Biostatistics at McGill

Information Session

What is Biostatistics?

- Statistics is the branch of Science that develops methods to make decisions in the presence of uncertainty

- Statisticians commonly use a sample from the population of interest to either infer about associations or to predict a phenomenon of interest

- Biostatistics is associated with the study of health outcomes

Where we are…

- Part of the Faculty of Medicine and Health Sciences, our department has a long history in epidemiologic and biostatistical research.

- We form the largest concentration of PhD-level statisticians of any like department in Canada.

- In 1995 we accepted the first students into a Biostatistics 'stream'.

- From 2007, the training program was revised to require increased depth in statistics and to offer a broader array of statistics and biostatistics courses, while maintaining the strengths which come from strong links with the medical and epidemiological sciences.

Since Sept 2021

2001 McGill College Floors 11 and 12

Core Members of the Program

Professor Michal Abrahamowicz

Main areas of research: Flexible modeling of survival data; Unmeasured confounding; Prognostic studies.

Dr Andrea Benedetti

Main areas of research: Meta analysis & individual patient data meta analysis; Flexible regression methods; Statistical methods in molecular epidemiology.

Dr Shirin Golchi

Main areas of research: Bayesian inference; Computational statistics; Bayesian adaptive designs; Gaussian process regression.

Professor Josée Dupuis (chair of EBOH)

Main areas of research: Statistical genetics and genomics, genetic epidemiology, meta-analysis

Professor James Hanley

Main areas of research: Statistical methods for epidemiology; History of statistics & epidemiology; Receiver operating characteristic (ROC) analysis.

Professor Erica Moodie

Mains areas of research: Adaptive treatment strategies; Longitudinal data; Causal inference.

Professor Robert Platt

Main areas of research: Causal inference; Statistics in epidemiology; Prognostic models; Big data.

Professor Alexandra M. Schmidt

Main areas of research: Bayesian disease mapping; Dynamic linear models; Hierarchical models; Spatio-temporal models.

Dr Qihuang Zhang

Main areas of research: Noisy data, Statistical genomics, Machine learning, Spatial statistics.

Associate Members of the Program

Dr Nandini Dendukuri

Main areas of research: Latent class models; Bayesian inference; Meta-analysis.

Professor Celia Greenwood

Main areas of research: Statistical genetics; Genetic epidemiology.

Dr Elham Rahme

Main areas of research: Statistical methods for Pharmacoepidemiology; Adjusting for misclassification in administrative databases.

More about our faculty members' research

Click here for link to the videos

Our programs of study

We offer three programs of study:

- PhD
- MSc (Thesis)
- MSc (Non thesis)

What will you study?

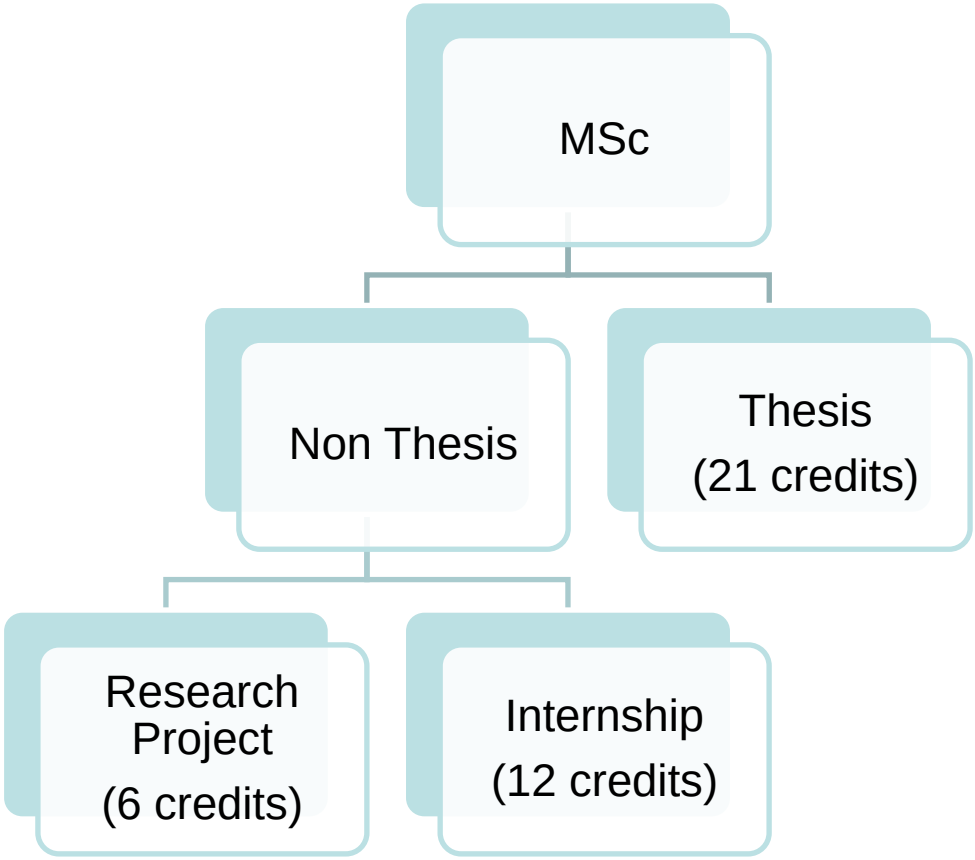
- All programs:
  - BIOS 601: Epidemiology: Introduction & Statistical Models
  - BIOS 602: Epidemiology: Regression Models
  - MATH 523: Generalized Linear Models
  - MATH 533: Analysis of Variance and Regression
  - MATH 556: Mathematical Statistics 1
  - MATH 557: Mathematical Statistics 2

