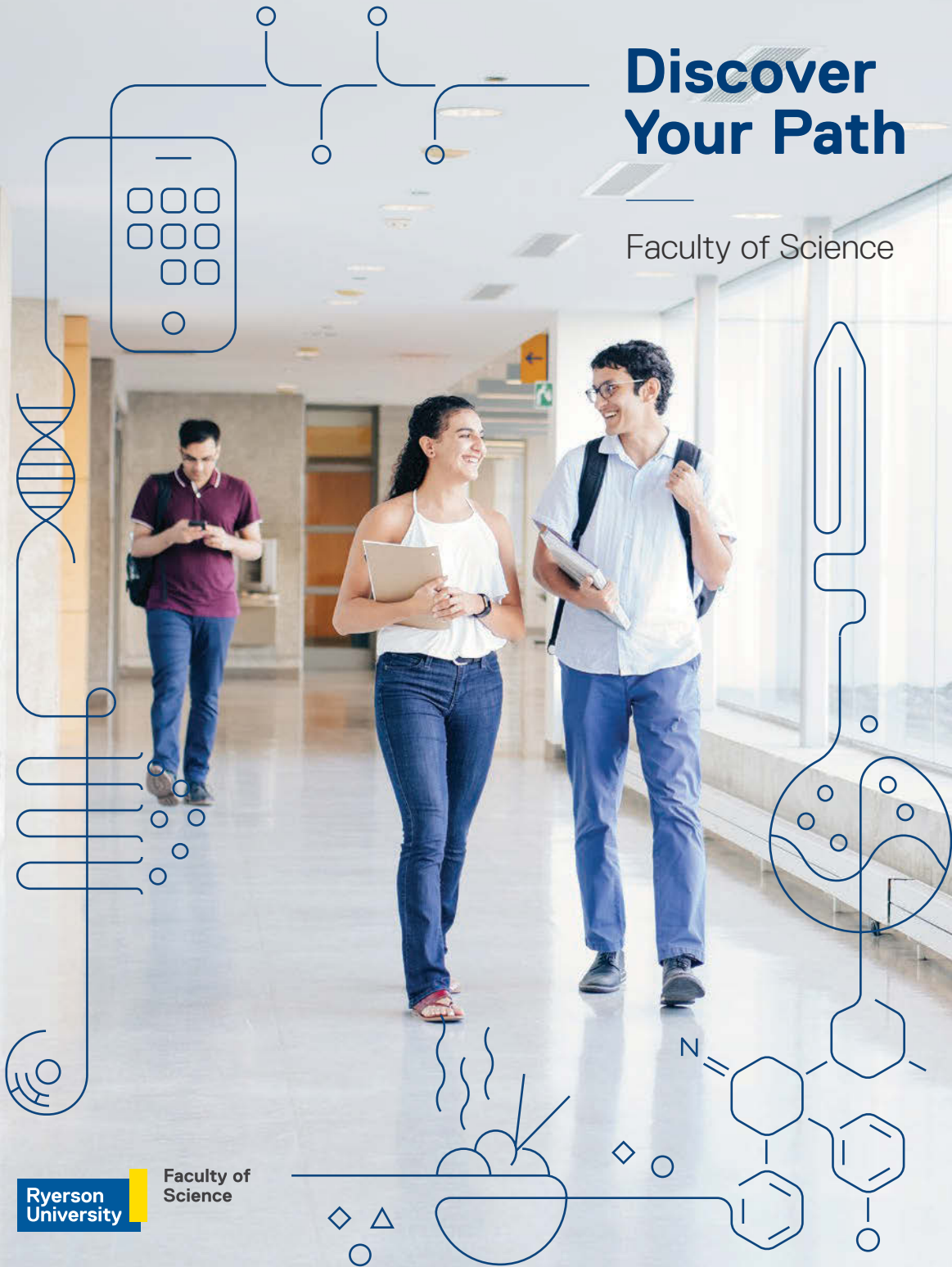


Discover Your Path

Faculty of Science



Ryerson
University

Faculty of
Science



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The Ryerson Experience

WELCOME TO FACULTY OF SCIENCE

At Ryerson, science is about discovery and results. Our connected science approach builds bridges between disciplines to solve some of today's biggest challenges, from preserving clean water to developing smarter disease therapies to measuring financial risk. We offer co-op programs and real-world learning, and you'll be immersed in a community of students like you who interact daily with passionate, talented professors.

BRIGHT LIGHTS, BIG CITY

Ryerson's location in the largest and most diverse city in Canada places a rich array of cultures, businesses, industries and employment opportunities within easy reach. This is a university campus that extends beyond classrooms, labs and buildings and into the heart of Toronto. In this truly global city, you'll meet and work with people from all around the world and build friendships and networks for life.





RYERSON LIFER

Eno Hysi

PhD Student
Biomedical Physics

Eno Hysi can't get enough of Ryerson. He arrived as a first year student in Medical Physics, stayed on for his Master's degree and is now working on his PhD in Biomedical Physics.

