science computing & mathematics



BSc

iBSc

BA

iBA



2012.2013

ONE OF CANADA'S LEADING TEACHING AND RESEARCH INSTITUTIONS

Welcome to York University

An education in sciences at York University is the launch pad for your future career - be it in research, further professional studies or immediate employment.

Seamlessly combine learning of both theory and application in an environment where you can thrive. Our diverse choice of courses allows you to follow a unique educational path just right for you.

You will receive a first-rate education while enjoying the considerable benefits offered by living in Ontario's most dynamic city.

What makes York University special is our people - the professors and staff who will teach and guide you along the way.

Our professors are internationally recognized and have received some of the highest teaching awards in Canada. They bring their award-winning approach to teaching and learning to every lecture.

··TEACHING EXCELLENCE ················· WORLD-CLASS RESEARCH ··············...

The professors you will meet in the classroom are full-time faculty members actively engaged in internationally acclaimed research.

Our researchers work at the forefront of discovery, ranging from subatomic particles to Mars and beyond, from the molecular level to complex ecosystems, from the theoretical to the practical. Our strength in research allows us to be at the cutting-edge of innovation, expanding what is known and providing solutions for local and global issues.

BUILD SKILLS & EXPERIENCE

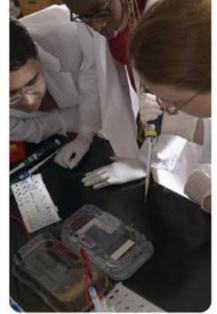
Work and international experiences help lay the foundation for your future success. Options include industrial internships, research positions, on-campus jobs and numerous international opportunities such as summer schools abroad, exchange terms abroad, dual degree programs, or international degree programs.

Getting involved at York will also build your skills and experience. You can participate in campus activities, join student government or one of York's 250+ clubs and organizations.

CAREER DEVELOPMENT

Your York degree will be a stepping stone to a career in industry, research, teaching or professions such as medicine, law or business. Our students have continued on to top-ranked graduate and professional schools.

York's Career Centre will help you find jobs during university, and also help you hone your resume and job search skills to find your ideal career after you graduate.







FINANCIAL SUPPORT

As a new student at York University, you will be automatically offered an entrance scholarship based on your final admission average. To be eligible, you must be entering directly from a Canadian high school.

final admission average	scholarship amount
95%+	\$14,000 (\$3,000 x 4 years + \$2,000 1st year*)
90%-94.9%	\$10,000 (\$2,000 x 4 years + \$2,000 1st year*)
85%-89.9%	\$4,000 (\$1,000 x 4 years)
80%-84.9%	\$2,000 (\$500 x 4 years)
	eceive a Science & Engineering Scholarship of \$2000 for first year.
	on about the support & services available to it us at science.yorku.ca/futurestudents

START YOUR FUTURE HERE

Science & Engineering is home to the full range of pure and applied sciences, including life, physical, earth, and space sciences, computing, mathematics and engineering. We offer a wide selection of programs, allowing you to satisfy your scientific curiosity while still being able to focus on one area in-depth.

You don't have to put aside your other interests to pursue only science or engineering. Are you interested in languages and culture? International experiences can give you an edge in your future career. It's why we offer the international BSc, dual degrees, summer schools and study abroad options at York's many partner institutions around the world. Is business, music or philosophy equally your passion? Or writing perhaps? You can combine these with your science studies too. Part of the York advantage is the diversity of options available to you.

DEGREE CHOICES

Yes, we offer BA degree in addition to the BSc. We also offer international degrees, the iBSc and iBA. The BA degrees are available in the Mathematics and Computing areas. These are fields of study with foundations and applications beyond the sciences, meaning that study in these fields can be embedded in either science (BSc) or liberal arts (BA). The degree options are noted for each program.









