



# BIostatISTICS AT UF AND BEYOND

Babette Brumback

Professor and Associate Chair for Education

Director of Graduate Studies

UF Biostatistics Department

John Kairalla

Research Assistant Professor

Chair of the Recruitment Committee

UF Biostatistics Department

February 10, 2015



## WHAT IS BIOSTATISTICS?

Biostatistics is the theoretical, methodological, and applied science of collecting, organizing, summarizing, presenting, analyzing, and interpreting data for the purpose of advancing health science and health policy.



To learn about biostatistics, consider applying for the Summer Institute for Training in Biostatistics, sponsored by the National Heart, Lung, and Blood Institute (NHLBI) of the National Institutes of Health (NIH).

(<http://www.nhlbi.nih.gov/research/training/summer-institute-biostatistics-t15>)

Participating Universities in 2015:

Boston University, Columbia University, Emory University, North Carolina State University, University of Iowa, University of Minnesota, University of Pittsburgh, University of Wisconsin

Application deadline March 6 (I checked BU's and Columbia's.)



## WHAT IS IT and WHO IS IT FOR?

The Summer Institute for Training in Biostatistics (SIBS) offers a comprehensive six to seven week summer training course on biostatistics with relevant examples that include data collected in studies of heart, lung, blood, and sleep disorders. Designed to address a growing imbalance between the demand and supply for biostatisticians, the course targets undergraduates and beginning graduate students who are interested in learning about biostatistics. The program will provide an intensive introduction to biostatistical approaches and research by exposing participants to the principles, methodologies, uses, and applications of statistical methods in biomedical and clinical research.

Must be a US Citizen or Permanent Resident



A related opportunity that you might want to consider:

## POSTBACCALAUREATE INTRAMURAL RESEARCH TRAINING AWARD (POSTBAC IRTA/CRTA)

The NIH Postbac IRTA program (CRTA, Cancer Research Training Award, in the National Cancer Institute) provides recent college graduates who are planning to apply to graduate or professional (medical/dental/pharmacy) school an opportunity to spend one or two years performing full-time research at the NIH. Postbac IRTAs/CRTAs work side-by-side with some of the leading scientists in the world, in an environment devoted exclusively to biomedical research.

[https://www.training.nih.gov/programs/postbac\\_irta](https://www.training.nih.gov/programs/postbac_irta)

Must be a US Citizen or Permanent Resident



There are very many jobs available for Biostatistics graduates with MS or PhD degrees. The pay is good.

There are many MS and PhD programs that you can apply to. There is ample financial support available.

There is a shortage of US Citizens and Permanent Residents. You are in demand.

To see specific examples of current job opportunities, go to [www.stat.ufl.edu/jobs/](http://www.stat.ufl.edu/jobs/) or [jobs.amstat.org/jobs](http://jobs.amstat.org/jobs)



## CAREERS IN BIOSTATISTICS:

- Perform cutting-edge theoretical and applied research
- Further knowledge in the health sciences
- Good job opportunities in academia, government, and industry
- Jobs entail different blends of teaching, research, consulting, collaboration, data analysis, computer program development, report/manuscript writing



## CAREERS IN BIOSTATISTICS:

Examples:

Work at the National Institutes of Health (NIH), the Centers for Disease Control and Prevention (CDC), the National Center for Health Statistics (NCHS), the Food and Drug Administration (FDA) or the World Health Organization (WHO).

Work as a faculty member at a research university such as UF, doing collaborative and methodological research as well as teaching.



## CAREERS IN BIOSTATISTICS:

Examples:

Work at the Mayo Clinic in Jacksonville, FL or Rochester, MN doing collaborative and methodological research.

Teach statistics at a small liberal arts college such as New College of Florida in Sarasota.

Work in the pharmaceutical , biotech, CRO, or software industries (e.g., SAS, Quintiles, or GSK).



## UF BIOSTATISTICS GRADUATE PROGRAMS:

Master of Public Health (MPH)

Master of Science (MS)

Doctor of Philosophy (PhD)



## PREREQUISITES:

MS Program: BA/BS Degree,  
3 Semesters Calculus,  
1 Semester Linear Algebra, 1 Semester  
Introductory Statistics

PhD Program: Same as MS but additional  
mathematics training is desirable (e.g.  
Advanced Calculus), as is calculus-based  
probability theory



## HOW TO APPLY:

Application Deadline is Jan 15 each year

GRE results required. Statement of purpose.  
Letter of intent, official transcripts, completed  
UF application form, and 3 letters of  
recommendation.



