# Admission Requirements

## Mathematical Biology (BSc)

### Prerequisite Requirements for BSc:
- ENG4U, SBI4U, SCH4U, MHF4U, MCV4U
- Recommended: SPH4U

### Expected minimum admission average:
high 70s – mid 80s

### If you major in Mathematical Biology your courses in first year will probably be:
- Linear Algebra I
- Calculus
- Statistics
- Problems, Conjectures and Proofs
- Computing for Mathematics & Statistics
- Biology
- Chemistry

### In second year you will probably take:
- Linear Algebra II
- Calculus of Several Variables with Applications
- Elementary Probability
- Real Analysis
- Differential Equations
- Symbolic Computational Lab
- Human Physiology or Anatomy
- Ecology
- Introduction to Environmental Studies

### Career options for Mathematical Biology majors include:
- University researcher in Engineering, Medicine, Environmental Studies
- Business and government research labs – i.e. Environment Canada, Public Health Agency of Canada, World Health Organization, NASA, Boeing
- Disease Prevention Specialist
- Pharmaceutical research
- Conservationist; Natural Resource Management
- Scientific Consultant
- Armed Forces/Intelligence Agencies Analyst
- City Planning
- Museums
- Finance
- Forestry Industry; Oil and Gas industry
- Post Graduate Studies/Academic Career
- Education- high school, college, university

### Courses you might take in upper years include:
- Mathematical Biology
- Practicum in Mathematical Biology
- Mathematical Modelling
- Vector Integral Calculus
- Introduction to Geometries
- Mathematical Analysis
- Probability Modelling
- Operations Research
- Cell Biology
- General Education Course(s)
- Dynamical Systems
- Virology
Why study Mathematical Biology at York University?

York offers Canada’s only degree in Mathematical Biology. At York your studies in Mathematical Biology will give you a solid base of knowledge in mathematics with an emphasis on the applications of mathematics and computing in the medical, environmental science, and public health fields. Your studies will begin with core courses in calculus and differential equations, problems, conjectures & proofs, linear algebra, computing and computation, probability and statistics, alongside introductory biology and chemistry courses. You will then specialize in areas like numerical analysis, operations research, probability and statistics in combination with upper year biology and health science courses. You may also combine your studies with other degree programs in Science or Health. Your studies in Mathematical Biology will prepare you for success in professional careers in disease prevention, pharmaceutical, medical, and space and aeronautics research, natural resource management, education, government, and for further professional or postgraduate studies. Your studies in Mathematical Biology will allow you access to The Centre for Disease Modelling (CDM), a core group of researchers in disease modelling globally, housed within this department and the York Institute for Health Research. As a fourth-year student, you will have the opportunity to acquire real-life problem-solving skills in a required research project.

Program Overview

Mathematical Biology involves foundational knowledge in mathematics and in the application of mathematics to biological processes. Courses are concerned with the mathematical representation, treatment and modeling of biological processes, using a variety of mathematical techniques and tools. Your studies will allow you to gain specific skills including experimental methods, data analysis, mathematical modeling, writing computer programs, using specific software applications, and the ability to translate mathematics to a biological question.

Mathematical modelling and computation are in many aspects of industrial research and development, including city planning, space and aeronautics, product engineering, environmental assessment, controlling the spread of infectious disease and other biomedical applications.

Facilities and Opportunities at York University and Beyond

Your studies at York will take place in energetic classes and tutorials taught by fifty full-time faculty members whose teaching and research interests span the spectrum of mathematical studies today. Our strong academic support system includes the Math and Statistics Tutorial Labs and the peer Study Group program to bolster your mathematical understanding. Club Infinity offers social and intellectual exchange with your peers. A rich array of academic prizes and awards recognizes high achievement in your mathematical and statistical studies. Mathematics & Statistics at York strongly supports its students who enter and achieve highly in international mathematics contests like the Putnam Competition and the Mathematical Contest in Modeling.

As a graduate of Mathematics & Statistics at York, you will be prepared for leadership in a wide array of careers, and will gain the background to succeed in a full range of graduate professional and academic programs. Our graduates go on to post-graduate and professional studies in mathematics and related science and social science fields, and establish rewarding careers in fields as diverse as biometrics, industry, data and research analysis, teaching, and finance. Our graduates are quick to credit York's challenging Mathematics & Statistics program for their successes.