



# Applied Biostatistics Certificate

Our Applied Biostatistics Certificate is designed for persons currently working as data managers or analysts in academics, government or industry, and want formal training in biostatistical methods for designing, organizing, analyzing and interpreting large clinical and observational databases.

The focus of our online Applied Biostatistics Certificate is on biostatistical methods and their application in medicine, public health, and environmetrics.

Biostatistics is the application of statistical techniques to problems in biology and biomedicine. With the explosion in “big data” arising from genomics studies, web-based social interactions, and other clinical and observational sources, the field of biostatistics is becoming more and more critical to sensible, well-informed decision-making. At present, however, the nation’s supply of well-trained biostatisticians is not keeping up with demand.

## Student Learning Objectives

- enhance your understanding of key elements of database management and investigation,
- alert you to key variables and trends, help you judge their statistical significance,
- improve your overall data evaluation and programming skills,
- learn key aspects of study design, implementation and analysis for both observational and clinical studies.

## Curriculum

13 of the certificate’s 15 credits are offered entirely online, throughout the calendar year. The remaining two credits are offered one week during the May session at the SPH Public Health Institute.

By taking just one course per term, the Applied Biostatistics Certificate can be completed part time in just five terms, plus one week of attendance at the Summer Public Health Institute.

- Fundamentals of Epidemiology (PubH 6320, 3 credits)  
Available online
- Biostatistical Methods I (PubH 6414, 3 credits)  
Available online or in-class
- Biostatistical Methods II (PubH 6415, 3 credits) Prereq: PubH 6414  
Available online

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**For more information about the Applied Biostatistics Certificate:**  
<http://www.sph.umn.edu>

**Or contact the Public Health Practice major at:**  
[php@umn.edu](mailto:php@umn.edu)  
Phone: (612) 626-5665  
Toll Free: (800) 774-8636

**Program Director:**  
Brad Carlin, Ph.D.  
Mayo Professor  
Head of Biostatistics

- Introduction to SAS Programming (PubH 6420, 1 credit)  
Available online or in-class
- Introduction to Clinical Trials (PubH 7415, 3 credits) Prereq: PubH 6414  
Available online
- Topics in Translational and Clinical Research (PubH 6400, 1 credit)  
Available in-class (1 week) at the Public Health Institute during May session
- Topics in Hierarchical Bayesian Analysis (PubH 6440, 1 credit)  
Available in-class (1 week) at the Public Health Institute during May session

Similar to the role of PubH 7415 Introduction to Clinical Trials, the last two courses, PubH 6400 and 6440, are intended as culminating courses that pull together much of the earlier curriculum in the context of real data settings of biomedical interest. As such, they should be taken near the end of your program, and certainly after the basic biostatistical methods sequence (PubH 6414-15; 6450-51 may be substituted here). However, if you have sufficient relevant field experience, these courses may be taken earlier.

The curriculum is designed to provide:

- a general understanding of core biostatistical methods for the design, analysis, and interpretation of categorical, ordinal, and continuous data.
- the ability to communicate quantitative results and associated statistical inferences clearly to non-statistical scientists.
- the skill to collaborate in the design of research studies of human health and disease.
- the capability to understand research study implementation, data collection, and quality control.
- the ability to follow good clinical practice in research studies.
- the proficiency to program in two or more biostatistical software packages with intermediate skill.

## Qualification for Admissions

The online Applied Biostatistics Certificate is designed for working protocol managers, biostatisticians, clinicians, and other health professionals with at least three years of relevant experience and a bachelor's degree or an advanced degree in a health science discipline.

### Admission Preferences and Prerequisites

- At least three years of relevant experience or GRE scores are required.
- Applicants must hold a baccalaureate degree.
- A GPA of a 3.0 or better is preferred.
- Applications are reviewed holistically.

## Application Deadlines

- November 15 to start spring term
- March 15 to start summer term
- July 15 to start fall term

## Application Requirements

Submit to the University of Minnesota School of Public Health:

- 1) Application and \$75.00 application fee.
- 2) Statement of purpose and objectives:  
An essay describing your past education, experience and current professional career objectives. You are encouraged to comment on any or all of the following: plans to use the education and training; the needs and/or challenges perceived as important in your field of study; and any personal qualities, characteristics and skills that you believe will lead to your success in the program.
- 3) One letter of recommendation from a person qualified to assess your academic work, clinical, and professional experiences.
- 4) Official transcripts of record from each college/university attended.
- 5) Resume or C.V.
- 6) Required for international applicants:  
World Education Services (WES) evaluation of foreign academic credentials. Official TOEFL or IELTS score – see application information for specifics.