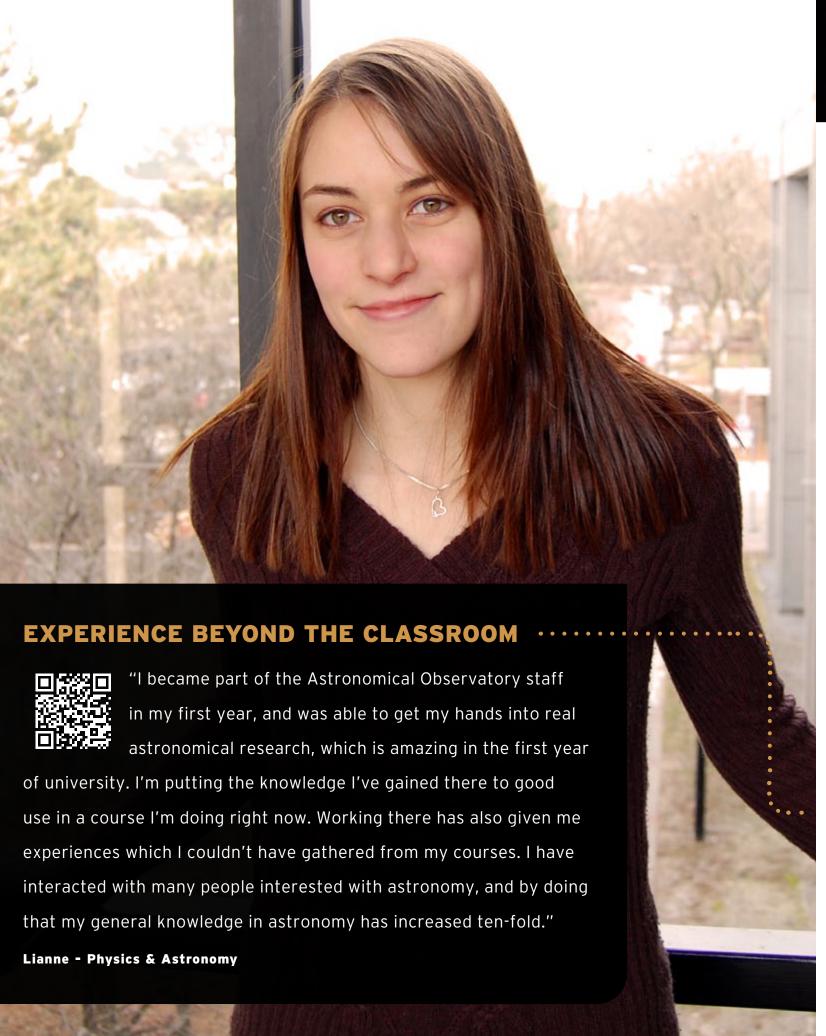
FIND OUT MORE ONLINE



Throughout this booklet you will notice that each program has a QR code included along with the description. Simply scan the QR code

using your mobile phone or type the URL into your browser to discover more online - you can hear from current students, discover major-minor combinations and career opportunities. QR code readers can be downloaded from the app store for your mobile device.

SCIENCE.YORKU.CA/FUTURESTUDENTS



chemical & physical sciences

CHEMISTRY

BIOCHEMISTRY BSc

Each year, the world of Chemistry continues to expand. If you want to be a part of this rapidly changing field, York offers many avenues to pursue your interests. Whether it's taking 3D pictures of protein structures, analyzing the chemical makeup of our atmosphere, or designing materials for the nanotechnology age, York offers a collaborative learning atmosphere in your classes or research labs.

FIRST-YEAR COURSES

- Chemistry
- Physics and/or Biology
- Calculus
- Computer Use
- General Education course



science.vorku.ca/chem

the microscope lies a whole new world for the taking! FIRST-YEAR COURSES

- Chemistry
- Biology
- Physics Calculus
- Computer Use
- General Education course



science.yorku.ca/biochem • •

Magnify those fundamental chemical processes of life

as a Biochemistry student. When you combine theories

of Biology and Chemistry you open up a myriad of sub-

biology. Engage with laboratory research, contributing

to projects supervised by renowned professors. Beyond •

fields like molecular biology, proteomics and cellular

PHYSICS & ASTRONOMY BSc

Understand and model the universe at scales ranging from quarks to galaxies while developing sophisticated problem solving skills that will prepare you for graduate studies and beyond! Choose a specialization and make your studies come alive in our undergraduate research programs or our internship program. From antimatter to the stars - the possibilities are virtually endless!

