholarly misconduct. This includes:** “improper assignment of credit, such as excluding or insufficiently citing others; misrepresentation of the same material as original in more than one publication; inclusion of individuals as authors who have not made a contribution to the work published; or submission of multi-authored publications without the concurrence of all authors.”³

The Department of Epidemiology and Biostatistics follows the following guidelines in order to facilitate discussion regarding authorship and avoid potential conflict, confusion, and improprieties of authorship:

¹ Strange K. Authorship: why not just toss a coin? *Am J Physiol Cell Physiol* 2008;295(3), C567-575. doi: [10.1152/ajpcell.00208.2008](https://doi.org/10.1152/ajpcell.00208.2008).

² Department of Health and Human Services. Integrity and Misconduct in Research: Report of the Commission on Research Integrity. 1995. Retrieved April 24, 2015 from https://ori.hhs.gov/images/ddblock/report_commission.pdf

³ University of Maryland. **III-1.10(A) UNIVERSITY OF MARYLAND PROCEDURES FOR SCHOLARLY MISCONDUCT. In:** Consolidated USM and UMD Policies and Procedures. 2009. Retrieved April 24, 2015 from <http://www.president.umd.edu/policies/iii110a.html>

1. Discuss authorship early and often, including who will be the lead author, other key author(s), and contributing author(s).
2. Authors should meet the Uniform Requirements for Manuscripts from the International Committee of Medical Journal Editors (ICMJE) on authorship:⁴
 - a. “Substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work; AND
 - b. Drafting the work or revising it critically for important intellectual content; AND
 - c. Final approval of the version to be published; AND
 - d. Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.”
3. Document joint decisions on authorship assignment and order leaving some flexibility for changes in ability to contribute to the publication.
4. The primary author should prepare a concise written description of how authorship order was decided (often requested by journals).
5. Masters and doctoral students should be first authors of publications stemming from their theses or dissertations which are prepared within a reasonable timeframe (e.g., two years following graduation).
6. Students are encouraged to involve their advisors and committee members early in development of manuscripts stemming from their theses and dissertations so that they can appropriately credit intellectual contributions, strengthen manuscripts, improve chances of publication, as well as ensure that ICMJE authorship requirements are met.
7. Prior approval should be sought to acknowledge someone’s contributions when not listed among the authors (required by many journals).

Additional resources at UMCP regarding authorship and how to mediate conflicts:

- Responsible Conduct of Research: <http://www.umresearch.umd.edu/RCR/publications.html>
- Academic Integrity: <http://www.lib.umd.edu/tl/guides/academic-integrity>
- Ombuds Office: <http://www.umd.edu/ombuds/>
- University of Maryland Procedures for Scholarly Misconduct: <http://www.president.umd.edu/policies/docs/III-110A.pdf>

⁴ International Committee of Medical Journal Editors. Defining the Role of Authors and Contributors. 2015. Retrieved April 24, 2015 from: <http://www.icmje.org/recommendations/browse/roles-and-responsibilities/defining-the-role-of-authors-and-contributors.html>

N. Graduate School and Graduate Catalog Links

The Graduate School website provides important information for our students on graduate policies, requirements, forms, and graduation deadlines. All students should be familiar with these resources and keep up to date on the deadlines and policies.

- *Graduate Student Deadlines:*
http://www.gradschool.umd.edu/current_students/deadlines_for_graduate_students.html
- *Graduate Student Forms:*
http://www.gradschool.umd.edu/current_students/general_forms_for_graduate_students.htm
- *The Graduate Catalog:*
<http://www.gradschool.umd.edu/catalog/> provides information on policies and procedures for admissions, academics, registration, financial aid and student support policies.
- *Graduate School Fellowship Opportunities:*
http://www.gradschool.umd.edu/prospective_students/gf_fellowships.html
- *Graduate Student Prizes and Awards:*
http://www.gradschool.umd.edu/current_students/prizes_and_awards.html

APPENDIX 1

MPH Core-Specific Competencies

Evidence-based Approaches to Public Health

1. Apply epidemiological methods to the breadth of settings and situations in public health practice
2. Select quantitative and qualitative data collection methods appropriate for a given public health context
3. Analyze quantitative and qualitative data using biostatistics, informatics, computer-based programming and software, as appropriate
4. Interpret results of data analysis for public health research, policy or practice

Public Health & Health Care Systems

5. Compare the organization, structure and function of health care, public health and regulatory systems across national and international settings
6. Discuss the means by which structural bias, social inequities and racism undermine health and create challenges to achieving health equity at organizational, community and societal levels

Planning & Management to Promote Health

7. Assess population needs, assets and capacities that affect communities' health
8. Apply awareness of cultural values and practices to the design or implementation of public health policies or programs
9. Design a population-based policy, program, project or intervention
10. Explain basic principles and tools of budget and resource management
11. Select methods to evaluate public health programs

Policy in Public Health

12. Discuss multiple dimensions of the policy-making process, including the roles of ethics and evidence
13. Propose strategies to identify stakeholders and build coalitions and partnerships for influencing public health outcomes
14. Advocate for political, social or economic policies and programs that will improve health in diverse populations
15. Evaluate policies for their impact on public health and health equity

Leadership

16. Apply principles of leadership, governance and management, which include creating a vision, empowering others, fostering collaboration and guiding decision making
17. Apply negotiation and mediation skills to address organizational or community challenges
Communication
18. Select communication strategies for different audiences and sectors
19. Communicate audience-appropriate public health content, both in writing and through oral presentation
20. Describe the importance of cultural competence in communicating public health content

Interprofessional Practice

21. Perform effectively on interprofessional teams

Systems Thinking

22. Apply systems thinking tools to a public health issue

APPENDIX 2

Elective Courses

The School of Public Health offers a number of courses each semester that students may be interested in taking as elective. You can see what courses are offered for each department by going to www.testudo.umd.edu and then selecting the departmental prefix and the specific semester (EPIB, MIEH, HLTH, FMSC, KNES, HLSA). Graduate level courses are numbered starting at 600 (a course below 600 will not be counted as part of your required 45 credits).

