

# EPIDEMIOLOGY FOR PUBLIC HEALTH PROFESSIONALS

## Epidemiology for Public Health Professionals OVERVIEW

*The timely detection, investigation, control, and prevention of outbreaks and major long-term public health problems require a well-trained and competent epidemiology workforce as a key component of a national public health infrastructure. The Epidemiology Workforce in State and Local Health Departments - United States, 2010 Weekly March 30, 2012/61(12):205-208*

Epidemiology is an integral component of public health practice. The discipline aims to provide the basis to prevent disease and to promote the health of populations through the study of the occurrence and distribution of health-related states or events, including the study of determinants influencing such states. Professional epidemiologic methods, defined as the application of epidemiologic methods to public health practice, entail the combination of analytical methods and applied epidemiology oriented to problem solving in public health. The principal areas of professional epidemiology include epidemiologic assessment of public health data, health situation and trend analyses, public health surveillance and health program impact assessment. These areas are closely linked to the essential public health function and services. This certificate program is intended to provide the concepts, methods and tools needed for the assessment of health situations and trends of population groups.

## EDUCATIONAL OBJECTIVES

Upon completion of the core courses in this certificate program, individuals will have gained specialized knowledge and skills on the application of epidemiologic concepts and methods to public health problems, as follows:

1. Understand the place of epidemiology in public health, specifically how epidemiology is used to identify causes of disease, identify populations at high risk for disease, develop preventative methods and evaluate public health strategies.
2. Calculate and interpret basic epidemiologic measures of disease frequency, identify sources of data for measuring health outcomes, and identify key aspects of measurement problems,
3. Identify distinguishing features of fundamental study designs, including randomized trials, cohort and case-control studies, birth cohort and ecologic studies, and pre-post and quasi-experimental studies. Students will be able to describe strengths and limitations of the different study designs, and key sources of confounding and bias in epidemiological studies and
4. Interpret and make inferences from results of epidemiologic studies.

With regard to the usual functions of public health agencies, students will be able to:

1. Identify the Problem Solving Framework for measuring the severity of priority health problems,
2. Recognize the role of routine and public health information systems in epidemiologic assessments,

3. Identify tools and measurements used to monitor the quality of performance of public health information systems,
4. Identify the main indicators for measuring the burden of diseases at global, national and local levels
5. Design health situation analyses: epidemiological profiles and community health status assessments,
6. Interpret measures of health burden, association and effectiveness,
7. Describe the framework of the public health surveillance cycle and sources of information,
8. Design, implement and evaluate disease surveillance systems,
9. Communicate epidemiological information and synthesis to policy makers, professionals, and lay audiences.

## CONTACT INFORMATION

### Certificate Program Contact

Ayesha Khan, Department of Epidemiology  
akhan6@jhu.edu (akhan@jhsph.edu)  
410-955-7158

### Faculty Sponsor

Carlos Castillo Salgado (<https://www.jhsph.edu/faculty/directory/profile/118/carlos-castillo-salgado/>), MD, DrPH, JD

### Faculty Co-Sponsor

Moyses Szklo (<https://www.jhsph.edu/faculty/directory/profile/687/moyeses-szklo/>), MD, MPH, DrPH

## ELIGIBILITY

The certificate program is open to Bloomberg School students, with the exception of MAS students; graduate students in other divisions of Johns Hopkins University; and to non-students.

The certificate is designed for junior and mid-level public health professionals interested in expanding their knowledge of epidemiologic methods as related to public health issues and their ability to address public health problems. It is also designed for masters and doctoral students enrolled at the Bloomberg School of Public Health and in other university divisions, including the Schools of Medicine and Nursing and the Krieger School of Arts and Sciences. JHSPH MAS students are not eligible to apply until they have completed their primary degree program.

The certificate program can be completed entirely with a combination of online and on-campus courses.

## ADMISSIONS PROCESS

All applicants must review the General Certificate Guidelines page (<http://e-catalog.jhu.edu/public-health/certificates/#newitemtext>), which provides important information about how to apply to a certificate program.