FIRST-YEAR COURSES

- Physics
- Astronomy (Astronomy stream)
- Chemistry
- Calculus
- Linear Algebra
- Computer Programming
- General Education course



science.yorku.ca/phas

BIOPHYSICS BSc

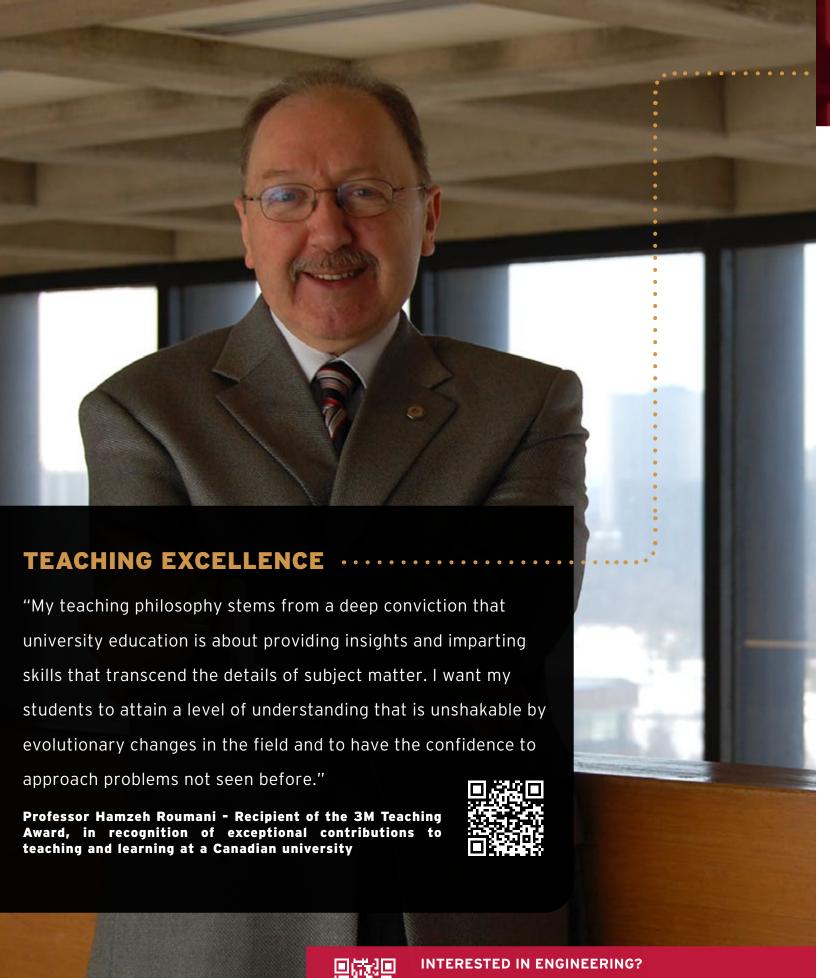
Can a laser aid in drug delivery? Can DNA improve light emitting diodes? Use the theory and methods of physics to investigate biological systems; and use biological systems to guide the development of new and improved tools in physics. Exercise your powers of lateral thinking, and the combination of theoretical and laboratory experience in both biology and physics will lead you to destinations never before imagined.

