

### Program Director

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The Department of Epidemiology and Biostatistics offers the degree of Master of Science in Epidemiology. The goals of the MS degree are to prepare students for careers in industry or academia and to prepare students for continued study in a doctoral program. The program includes coursework that focuses on theoretical and applied epidemiological and statistical methods. Comprehensive examinations are required.

If desired, a student may apply for admission to the Ph.D. degree program prior to completing the M.S. degree, in which case no more than 24 credit hours from the M.S. degree may be applied to the Ph.D. course work requirements. In this instance, the student will be required to take a minimum of 27 additional credit hours of coursework. The distribution of these courses between epidemiology and statistics will depend on the nature of the Master's degree and whether the transferred credit hours would be used to defray epidemiology and statistics course work.

At the completion of the MS program in Epidemiology students will be able to:

- Demonstrate proficiency in basic epidemiology concepts, e.g., formulate hypotheses and research aims, select appropriate study design, identify risk and/or protective factors that contribute to disease outcomes, develop analytic plans, and identify bias.
- Demonstrate competence using standard statistical software packages to manage and analyze primary data or conduct secondary data analyses to address research questions
- Demonstrate proficiency in data analysis and interpretation of results, including discussion of threats to internal validity, and compose a formal presentation or report
- Describe and apply methods to conduct sound ethical research

### Admissions Requirements

Applicants must hold an undergraduate degree from an accredited institution of higher learning. Applicants should have academic backgrounds of excellence, usually with majors, or equivalent, in the fields in which they intend to study for advanced degrees. Normally, a B average (or equivalent) from an accredited college is required. With evidence of special promise, such as high Graduate Record Examination scores, an applicant whose academic record falls short of a B average may be accepted on a conditional basis. Meeting the minimum requirements does not assure acceptance. The departments may, and often do, set higher admission standards. Moreover, the number of spaces available for new graduate students limits the number who can be accepted. Students who apply in their senior year must provide evidence of the completion of their baccalaureate work before registration in Columbian College is permitted. Applicants should be aware that graduate courses taken prior to admission while in non-degree status are not used in assessing admissibility to degree programs and may not be transferable into those programs. All applications are submitted to Columbian College Graduate School of Arts and Sciences. Applications are available online at <http://www.gwu.edu/apply/graduateprofessional>. For reporting GRE general test scores use the following institutional code: 5246.

**Minimum Prerequisite Courses for Admission Consideration (or equivalents to these GW courses)**

The courses listed below (or equivalents) are prerequisites for admission consideration, and **MUST** appear on your transcript. Submit your MS Epidemiology program admission application only after you have completed all of the following courses:

BISC (011)	1111	Introductory Biology: Cells and Molecules	4	Lecture (3 hours), laboratory (1 credit/3 hours). Nutrition and metabolism, cellular and developmental biology, genetics, and molecular biology of plants and animals.
BISC (012)	1112	Introductory Biology: Biology of Organisms	4	Lecture (3 hours), laboratory (1 credit/3 hours). Concepts and methods in the study of whole organisms. Evolutionary theory; population biology; diversity of plants, animals, fungi, and microorganisms; ecology and behavior; and animal structure and function.
MATH (031)	1231	Single-Variable Calculus I	3	Limits and continuity. Differentiation and integration of algebraic and trigonometric functions with applications.
MATH (032)	1232	Single-Variable Calculus II	3	The calculus of exponential and logarithmic functions. L'Hopital's rule. Techniques of integration. Infinite series and Taylor series. Polar coordinates. Prerequisite: Math 1231

**Additional Course Requirements**

The courses listed below are "Additional Course Requirements." Applicants lacking these courses (or equivalents to these GW courses) will be considered for admission, but, if admissible, will be admitted conditionally with the expectation that these courses will be satisfactorily completed within two semesters following matriculation in the program. These credits do not count as credit toward the 33 credit graduation requirement, nor are grades earned in these additional courses reflected in the overall grade point average.

STAT (183) or PubH (249)	2183  6249	Intermediate Statistical Laboratory: Statistical Computing Packages  Use of Statistical Packages: Data Management and Data Analysis	3 or  3	Application of program packages (e.g., SAS, SPSS) to the solution of one-, two- and k-sample parametric and nonparametric statistical problems. Basic concepts in data preparation, modification, analysis and interpretation of results. Prerequisite: an introductory statistics course.  This course familiarizes the student with one of the most widely used database management systems and statistical analysis software packages, the SAS System, operating in a Windows environment. Throughout the course, several database management system techniques and data analytical strategies for the appropriate analysis of datasets obtained from a variety of studies will be presented. Statistical techniques covered include linear regression, analysis of variance, logistic regression, and survival analysis.
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## MS Epidemiology Degree Requirements