### APPLYING TO THE CERTIFICATE PROGRAM AS A JHU GRADUATE STUDENT

Students already enrolled in a graduate program at JHU are not required to submit the School's electronic admissions application, but must email Certificate Program Contact (akhan6@jhu.edu) to request application forms prior to starting coursework.

**Start terms:** It is possible to begin the certificate program only in these terms: Summer Institute, 1, 2, 3, 4 & Winter Institute.

## APPLYING TO THE CERTIFICATE PROGRAM AS A NON-DEGREE STUDENT

Students who are not currently enrolled in a graduate program at JHU are required to apply to certificate programs using SOPHAS Express (<https://sophasexpress.liaisoncas.com/applicant-ux/#/login>). All non-degree applicants should review the general Certificates Admissions (<http://e-catalog.jhu.edu/public-health/certificates/#newitemtext>) page for instructions on how to apply to a certificate program and application deadlines.

**Start terms:** It is possible to begin the certificate program only in these terms: Summer Institutes, Winter Institute, 1,2,3, & 4.

**TOEFL/IELTS:** Required.

**Prerequisites or special requirements:** None

## REQUIREMENTS FOR SUCCESSFUL COMPLETION

All required and elective courses must be taken for a letter grade; a minimum grade of C is required in all certificate coursework and students must maintain a 2.75 or better overall GPA for all certificate coursework.

Students must successfully complete the core courses, demonstrated by full attendance and participation in all course activities and assignments. The student should review the section of the website that addresses completion (<http://e-catalog.jhu.edu/public-health/certificates/#courserequirements>) before completing certificate program requirements. The student's transcript will not indicate that the certificate was earned until the Notification of Completion has been submitted, verified by the certificate program and processed by the Registrar.

## COURSE OF STUDY

The certificate program requires a minimum of 21 term credits comprised of required courses and core elective courses. The certificate curriculum consists of four required courses in epidemiologic methods, and at least two of three core elective courses. Certificate students may take additional elective courses focusing on application of epidemiologic methods to substantive areas, such as infectious diseases and biostatistics methods. Students should check the JHSPH course directory (<https://www.jhsph.edu/courses/>) to confirm when courses are offered.

Code	Title	Credits
PH.550.860	Academic & Research Ethics at JHSPH (All students are required to complete this noncredit course in their first term of study)	
<b>Students must select either 340.601, 340.721 or 340.751</b>		
PH.340.601	Principles of Epidemiology	5
PH.340.721	Epidemiologic Inference in Public Health I	5
PH.340.751	Epidemiologic Methods 1	5
<b>Students must select either 340.602, 340.722, or 340.752</b>		
PH.340.602	Intermediate Epidemiology	3
PH.340.722	Epidemiologic Inference in Public Health II	4
PH.340.752	Epidemiologic Methods 2	5
<b>Students must select either (340.767 and 340.768) or 340.769</b>		
PH.340.767	Professional Epidemiologic Methods: Topics and Methods for Health Situation Analysis	2
PH.340.768	Professional Epidemiologic Methods: Decision Making in Health Situation Analysis	2

PH.340.769	Professional Epidemiology Methods	4
<b>Students must complete either (340.765 and 340.766) or 340.770</b>		
PH.340.765	Professional Epidemiologic Methods: Epidemiologic intelligence and Population Health Assessments	2
PH.340.766	Professional Epidemiologic Methods: Surveillance	2
PH.340.770	Public Health Surveillance	3
<b>Required Elective Courses: Students must complete at least two of the following elective courses to complete the certificate program with at least 21 academic credits. Elective substitutions are possible, but require approval in advance from Dr. Carlos Castillo-Salgado. Only one elective course may be substituted</b>		
<i>Students may select either 340.606 or 340.686</i>		
PH.340.606	Methods for Conducting Systematic Reviews and Meta-Analyses	4
PH.340.686	Introduction to Systematic Reviews and Meta-Analysis	2
<i>Students may select either 340.653 or 340.693</i>		
PH.340.653	Epidemiologic Inference in Outbreak Investigations	3
PH.340.693	Investigation of Outbreaks	2
<i>Students may select either 320.717 or 340.727</i>		
PH.340.717	Health Survey Research Methods	4
PH.340.727	Introduction to Health Survey Research Methods	2