

# BIOSTATISTICS

## Bachelor of Science in Public Health

**DO YOU ENJOY QUANTITATIVE SUBJECTS? INTERESTED IN MATH, MEDICINE, PUBLIC HEALTH OR BIOLOGY?  
DO YOU WANT TO APPLY YOUR MATH AND STATISTICS SKILLS TO HEALTH- RELATED FIELDS?  
A BSPH IN BIOSTATISTICS MIGHT BE A PERFECT FIT FOR YOU!**

### WHAT IS BIOSTATISTICS?

Biostatistics is the discipline concerned with the improvement of human health through the application and advancement of statistical science. A biostatistician applies innovative statistical methods to help understand public health issues and disease, including the basic medical sciences. Biostatisticians design, conduct and analyze research projects related to human health.

Biostatistics education consists of a strong background in mathematics, advanced course work in statistical applications, theory and computing. This specialized academic bachelor's degree has a disciplinary orientation to apply biostatistics to a range of human health applications.

A BSPH in Biostatistics provides an excellent foundation for employment or continued study, including admission into medical school.

### TELL ME ABOUT THE DEPARTMENT OF BIOSTATISTICS AT UNC-CH

The Department of Biostatistics is part of the UNC-CH Gillings School of Global Public Health, which is ranked the number two School of Public Health in the country according to the 2015 US News and World Report. We have over 40 faculty members doing research in a variety of methodology areas (such as survival analysis, clinical trials, and genetics) and collaborative fields (such as cancer, cardiovascular disease, and environmental health).

We are believed to be the first department in the country to offer an undergraduate degree in Biostatistics.

### WHAT ARE THE JOB PROSPECTS FOR BIOSTATISTICIANS?

The job market for skilled biostatisticians has been excellent.

"Statisticians have their pick of jobs – Google, Facebook, pharmaceutical companies and tenure-track academic positions straight out of graduate school. 'We are just not finding unemployed statisticians,' says Ronald Wasserstein, PhD, executive director of the ASA." [Sainani, K. (2012). *Statistically Significant: Biostatistics is Blooming*, *Stanford Medicine*, 16-19.]

Fortune Magazine named the MS in Biostatistics as the #1 best graduate degree for jobs in 2016 with:  
Projected Growth in Jobs by 2024: 23%  
Percentage Who Are Highly Satisfied: 85%  
<http://fortune.com/2016/03/21/best-worst-graduate-degrees-jobs-2016/?xid=timehp-popular>

### WHO ARE THE CURRENT BIOSTATISTICS BSPH STUDENTS?

- Average Math SAT: 750
- Average Total SAT: 1440
- Average GPA: 3.8

Many students graduate with a double major (Math, Biology, Other). Past students have had varied backgrounds and interests: artists, musicians, varsity athletes, and service volunteers.

### WHAT DO GRADUATES DO?

Immediately following graduation, our BSPH biostatistics graduates usually attend graduate school in biostatistics or closely related field (~45%), medical school (~15%), or are employed in biostatistical fields (~30%). Many students who choose to work immediately following graduation return for further education in biostatistics or medicine.

#### Recent "First Destinations" of BSPH Students

*Graduate biostat/stat programs:* U of Washington  
· UNC-CH · Harvard · U of Michigan · Emory · Columbia · NCSU · Duke.

*Medical Schools:* UNC-CH · Johns Hopkins · UVa · Duke · Wake Forest · Vanderbilt · MUSC · Commonwealth Medical College · ECU.

### WHERE DO BIOSTATISTICIANS WORK?

Previous graduates have taken positions in the pharmaceutical industry, *contract research organizations (CROs)*, medical settings, academics, and government agencies involved in health care. Salaries for biostatisticians are very competitive.

Typical employers of biostatisticians include: GlaxoSmithKline, Merck, IQVIA/Quintiles, Duke Clinical Research Institute, Eli Lilly, Harvard School of Public Health, Rho, PPD, Ciba Vision, SAS Institute, American Cancer Society, Family Health International, NIH, Centers for Disease Control and many academic institutions.

### HOW DO I APPLY?

Students typically complete their General College requirements during their first two years at UNC-CH. Students need to take three semesters of calculus, introductory computer science, and introductory biology before beginning coursework in biostatistics. Successful candidates have strong quantitative abilities and interests.

In general, students apply in January of their sophomore year. Admission is based on the student's academic record, two letters of recommendation (at least one recommendation from a person in a quantitative field) and a personal statement. Minimum GPA to apply is 3.0. About 33 students were admitted for Fall 2020 entry. Admission materials are submitted completely online. Admission into the program is competitive with most successful applicants exceeding these minimums.

Visit our dept. website and FAQs:  
[www.sph.unc.edu/bios](http://www.sph.unc.edu/bios)  
and [sph.unc.edu/bios/faqs-undergraduates-2/](http://sph.unc.edu/bios/faqs-undergraduates-2/)



## TYPICAL† BSPH BIOSTATISTICS CURRICULUM

**FRESHMAN-SOPHOMORE YEARS** Approximately 60 credit hours including:

- BIOL 101, 101L: Principles of Biology and its Laboratory
- COMP 110 or 116: Introduction to Programming
- MATH 231: Calculus of Functions of One Variable I
- MATH 232: Calculus of Functions of One Variable II
- MATH 233: Calculus of Functions of Several Variables

Calculus series must be completed before a student can be admitted

Completing all the General College requirements is recommended in the first two years

See Director of Undergraduate Studies in Biostatistics for complete details

**JUNIOR- SENIOR YEARS** Approximately 60 credit hours including:

<p><u>FALL JR</u></p> <ul style="list-style-type: none"> <li>• BIOS 500H (3): Intro to Biostatistics</li> <li>• BIOS 511 (4): Intro to Stat Computing (SAS)</li> <li>• MATH 381 (3): Discrete Mathematics</li> <li>• SPHG 351 (3): Foundations in Public Health</li> <li>• FREE ELECTIVE</li> </ul>	<p><u>SPRING JR</u></p> <ul style="list-style-type: none"> <li>• BIOS 645 (3): Principles of Experimental Analysis (Multiple Linear Regression)</li> <li>• MATH 521 (3): Advanced Calculus I <b>or</b> MATH 528: Math for the Physical Sciences</li> <li>• EPID 600 (3): Principles of Epidemiology</li> <li>• SPHG 352 (4): PH Systems and Solutions</li> <li>• FREE ELECTIVE</li> </ul>
<p><u>FALL SR</u></p> <ul style="list-style-type: none"> <li>• BIOS 650 (4): Probability and Inference I</li> <li>• BIOS 691 (1): Field Obs. in Biostatistics</li> <li>• MATH 347 (3): Linear Algebra</li> <li>• FREE ELECTIVE</li> <li>• FREE ELECTIVE</li> </ul>	<p><u>SPRING SR</u></p> <ul style="list-style-type: none"> <li>• BIOS 664 (4): Sample Survey Methodology</li> <li>• BIOS 668 (3): Design of PH Studies</li> <li>• BIOL 201 (4)*: Ecology and Population Biology <b>or</b> BIOL 202*: Genetics</li> <li>• FREE ELECTIVE</li> </ul>

Blue: Biostatistics- offered fall only or spring only.

Green: Math.

Red: Other courses including Public Health Core Courses.

\* Biol 201 and 202 have prerequisites of Chem 101.

†Typical Program assumes that a student does not have substantial AP credit and does not plan to double major. Many students are able to take courses noted in junior/senior years *earlier*, allowing flexibility to double major or to pursue other opportunities.