

Collaborative Graduate Program with a Specialization in

# Biostatistics (MSc, PhD) Map

## Why GRADUATE STUDIES in BIOSTATISTICS?

A graduate degree in Biostatistics will equip students with a sound knowledge in observational and experimental study designs, statistical theory, statistical models for health data analysis, and statistical computing. A four-month practicum will provide students opportunities to apply basic knowledge and develop consulting expertise within a health research group in an academic or industry setting. Graduates of this program will be capable of working as biostatistical data analysts in public and private sectors, such as government agencies, pharmaceutical companies in industry, and multidisciplinary health research teams in research centres, institutions, and hospitals.



*"I was drawn to the program because I knew the coursework would provide me with a strong foundation in statistics and epidemiology, while the practicum would give me the opportunity to develop practical research skills."*

-Michael Resume, MSc 2016

## Why QUEEN'S?

Queen's University is one of Canada's most research-intensive universities with a medical school. Queen's also houses a world-class group of biostatistics faculty members who are heavily involved in health-related research.

The Biostatistics program at Queen's has been greatly benefited from Queen's excellence in health research. The program is jointly offered by the Department of Public Health Sciences and Department of Mathematics and Statistics. The two departments offer strong graduate programs that include a broad range of courses in statistics, biostatistics, epidemiology, and health-services research. By combining these resources, students in the collaborative program will have unique opportunities to develop the analytical skills and practical experience needed to interact with practitioners and to work in health projects closely with health researchers, or to work in methodological research with biostatistics faculty members.

With the world's best scholars, prize-winning professional development opportunities, excellent funding opportunities, and life in the affordable, historic waterfront city of Kingston, Queen's offers a wonderful environment for graduate studies.

## Program STRUCTURE

The Department of Public Health Sciences and Department of Mathematics and Statistics jointly offer the collaborative MSc program in biostatistics specialization. It is a 12-month program with two terms of course work (6 core courses, 2 electives) and a supervised 4-month practicum. Students who complete the program requirements will receive an MSc degree in Public Health Sciences with a Specialization in Biostatistics or an MSc degree in Mathematics and Statistics with a Specialization in Biostatistics, depending on their home department.

## RESEARCH Areas

- Bioinformatics
- Cancer Clinical Trials
- Genetics and Genomics Data Analysis
- High-dimensional Big Data Analysis
- Observational Studies
- Population Health and Health Services Research
- Statistical Computing



## WEBSITE

[phs.queensu.ca/graduate-programs/msc-biostatistics](https://phs.queensu.ca/graduate-programs/msc-biostatistics)  
[queensu.ca/sgs/graduate-calendar/programs-study/biostatistics](https://queensu.ca/sgs/graduate-calendar/programs-study/biostatistics)

# Biostatistics



## Faculty RESEARCH and SUPERVISION

### PUBLIC HEALTH SCIENCES

- **Bingshu Chen:** Survival analysis, design and analysis of clinical trials, cancer genetics and epidemiology
- **Keyue Ding:** Design and analysis of clinical trials; Sequential analysis; Statistical quality control procedures; Change point detection and estimation; Statistical computing
- **Paul Peng:** Survival Analysis; cure models; observational and epidemiological research methods; health services research; statistical computing
- **Dongsheng Tu:** Biostatistical theory and methods, design and analysis of clinical trials, longitudinal data analysis, resampling methods, survival analysis
- **Zihang Lu:** Design and analysis of observational studies; Regression modeling and predictive modeling strategies; Cluster analysis; Analysis of longitudinal and functional data; Analysis of high-dimensional and big data.
- **Wei Tu:** is a biostatistician with research interests in data science and its application in health care. His research focuses on translating different sources of high-dimensional data into informed clinical decision-making. The topics he is working on include personalized medicine, data privacy and causal inference.

### MATHEMATICS AND STATISTICS

- **Wenyu Jiang:** Statistical methods in clinical trials; survival analysis; computational methods; analysis of genomic data
- **Devon Lin:** Theory and applications of fractional factorial designs, design computer experiments, uncertainty quantification, interface between data collection and modeling.
- **Yanglei Song:** Sequential analysis; multiple testing with sequential data; change detection with experimental design; rare event simulation
- **Glen Takahara:** Bayesian methods and applications; orientation data analysis; and functional data
- **David Thomson:** Analysis of global climate data; space physics; financial time series
- **Brian Ling:** survival analysis, shape-constrained inference, latent variable models.

# Application FAQs

## What do I need to know to APPLY?

Before you start your application, please review the departmental websites:

[phs.queensu.ca/graduate-programs/msc-biostatistics](https://phs.queensu.ca/graduate-programs/msc-biostatistics)

[queensu.ca/sgs/graduate-calendar/programs-study/biostatistics](https://queensu.ca/sgs/graduate-calendar/programs-study/biostatistics)

### ACADEMIC REQUIREMENTS

- Four-year Bachelor's degree with Honours, and an overall minimum average of 75% in undergraduate studies.
- All MSc applicants must have demonstrated quantitative skills, by either having a BSc degrees in statistics, mathematics, or computer science, or successfully completing courses in mathematics, statistics or data analysis. Successful applicants normally have at least two undergraduate courses in calculus and linear algebra and two courses in applied statistics and probability.

### ADDITIONAL REQUIREMENTS

- Two copies of an official transcript (for external students).
- Two academic letters of recommendation.
- If English is not a native language, prospective students must meet the English language proficiency requirements in writing, speaking, reading, and listening.

### DEADLINES

- The deadline to be considered for the first round of offers is **January 15**. The deadline to be considered for subsequent rounds of offers is **January 31**. Any new applications submitted after January 31 will continue to be considered until we reach our admission target.

## What about FUNDING?

Individual funding packages for full-time students in the program will be developed based upon the student's academic standing and on the sources of money available each year. These packages are funded through a combination of external awards, internal awards, internal departmental awards, faculty support, teaching assistantships, graduate research assistant fellowships, and research assistantships.

Applying for external funding from CIHR, NSERC, OGS, ACCELERATE Ontario, and other sources are encouraged. For more information, see the School of Graduate Studies and Postdoctoral Affairs' information page on awards and scholarships in addition to the home department's graduate awards page.



## CONTACT Information

For more information, contact the representative of the Department that is best aligned with your research interests.

- **PUBLIC HEALTH SCIENCES**  
Graduate Assistant  
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- **MATHEMATICS AND STATISTICS**  
Jennifer Read  
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