Course Distribution Summary	Credits
Core Courses <ul style="list-style-type: none"> <li>• Public Health (16 Credits)</li> <li>• Statistics (6 Credits)</li> </ul> Note: Each student must enroll in a public health topics course (PubH 6299) that covers a public health topic in environmental and occupational health, health administration, health policy or social behavioral sciences.	22
Approved Elective Courses <ul style="list-style-type: none"> <li>• Public Health</li> <li>• Statistics</li> </ul>	9
Consulting	2
Total Credits	33
<p><b>The Master's Comprehensive Examination</b> The Master's Comprehensive Examination is a <u>written comprehensive examination</u> in the field of Epidemiology and is based on the course content of PubH 6003 Principles and Practice of Epidemiology, PubH 6247 Design of Health Studies, and PubH 6252 Advanced Epidemiology Methods and is administered by the faculty of the Department of Epidemiology &amp; Biostatistics. Administration of the examination can be schedule after completion of all courses listed above in the Fall, Spring, or Summer semester.</p>	
<p><b>Professional Enhancement Requirement (One Day)</b>            Professional enhancement activities supplement the academic curriculum and help prepare students to participate actively in the professional community. They enhance practical knowledge and awareness of public health issues – either in general or in a student's specific area of study.</p> <p>Students can fulfill this requirement by attending workshops, seminars, or other relevant professional meetings, which are often held at SPHHS and in the metropolitan Washington, DC area. Examples of conference sponsors include the National Academy for State Health Policy, the Pan American Health Organization, the American Public Health Association, the American College of Healthcare Executives, the Area Health Education Center, the American College of Sports Medicine, and the National Athletic Trainer's Association. Opportunities for professional enhancement are regularly publicized via the SPHHS Listserv and through your department or advisor. MS students may fulfill the one day by participating in a poster presentation at GWUMC Research Day.</p> <p><i>Students must submit documentation of Professional Enhancement activities to the Epidemiology Program Director, which includes a <u>prior</u> approval, a description of the program agenda, and proof of attendance before applying for graduation.</i></p>	

**Required Core Courses (22 Total Credits)**

<b>Required Public Health Core Courses (16 Credits)</b>		<b>Credits</b>	<b>Semester Offered</b>	<b>Grade</b>
PubH 6001 (201)	Biological Concepts for Public Health	2	Summer, Fall, Spring	
PubH 6002 (202)	Biostatistical Applications for Public Health	3	Fall, Spring	
PubH 6003 (203)	Principles and Practice of Epidemiology <i>Basis for MS General Comprehensive</i>	3	Fall, Spring	
PubH 6247 (247)	Design of Health Studies <i>Basis for MS General Comprehensive</i>	3	Fall, Spring	
PubH 6252 (252)	Advanced Epidemiology Methods <i>Basis for MS General Comprehensive</i>	3	Summer, Spring	
PubH 6299 (209)	Topics (1 credit courses) May be repeated for credit. Take two Topics courses.	2	Summer, Fall, Spring	

<b>Required Statistics Core Courses (6 Credits)</b>		<b>Credits</b>	<b>Semester Offered</b>	<b>Grade</b>
STAT 4157 (157)	Introduction to Mathematical Statistics I	3	Fall, Spring	
STAT 4158 (158)	Introduction to Mathematical Statistics II	3	Fall, Spring	
- OR -				
STAT 6201* (201)	Mathematical Statistics I	3	Fall, Spring	
STAT 6202* (202)	Mathematical Statistics II	3	Fall, Spring	

\*Students interested in applying to the PhD degree program in Epidemiology may register in STAT 6201 and 6202, and not STAT 4157 and 4158. Advisor's approval is required before registering for STAT 6201 and STAT 6202.

**Approved Elective Courses (9 Total Credits)**

<b>Approved Public Health Elective Courses</b>		<b>Credits</b>	<b>Semester Offered</b>	<b>Grade</b>
PubH 6004 (204)	Environmental and Occupational Health in a Sustainable World	2	Summer 1, Fall, Spring	
PubH 6007 (207)	Social and Behavioral Science Approaches to Public Health	2	Summer 1, Fall, Spring	
PubH 6121 (221)	Environmental and Occupational Epidemiology	3	Fall	
PubH 6123 (223)	Toxicology: Applications for Public Health Policy	3	Spring	
PubH 6124 (224)	Problem Solving in Environ & Occupational Hlth	3	Summer 10 week	
PubH 6242 (242)	Clinical Epidemiology and Decision Analysis	2	Spring	
PubH 6244 (244)	Cancer Epidemiology	2	Spring	
PubH 6245 (245)	Infectious Disease Epidemiology	2	Spring	
PubH 6246 (246)	Injury Epidemiology and Prevention	2	Spring	
PubH 6248 (248)	Epidemiology Methods in Older Populations	2	Fall	

PubH 6250 (250)	Epidemiology of HIV/AIDS	2	Fall	
PubH 6260 (260)	Advanced Data Analysis for Public Health	2	Fall, Spring	
PubH 6262 (262)	Introduction to Geographic Information Systems	1	Summer, Fall, Spring	
<b>Approved Statistics Elective Courses</b>		<b>Credits</b>	<b>Semester Offered</b>	<b>Grade</b>
STAT 2118 (118)	Regression Analysis	3	Fall, Spring	
STAT 4181 (181)	Applied Time Series Analysis	3	Spring	
STAT 3187 (187)	Introduction to Sampling	3	Fall	
STAT 4188 (188)	Nonparametric Statistical Inference	3	Fall, Even Years	
<b>Consulting (2 Credits)</b>				
PubH 6299.58 (209)	Consulting Practicum	1	Summer, Fall, Spring	
PubH 6258 (258)	Advanced Topics in Biostatistical Consulting	1	Spring	