The Collaborative Program in Biostatistics

Department of Epidemiology and Biostatistics
Department of Statistical and Actuarial Sciences

(Updated: 9/13/18)

The degree levels of the collaborative program are:

1. MSc (with specialization in Biostatistics)
2. PhD (with specialization in Biostatistics)

Biostatistics is the branch of statistics that provides proper interpretation of scientific data generated in biology, medicine, epidemiology, public health and other health sciences. It advances human health by turning data, big and small, into knowledge and by addressing pressing health issues. Biostatistical researchers focus on developing novel statistical methods that are central to research across all health sciences.

The Collaborative Specialization in Biostatistics, commonly referred to as the Collaborative Biostatistics Program, comprises both MSc and PhD degrees. It is a collaboration between the Department of Epidemiology and Biostatistics in the Schulich School of Medicine and Dentistry and the Department of Statistical and Actuarial Sciences in the Faculty of Science. Each student can register with either one of the two departments, which is commonly referred to as the home department.

Admission Requirements

Applicants should apply directly to the intended home department. Admission requirements are different depending on the home department. If the intended home department is Epidemiology & Biostatistics, the applicant should have a degree in mathematics/statistics, or equivalent, with an average GPA above 80%.

If the intended home department is Statistics and Actuarial Sciences, the applicant is expected to have a significant knowledge of Linear Algebra, Calculus, Intermediate Probability, Mathematical Statistics, Design of Experiment, and Regression. The applicant must also have an average GPA above 78%.

Course requirements:

Course requirements are different depending on which department a student is registered.

- Department of Epidemiology & Biostatistics

Both MSc and PhD students are required to have a total of 3.5 credits to graduate. Students in this department must take the following two courses (A=offered in the fall term, B=offered in the winter term):

Biostatistics 9510A (0.5 credit): Biostatistical Research Methods
Biostatistics 9521B (0.5 credit): Multivariable Methods in Biostatistics

Students are also required to take 1.0 credit courses from the following (A: Fall, B: Winter, Q: 1st half in
Fall, R: 2nd half in Fall, S: 1st half in Winter, T: 2nd half in Winter, V: Summer):

- Epidemiology 9551A (0.5 credit): Foundations of Epidemiology
- Biostatistics 9681Q: (0.25 credit): Causal Modelling
- Epidemiology 9690R: (0.25 credit): Advanced Topics in Epidemiology & Biostatistics
- Biostatistics 9641V (0.25 credit): Missing Data
- Biostatistics 9651V (0.25 credit): Multilevel Models

In addition, students must take 1.5 credits from the following (A: Fall, B: Winter, Q: 1st half in Fall, R: 2nd half in Fall, S: 1st half in Winter, T: 2nd half in Winter, V: Summer):

- Epidemiology 9553B (0.5 credit): Analytic Epidemiology
- Epidemiology 9566S (0.25 credit): Clinical Trials: Design
- Epidemiology 9568T (0.25 credit): Clinical Trials: Analysis
- Actuarial Science 9004A (0.5 credit): Survival Analysis
- Statistical Sciences 9846A (0.5 credit): Experimental Design
- Statistical Sciences 9030B (0.5 credit): Topics in Statistical Inference
- Statistical Sciences 9055B (0.5 credit): Generalized Linear Models
- Statistical Sciences 9850B (0.5 credit): Advanced Data Analysis
- Statistical Sciences 9859A (0.5 credit): Regression
- Statistical Sciences 9864A (0.5 credit): Statistical Computing
- Statistical Sciences 9833B (0.5 credit): Analysis of Brain Imaging Data
- Statistical Sciences 9924A (0.5 credit): Advanced Linear Regression

Exceptions to the course requirements may be granted, with permission from both the Graduate Chair and the Biostatistics Coordinator in the home department.

- **Department of Statistical and Actuarial Sciences**

MSc students in this department require a total of 4.0 credits to graduate. Students in this department must take the following two courses (A=offered in the fall term, B=offered in the winter term):

- Biostatistics 9510A (0.5 credit): Biostatistical Research Methods
- Biostatistics 9521B (0.5 credit): Multivariable Methods in Biostatistics

MSc students are also required to take 1.0 credit from the following

- Actuarial Science 9004A (0.5 credit): Survival Analysis
- Statistical Sciences 9030B (0.5 credit): Statistical Inference
- Statistical Sciences 9055B (0.5 credit): Generalized Linear Models
- Statistical Sciences 9846A (0.5 credit): Design and Analysis of Experiments
- Statistical Sciences 9850B (0.5 credit): Advanced Data Analysis
- Statistical Sciences 9864A (0.5 credit): Statistical Computing
- Statistical Sciences 9924A (0.5 credit): Advanced Linear Regression

Two additional credits (2.0) are also be required to take from courses offered from either the Department of Statistical and Actuarial Sciences or the Department of Epidemiology and Biostatistics.

PhD degree in this department requires 4.0 credits. Students must take the following courses (A=offered in the fall term, B=offered in the winter term):
Biostatistics 9510A (0.5 credit): Biostatistical Research Methods
Biostatistics 9521B (0.5 credit): Multivariable Methods in Biostatistics

In addition, PhD students registered in this department are required to complete six half credit courses in the Department of Statistical and Actuarial Sciences at the graduate level. With the permission of the Graduate Chair, up to two half course credits from a student's Master's coursework may be counted toward the PhD course requirement. At the discretion of the student's supervisor and the Graduate Chair, permission may be granted to substitute at most two half credit research related courses from other departments for the Statistical and Actuarial Sciences courses.

The additional courses beyond the core courses are normally in statistics or clinical trials at the graduate level. In special circumstances, a student may be allowed to take an undergraduate course at the 3000-level or 4000-level with permission of the graduate chair.

Exceptions to the course requirements may be granted, with permission from both the Graduate Chair and the Biostatistics Co-Director in the home department.

**Faculty:**

The following faculty serves as primary supervisors in the collaborative program:

1. **Department of Epidemiology and Biostatistics:**
   - Y. Choi
   - N. Klar
   - D. Lizotte
   - Y. Zhu
   - GY Zou

2. **Department of Statistical and Actuarial Sciences:**
   - S. Bonner
   - C. de Souza
   - W. He
   - B. Jones
   - A. I. McLeod
   - D. Stanford
   - D. Woodford
   - R. Zitikis

**Contacts:**

If you are interested in this program, please contact the Biostatistics Co-Directors:
- Professor W. He (whe@stats.uwo.ca) if you wish to register with Statistical and Actuarial Sciences.
- Professor GY Zou (gy.zou@robartsinc.com) if you wish to register with Epidemiology and Biostatistics.