FIRST-YEAR COURSES

- Physics
- Biology
- Chemistry
- Calculus
- Linear Algebra
- Computer Use



science.yorku.ca/biophys



computing

What do you know about software development? Intelligent systems? Interactive systems? Communications networks? Get a taste of all that the Computer Science field has to offer! Expand your knowledge and connect your Computer Science studies with other fields offered at York. Challenge what you thought you knew by taking up an internship, delve into the wealth of research opportunities and learn to push computers to the limits of what they can

FIRST-YEAR COURSES

- Computer Science
- Calculus
- Discrete Mathematics
- · One of Biology, Chemistry, Physics, or Earth & Atmospheric Science (BSc students only)
- General Education course(s)



science.yorku.ca/compsci • •

As instances of compromised security increase, the need for computer security experts is now dire for areas that rely on technology such as economics, computer networks, finance, commerce, telecommunications, transportation and energy. With a solid background in computer science and mathematics, plus ethics and operational practices, any challenge to computer security will be yours for the taking.

FIRST-YEAR COURSES

- Computer Science
- Calculus
- · Discrete Mathematics
- Statistics
- · One of Biology, Chemistry, Physics or Earth & Atmospheric Science (BSc students only)
- General Education course(s)



Visit us online at eng.yorku.ca/futurestudents to discover

more about Computer Engineering and Software Engineering

science.yorku.ca/compsec • • • • • • •

INTERNATIONAL DEGREE -**COMPUTER SCIENCE**

The global reach of computing means that the demand for international experience combined with advanced computing skills is ever increasing. Immerse yourself in computing science and technology, simultaneously taking international studies and language courses, and pursue an international exchange abroad. Options include the International BSc/BA programs and a new Dual Degree program by which you earn two degrees in computer science – still in four years! You can also participate in annual International Summer Schools.

FIRST-YEAR COURSES

- Computer Science
- Calculus
- Discrete Mathematics
- One of Biology, Chemistry, Physics, or Earth & Atmospheric Science (iBSc students only)
- Language course



science.yorku.ca/intcs

DIGITAL MEDIA

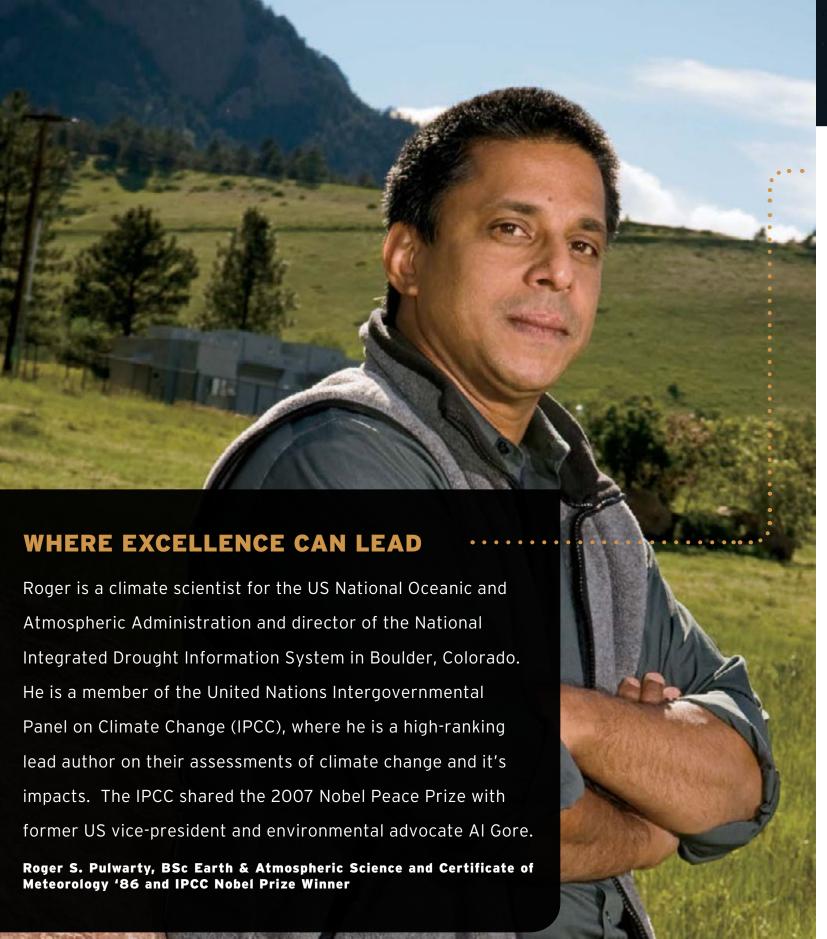
Make your imagined world a reality through Digital Media! Through a combination of Computing and Fine Arts courses, this dynamic program combines theoretical, artistic, aesthetic and experiential design elements. Get hands-on experience with our cuttingedge technologies for alternative media offered in state-of-the-art facilities at York.