## FACULTY

17 current faculty members and 3 new faculty in August

Diverse research interests, encompassing

- (1) development of statistical methods for, e.g., clinical trials and observational studies, genetic studies, health surveys, infectious disease modeling, survival analysis, longitudinal data analysis
- (2) collaborative research across the UF Health Science Center, other institutes across campus, and other research facilities across the US.



## STUDENTS

19 Current PhD students

12 Current MS students

5 Current MPH students

PhD students serve as research or teaching assistants and receive full tuition, Gator Grad Care, plus a \$20,000 annual stipend.

MS and MPH students are self-funded, but many find part-time jobs on campus or in Gainesville.



# PROGRAM REQUIREMENTS



## The Master of Science in Biostatistics Program

The following core courses are required for all MS students:

PHC 6050C Biostatistical Methods I

PHC 6051 Biostatistical Methods II

STA 6326 Introduction to Theoretical Statistics I

STA 6327 Introduction to Theoretical Statistics II

PHC 6001 Principles of Epidemiology in Public Health



### **Consulting requirement:**

Students must acquire experience in the planning of experiments and establishing a collaborative interaction with an investigator. This requirement is fulfilled by registering for PHC 6063 Biostatistical Consulting (3 credits).

### **Public Health requirement:**

PHC 6937 Introduction to Public Health

Students are also required to complete at least five additional biostatistics/statistics courses determined in conjunction with their supervisory committee (e.g. survival analysis, clinical trials methods, applied biostatistics using SAS)



## CULMINATING EXPERIENCE

This occurs at the end of the final semester of classes. The student must either read and critique a paper from the statistical literature, for example, from *Statistics in Medicine*, or select a data set and a research question and analyze the data set appropriately to answer the research question. The student must write a report for and deliver an oral presentation to a committee of three biostatistics faculty.



## The Doctor of Philosophy in Biostatistics Program

The following five courses are required for all Ph.D. students and compose the biostatistics core of the program.

<b>Course</b>	<b>Title</b>	<b>Hours</b>
PHC 7090	Advanced Biostatistical Methods I	3
PHC 7091	Advanced Biostatistical Methods II	3
PHC 7066	Large Sample Theory	3
STA 7346	Statistical Inference	3
PHC 6068	Biostatistical Computing	3



In addition, each student must complete six credits from the Public Health Core:

PHC 6001 Principles of Epidemiology in Public Health

PHC 6937 Introduction to Public Health

Cognate Option:

- Students may choose to explore a selected cognate field in some depth.
- The field and courses must be approved by the student's advisor.
- At least 6 credits of ordinarily graded courses in the cognate field must be completed.
- Some examples of cognate areas include Genetics, Epidemiology, and Environmental Health.
- For Public Health cognate fields, 6 credits beyond the Public Health core courses are required.

Students not choosing the cognate option must complete an additional 6 credits of biostatistical/statistical electives.



### Consulting Requirement:

Students must acquire experience in the planning of experiments and establishing a collaborative interaction with an investigator. This requirement is fulfilled by registering for PHC 6063 Biostatistical Consulting (3 credits).

Students also are required to complete at least three additional biostatistics/statistics courses (e.g. Longitudinal Data Analysis, Advanced Survival Analysis, Advanced Clinical Trials Methods, Genetic Data Analysis, Stochastic Modeling, Analytic Methods for Infectious Diseases)



A minimum of 90 credits beyond the bachelor's degree is required for the doctoral degree. Formal course work accumulated by students should be in the neighborhood of 60 credit hours. The remaining hours will be in PHC 7979/7980 (dissertation research). The credits are broken down as follows:

<b>Component</b>	<b># of credits</b>
Core Biostatistics courses	15
Core Public Health courses	6
Biostatistics/statistics electives	9
Consulting requirement	3
Cognate or biostat electives	6
M.S. courses in Biostatistics/Statistics	30
Dissertation	21
<b>Total</b>	<b>90</b>



The written qualifying exam is taken in August after the first year of courses.

The exam covers Advanced Biostatistical Methods I and II, Large Sample Theory, and Statistical Inference.

The oral qualifying exam consists of a written and oral presentation of the dissertation proposal. After it is passed, and with satisfactory grades on all courses, the student is advanced to candidacy.

Following completion of the PhD dissertation, the student will give an oral thesis defense.



FOR MORE INFORMATION PLEASE VISIT OUR  
WEBSITE or CONTACT US

<http://biostat.ufl.edu/>

Babette Brumback: [brumback@ufl.edu](mailto:brumback@ufl.edu)

John Kairalla: [johnkair@ufl.edu](mailto:johnkair@ufl.edu)