- MSc students require a further 21 (MSc-T) and 24 (MSc-NT) credits
  - MSc-T: a thesis (21 credits)
  - MSc-NT: project (6 credits) **or** internship (12 credits – must register for project and internship) + 18 or 12 credits of elective courses

- PhD students further require:
  - BIOS 624: Data Analysis and Report Writing (4 credits)
  - 18 credits of elective courses
  - Comprehensive exams (Theory and Applied)
  - Protocol defense
  - Thesis

https://www.mcgill.ca/epi-biostat-occh/academic-programs/grad/biostatistics/course-requirements

MSc



It is fairly easy to switch between these after the first semester.

Funding

See https://www.mcgill.ca/spgh/about-us/governance/graduate-student-funding-policy

PhD:

- Funding is guaranteed (4 years)
- Annual minimum funding:
  - -$26,500 Canadian/Permanent residents
  - -$27,500 International Students
- International students are offered mechanisms to reduce tuition to the level of Canadian students, when possible

MSc:

- Most MSc students are funded via supervisor stipends, fellowships, research assistantships….
- $22,500

Where do our alumni work?

- Post-Doc: Harvard, University of Florida
- Research Associate: Lady Davis Institute
- Industry: Deep Genomics, Tesera Systems, Certara, Biogen
- Academia: York University, Université de Montreal
- Public Sector: Health Canada, Public Health Agency of Canada

Admission Requirements

General:

- Undergraduate degree in mathematics or statistics or its equivalent
- Honours degree is preferred but not required
- At least three semesters of calculus, two of linear algebra, at least one but preferably two semesters of real analysis, and a full year course/sequence in mathematical statistics preferably at an honours level, e.g. MATH-356/357.
- Exposure to data analysis is an asset.

Ph.D.: Students with the above qualifications, in addition to an MSc degree in Statistics or Biostatistics, will be considered for Ph.D. admission.

- *Exceptional candidates who do not hold an MSc may apply to directly the PhD program. Students applying directly from an undergraduate degree are also encouraged to apply to the MSc program where transfer is possible after the first year.*

M.Sc.: Students admitted into the MSc program will, in general, meet the requirements above.

- *Transfer to the PhD program is possible after the first year, following successful completion of the PhD theory comprehensive exam.*

How to apply

Deadline: December 1

Apply online

You will need:

- Official transcripts
- A personal statement
- 2 References
- You may apply for two programs and you should!

Life in EBOH

- (Bio)Stat Research Day
  - Speakers, posters, networking with alumni
- Seminars
  - Biostatistics seminars
  - Statistics seminars (McGill/CRM)
  - Epidemiology seminars
  - Occasional joint seminars
- EBOSS (our student society)
  - Organizes social and academic events

Other support available to students

- Health (mental or physical): Student Wellness Hub, counselling services, Student Accessibility & Achievement
- Academics:
  - Writing Centre
  - Graphos
  - Library

Questions?

These slides are available at:

https://www.mcgill.ca/epi-biostat-occh/education/grad/biostatistics/applying