FIRST-YEAR COURSES

- Programming for Digital Media
- Building Interactive Systems
- The Electronic Landscape
- Arts and Ideas
- Introduction to Communication or Cybercities
- Elective



science.yorku.ca/digmedia



earth & space sciences

EARTH & ATMOSPHERIC SCIENCE

Engage in the world of Earth & Atmospheric Science! Whether you choose the Earth Science or Atmospheric Science stream, a wealth of opportunity awaits: meteorology, geophysics, remote sensing, and oceanography are just a few. Pair in-class theory and hands-on experience. Use the many labs, observatories, and research opportunities unique to York's academic community.

FIRST-YEAR COURSES

- Earth & Atmospheric Science
- Chemistry
- Physics
- Computer Programming
- Calculus
- Algebra



science.vorku.ca/eats

ENVIRONMENTAL SCIENCE •••••••

So vou're an environmental activist and budding scientist? Where else would you be other than in Environmental Science? You can choose your stream in the Life Sciences or the Physical Sciences and then take advantage of hands-on lab research or field work opportunities, or complete a GIS certificate in conjunction with your degree. There's no telling how far these will take you.

FIRST-YEAR COURSES

- Biology
- Physical Geography
- Chemistry or Earth & Atmospheric Science
- Calculus
- Computer Use
- General Education course



science.vorku.ca/envsci

GEOGRAPHY ••••••

York's BSc program in Geography proves that the world can be your laboratory! Explore the physical geography of the world we live in with the help of our state-of-the art facilities, plenty of research opportunities, and required fieldwork with professors well-versed in their craft. You could be a cutting-edge geographic scientist in no time.

FIRST-YEAR COURSES

- Physical Geography
- Human Geography
- Calculus
- One of Biology, Chemistry, Physics or Earth & Atmospheric
- · General Education course



science.yorku.ca/geog

eight planets of the solar system, this is the program you have been waiting for: join the voyages of starship York! Learn how to observe our planet through space-based remote sensing technologies or the fundamentals of space exploration and astronomy. You may not learn Klingon but you can discover

If your knowledge of space goes beyond naming the

international space science projects and research initiatives conducted by members of our department.

FIRST-YEAR COURSES

- Physics
- Chemistry
- Astronomy
- Atmospheric Science
- The Dynamic Earth and Space Geodesy
- · Applied Linear Algebra
- Calculus
- Computer Science



science.yorku.ca/spacesci • • • • • •

INTERESTED IN ENGINEERING?

Visit us online at eng.yorku.ca/futurestudents to discover more about Geomatics Engineering and Space Engineering

life sciences

BIOCHEMISTRY

Magnify those fundamental chemical processes of life as a Biochemistry student. When you combine theories of Biology and Chemistry you open up a myriad of sub-fields like molecular biology, proteomics and cellular biology. Engage with laboratory research, contributing to projects supervised by renowned professors. Beyond the microscope lies a whole new world for the taking!

FIRST-YEAR COURSES

- Chemistry
- Biology
- Physics
- Calculus
- · Computer Use
- General Education course



science.yorku.ca/biochem

Health and well-being all begins with one cell and the molecules that give it life. Learn about the complex processes and interactions that make life possible, delving into a world consisting of molecules to entire organisms. From biochemistry to physiology and anatomy, and laboratory experiences to research connections, gain the knowledge you need to understand health and medical matters and lay the foundation for your future career.