SPH students are not limited to only SPH courses as electives, students can take a course from another school on campus or even anywhere in the UMD system through the **inter-institutional enrollment** or another university in the Washington D.C. area through the **Washington Consortium** (see: <http://apps.gradschool.umd.edu/Catalog/policy.php?registration-policies>).

Sample of School of Public Health Elective Options

MIEH600 Foundations of Environmental Health
MIEH605 Fundamentals of Global Health (*Blended Course*)
MIEH606 Addressing Current, Pressing Global and Environmental Public Health Challenges in Bangladesh (*Blended Course*)
MIEH601 Global Health Program Planning and Evaluation
MIEH720 Principles of Toxicology
MIEH735 Food Toxicology
MIEH770 Law and Policy in Environmental Health
MIEH771 Exposure Assessment of Environmental Hazards
HLTH624 Advanced Lesbian, Gay, Bisexual & Transgendered Health
HLTH665 Health Behavior I
HLTH666 Health Behavior II
HLTH671 Public Health Communication
HLTH672 Public Health Informatics
HLSA601 Introduction to Health Systems
HLSA702 Policy and Politics of Health
HLSA714 Economic Evaluation of Medical Care
HLSA723 Health Policy Analysis and Advocacy
HLSA740 Healthcare Strategic Planning and Marketing
HLSA750 Healthcare Management Information Systems
FMSC710 Maternal and Child Health from a Life Course Perspective
FMSC720 Study Design in Maternal Child Health Epidemiology
FMSC750 Family and Health Policy
FMSC780 Qualitative Methods in Family and Health Research
KNES601 Epidemiology of Physical Activity
KNES602 Physical Activity Program Planning and Evaluation

Sample Elective Courses outside the School of Public Health

Department of Survey Methodology

SURV791 Analysis of complex sample data
SURV742 Inference Complex Surveys
SURV625 Applied Sampling
SURV630 Questionnaire Design
SURV745 Practical Tools for Sampling
SURV746 Advanced Stat Modeling

Department of Measurement, Statistics, and Evaluation

EDMS646 General linear models 1
EDMS657 Latent Composite Methods
EDMS657 Factor Analysis
EDMS722 Structural Modeling

Department of Communication

COMM714 Qualitative Methods in Communication Research

Department of Information Studies

INST733 Database Design

University of Maryland Baltimore Elective Courses

In an effort to increase educational opportunities for our SPH graduate students, we've arranged for UM-Baltimore courses to be taught at College Park via remote-access technology. Students at both UMB and UMCP will take these courses simultaneously. As a reminder, UMCP SPH students can register for most UMB courses, but the majority of these must be taken in person at Baltimore. Every semester, the SPH will endeavor to offer some courses using remote-access technology to minimize the logistical challenges of participating in UMB courses. To register for these courses student must use the inter-institutional enrollment:

<http://sph.umd.edu/content/inter-institutional-enrollment>

Sample of UMB courses that have been offered to SPH students via remote access:

Infectious Disease Epidemiology: A Global Perspective – CRN 90762 - PREV 749

This course is taught through lectures, discussions of case examples, including outbreak investigations, and assigned readings. Prerequisite: A basic knowledge of medical microbiology. (3 credits).

Cancer Epidemiology PREV 701

This course combines different bodies of knowledge – molecular biology, pathology, epidemiological methods, clinical and social/behavioral sciences - into an exploration of modern cancer epidemiology, prevention and control domestically and internationally. (3 credits).

Nutritional Epidemiology - CRN 26084 - PREV 613

This course provides lectures, “hands-on” class demonstrations and activities, and discussions of assigned readings during 15 three-hour sessions. Prerequisites: PH 600 and PH 620. (3 credits).

APPENDIX 3

Full-Time Course Planning Template (45-Credits)

Semester	Course		Credits
Summer 1			
Fall	SPLH 601	Core Concepts in Public Health	1
	SPHL 602	Foundations of Epidemiology and Biostatistics	4
	SPHL 603	Applied Data Laboratory	1
Spring	SPHL 610	Program Planning and Evaluation	5
	SPHL 611	Public Health Ethics	1
	EPIB 651	Biostatistics II (Applied Regression Analysis)	3
Summer 2			
Fall	SPHL 620	Leadership in Public Health	2
	EPIB 652	Categorical Data Analysis	3
	EPIB 655	Longitudinal Data Analysis	3
Spring	EPIB 653	Applied Survival Data Analysis	3

Part-Time Course Planning Template (45-Credits)

Semester	Course		Credits
Summer 1			
Fall	SPLH 601	Core Concepts in Public Health	1
	SPHL 602	Foundations of Epidemiology and Biostatistics	4
	SPHL 603	Applied Data Laboratory	1
Spring	SPHL 610	Program Planning and Evaluation	5
	SPHL 611	Public Health Ethics	1
	EPIB 651	Biostatistics II (Applied Regression Analysis)	3
Summer 2			
Fall	SPHL 620	Leadership in Public Health	2
	EPIB 652	Categorical Data Analysis	3
	EPIB 655	Longitudinal Data Analysis	3
Spring	EPIB 653	Applied Survival Data Analysis	3
Summer 3			
Fall			
Spring			