FIRST-YEAR COURSES

- Biology
- Chemistry
- Computer Use
- Calculus
- General Education course



science.yorku.ca/biomed

BIOLOGY

Feed your passion for life from the nano to the global scale. Our unique program in Biology can lead you into molecular biology, cell biology, proteomics and genomics, physiology, ecology, genetics and much more! With plenty of laboratory experience, computer facilities and research opportunities, there is no limit to what you can explore.

FIRST-YEAR COURSES

- Biology
- Chemistry
- Computer Use
- Calculus
- General Education course



science.yorku.ca/biology

INTERNATIONAL DEGREE - BIOLOGY

Modern biology is an international endeavour. The more we learn, the more we understand how intrinsically connected we are to people and to other organisms around the world. Take your knowledge in the biological sciences beyond York! This international program will allow you to learn all that our program in Biology has to offer while also experiencing another culture, language and society. And in your final years, you will have the opportunity to study biology in the country of your choosing.

FIRST-YEAR COURSES

- Biology
- Chemistry
- Computer Use
- Calculus
- Language course



science.yorku.ca/intbio

BIOTECHNOLOGY

Think you can improve the taste of broccoli? How about using microorganisms to clean up the environment? Use genetically altered organisms to produce antibiotics? Applying biology to improve existing processes or to contribute to the production of food and medicines involves challenges beyond the lab. Whether you are testing vaccines or creating synthetic molecules, your learning will build a career that encompasses social, legal and ethical practices. Biotechnology is always under the microscope - take a look for yourself!

FIRST-YEAR COURSES

- Biology
- Chemistry
- Physics
- Computer Use
- Calculus
- Micro Economics
- Macro Economics



science.yorku.ca/biotech

ENVIRONMENTAL BIOLOGY

If you want to do more than just recycling to save the planet, this is the program for you. Learn the ins and outs of biological processes within diverse ecosystems and learn from world-class Environmental Biologists in a field of your choosing. Make a difference in the world by taking on the challenges of conserving and managing the flora and fauna around you!

FIRST-YEAR COURSES

- Biology
- Chemistry
- Computer Use
- Calculus
- General Education course



science.yorku.ca/envbio

•

BSc

B 20



MORE THAN NUMBERS

"Something I was told when I came to university was that you're only going to be a number. I walk around the math department and my teachers know who I am. I feel like I have made such good connections with my professors. If you can't come in during their office hours, they'll make extra time for you - you're really not just a number"

Naamah - 4th Year Mathematics & Statistics student



mathematics

MATHEMATICS •••••••

Immerse yourself in the beauty of mathematics and discover how to express ideas using the language of mathematics. Use the power and elegance of abstract mathematical reasoning to learn how to develop and apply problemsolving skills. You will join an intellectual community dedicated to the precise analysis and interpretation of the world in which we live.

FIRST-YEAR COURSES

- Calculus
- Statistics
- Problems, Conjectures and Proofs
- Computing for Math and Statistics
- One of Biology, Chemistry, Physics or Earth & Atmospheric Science (BSc students only)
- General Education course(s)
- Elective



science.yorku.ca/math

MATHEMATICS FOR COMMERCE

Utilize your math skills by learning to apply them in the world of business, international commerce and management. As you progress, you will choose between Actuarial and Operations Research streams and see how skills like risk management and process modeling give you the leading edge in the world of commerce.

FIRST-YEAR COURSES

Calculus

BSc

- Statistics
- Problems, Conjectures and Proofs
- Computing for Math and Statistics
- General Education course
- Elective



science.yorku.ca/mathcom • • • • • •

APPLIED MATHEMATICS ••••• BSc

Discover how to reason and make sense of the world using the language of mathematics.

Develop and apply problem-solving skills using the precise analysis that is the hallmark of Applied Mathematics. Through analyzing problems arising from many areas of science, engineering and commerce you will realize that future opportunities are virtually limitless.

FIRST-YEAR COURSES

- CalculusStatistics
- Problems, Conjectures and Proofs
- Computing for Math and Statistics
- One of Biology, Chemistry, Physics or Earth & Atmospheric Science (BSc students only)
- General Education course(s)
- Elective

science.yorku.ca/appmath . .

COMPUTATIONAL MATHEMATICS ... BSc

Who ever said "you can't have your cake and eat it too," clearly never went to York. If you love math and computers, consider having both! Make sense of mathematical models by combining Applied Mathematics and Computer Science courses. As you progress, you can choose between Applied & Industrial Mathematics or Financial Mathematics and see how knowledge about computational models of mathematical processes will put you at the top in no time.

FIRST-YEAR COURSES

• Calculus

ВА

- Problems, Conjectures and Proofs
- Statistics
- Computer Science
- One of Biology, Chemistry, Physics or Earth & Atmospheric Science
- General Education course



science.yorku.ca/compmath

Share your passion for math, and inspire people to explore the magnitude of its applications. Combine your program with a Bachelor of Education to qualify yourself as a Math teacher. You will also have access to research opportunities with professors, the Undergraduate Mathematics Society, and many more resources. Play a pivotal role in changing the stereotype—show that anyone can do math!

FIRST-YEAR COURSES

- Calculus
- Statistics
- Problems, Conjectures and Proofs
- Computing for Math and Statistics
- One of Biology, Chemistry, Physics or Earth & Atmospheric Science (BSc students only)
- An elective course in an area planned as second teaching subject



science.yorku.ca/mathedu • • •

Due to the recent explosion of digital data, statistician has become one of the in demand careers. In our Statistics program, you'll learn how to analyze the patterns of the web, help uncover the inner workings of genes, and participate in developing economic and social policies - there is hardly any limit to the exciting applications of Statistics!

FIRST-YEAR COURSES

- Calculus
- Statistics
- Problems, Conjectures and Proofs
- Computing for Math and Statistics
- One of Biology, Chemistry, Physics or Earth & Atmospheric Science (BSc students only)
- General Education course(s)
- Elective



science.yorku.ca/stats

interdisciplinary



BEYOND JUST SCIENCE

"I've absolutely fallen in love with the program, from the encouraging and extremely knowledgeable professors, to the varied course options that cover everything from philosophy to mathematics. STS proved to be a true metadiscipline that has allowed me the chance to dabble in everything from biomedical sciences to the history of physics and has been an enriching experience."

Marina - Science & Technology Studies

SCIENCE & TECHNOLOGY STUDIES

Looking for a diverse program that deconstructs the role science and technology continues to play in the development of our contemporary culture? Take on the stimulating challenge of this unique program. Combine a core of fundamental lab-based science with courses in which the methodology of history, philosophy, and social science is used to explore science and technology in its social context.

FIRST-YEAR COURSES

- Introduction to Science & Technology Studies
- One of Biology, Chemistry, Physics, or Earth & Atmospheric Science
- Calculus
- Computer Use



science.yorku.ca/sts

MAJOR UNDECIDED ••••••

Take the time to think about your future and explore the possibilities.

Science is the future and it is your future. If so many of our programs look interesting to you, how can you decide what to major in? Here is a solution: you can apply to Major Undecided. That way you have some extra time to make up your mind.

First Year Undecided Science Major

As an Undecided Science Major, you'll encounter a range of possibilities. This option allows you to discover your interests and strengths in science prior to selecting a program for second year. When you meet with your academic advisors, you will be assisted in choosing the courses that best suit your interests and goals.



science.yorku.ca/undm

prerequisites

Ontario secondary school entry requirements

PROGRAM	12U Requirements (12U English required for all programs)
Applied Mathematics	BA: • Advanced Functions • Calculus & Vectors recommended
	BSc: • Advanced Functions • Chemistry OR Physics • Calculus & Vectors recommended
Biochemistry	• Biology • Chemistry • Advanced Functions • Calculus & Vectors • Physics recommended*
Biology	• Biology • Chemistry • Advanced Functions • Physics recommended
Biomedical Science	• Biology • Chemistry • Advanced Functions • Physics recommended
Biophysics	• Biology • Physics • Advanced Functions • Calculus & Vectors • Chemistry recommended*
Biotechnology	• Biology • Chemistry • Advanced Functions • Physics recommended
Chemistry	• Chemistry • Advanced Functions • Calculus & Vectors • Physics recommended*
Computational Mathematics	• Advanced Functions • One other 12U Math (Calculus & Vectors recommended) • Chemistry OR Physics
Computer Science	BA: • Advanced Functions • One other 12U Math course (Calculus & Vectors recommended) (Minimum average on math courses of 75% and no math mark below 65%)
	BSc: • Advanced Functions • One other 12U Math course (Calculus & Vectors recommended) • Chemistry OR Physics (Minimum average on math courses of 75% and no math mark below 65%)
Computer Security	BA: • Advanced Functions • One other 12U Math course (Calculus & Vectors recommended) (Minimum average on math courses of 75% and no math mark below 65%)
	BSc: • Advanced Functions • One other 12U Math course (Calculus & Vectors recommended) • Chemistry OR Physics (Minimum average on math courses of 75% and no math mark below 65%)
Digital Media	• One 12U Math course (minimum grade of 75%) • One 12U arts course or equivalent training recommended
Earth & Atmospheric Science	• Chemistry • Physics • Advanced Functions • Calculus & Vectors
Environmental Biology	• Biology • Chemistry • Advanced Functions • Physics recommended
Environmental Science	• Chemistry • Physics • Advanced Functions • Calculus & Vectors
Geography	• Chemistry OR Physics • One 12U Math course (Advanced Functions recommended)
Mathematics	BA: • Advanced Functions • Calculus & Vectors recommended
	BSc: • Advanced Functions • Chemistry OR Physics • Calculus & Vectors recommended
Mathematics for Commerce	• Advanced Functions • Calculus & Vectors recommended
Mathematics for Education	BA: • Advanced Functions • Calculus & Vectors recommended
	BSc: • Advanced Functions • Chemistry OR Physics • Calculus & Vectors recommended
Physics & Astronomy	• Physics • Advanced Functions • Calculus & Vectors • Chemistry recommended*
Science & Technology Studies	• Chemistry OR Physics • One 12U Math course (Advanced Functions recommended)
Space Science	• Chemistry • Physics • Advanced Functions • Calculus & Vectors
Statistics	BA: • Advanced Functions • Calculus & Vectors recommended
	BSc: • Advanced Functions • Chemistry OR Physics • Calculus & Vectors recommended
Major Undecided	• Chemistry OR Physics • One 12U Math course (Advanced Functions recommended)

Our minimum admission requirement is the completion of the Ontario Secondary School Diploma (OSSD) including the prerequisite courses as outlined above (or equivalent).

Note: Recommended courses will help you with your studies at York, but are not required for admission. Students who do not present a recommended course may be required to complete a York course, specified by the program, to proceed in the program. The recommended courses marked with an asterisk (*) will require that students complete the course in their first year if they have not taken the 12U course.

For detailed admission requirements including deadlines, documents required or language proficiency, please visit futurestudents.yorku.ca

SCIENCE, COMPUTING & MATHEMATICS PROGRAMS Applied Mathematics [85] [84] Biochemistry 🔤 Biology 🔤 Biomedical Science Biophysics 🔤 Biotechnology Esc Chemistry 🔤 Computational Mathematics Computer Science BE BA Computer Security BS BA Digital Media 📴 Earth & Atmospheric Science 🔤 Environmental Biology 🔤 Environmental Science 🔤 Geography 🔤 International Degree Biology 🔤 International Degree Computer Science 🔤 🖪

Mathematics BSC BA
Mathematics for Commerce BA
Mathematics for Education BSC BA
Physics & Astronomy BSC
Science & Technology Studies
Space Science BSC
Statistics BSC BA

Statistics Science
Major Undecided

• • • CONTACT

Science & Engineering Liaison Office Email sciadmit@yorku.ca Tel (416) 736 5151

TO BOOK A CAMPUS TOUR

register online at futurestudents.yorku.ca