"When I arrived, I was blown away by the research opportunities for undergrads," he says. "No matter what you want to do after your BSc – advanced science, medical school, employment – research experience opens a lot of doors. But maybe even more important, everyone here wants you to succeed. I feel like I've got a whole team on my side."

Eno was recently awarded a Vanier Canada Graduate Scholarship for his work on photoacoustic imaging in cancer treatment monitoring. But he had no idea he would be focused on this area when he chose Ryerson.



Early on, I got involved in the science course unions, joined several academic committees and made a pile of new friends. Now, my research into cancer treatment monitoring has an immediate impact on people. One day, I hope to have my own research lab and train the next generation of students the same way I've been helped here.



No Substitute for Experience

Student Experience Learning Outside the Classroom

The Faculty of Science offers experiential learning opportunities that enrich your academic experience, prepare you for the world of work and expand your thinking. Whether they take place in the classroom, community, lab or workplace, these experiences will give you memories and skills to last a lifetime.

FIRST YEAR SCIENCE OFFICE

To ensure you have a smooth transition from high school to university, we created an office that offers advice on academic, administrative and personal matters for most first-year science students. Whenever you have questions or concerns, drop by and visit this experienced team of professionals who are here to support you.

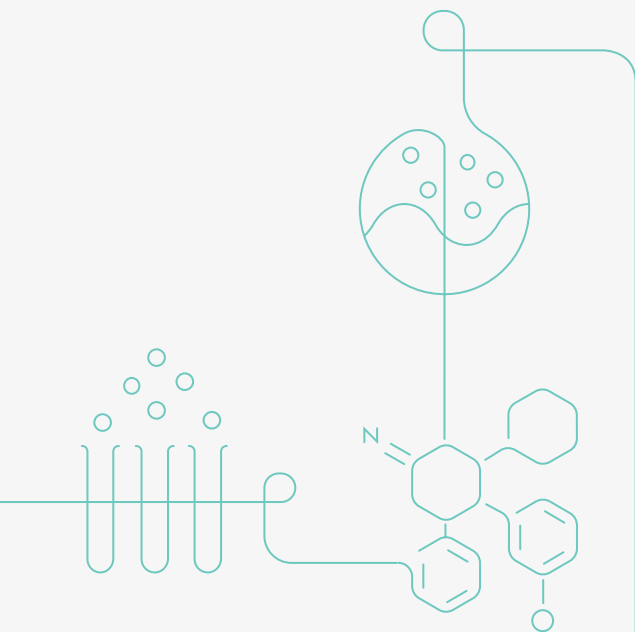
GET INVOLVED

We offer over 15 science groups to connect with students who share your interests and goals. Through these extracurricular activities, you can network, develop teams, host events, organize initiatives, deliver services and gain valuable leadership experience.

Community Builder

Helia Nabavian

Biomedical Sciences '18



RYSCIMATCH

RySciMatch is a non-credit course offered through The Chang School that connects you with senior students, staff, faculty and community mentors. Over a semester, you attend weekly sessions and engage with mentors on topics like research, health and wellness and career planning. You also meet successful entrepreneurs from startups in your field of interest.

SCIENCE DISCOVERY ZONE

Looking for the hands-on learning that comes with starting a venture or impact project? Want to work directly with industry leaders and entrepreneurs while solving a real world problem? The SDZ is the space you need for support, credit courses, workshops and networking events.

Helia Nabavian chose Biomedical Sciences at Ryerson because she loved the idea of a close-knit community nestled in the centre of the city. While here, she seemingly did it all, including Ryerson Urban Outreach, Undergraduate Women in Science, the Biomedical Sciences Course Union and the Ryerson Science social media team. She was also involved in two experiences that she feels “changed her life.” As a research assistant in the Botelho Lab, she remembers being “so lucky to be encouraged to learn and explore ideas.” Also, reflecting on her time as a student mentor at International Student Support, she says, “The experience taught me how to personalize conversations, foster open dialogue and understand what people need.” Now, as she begins medical school, Helia says, “I will forever be grateful for the experiences I was fortunate enough to have at Ryerson. If I were given a chance to do it all again, I wouldn't change a thing.”

Student Experience Learning Outside the Classroom

GLOBAL SCIENCE CITIZEN

Keen to live, work or study abroad and experience a new culture? The Faculty of Science has exchanges and research partnerships around the world, including Australia, United Kingdom, Netherlands, Singapore, China, Germany, France and India. Go on academic exchange for a semester or full year and receive academic credit, or engage in research learning at a prestigious university. In 2018, several Faculty of Science undergrads spent their summer in a research internship at University College London in England.



Travelling abroad and conducting research at one of the top universities in the world was thrilling. The city of London and UCL are incredible. I would suggest everyone live here at some point.

Justin Meneses
3rd Year Chemistry

RESEARCH OPPORTUNITIES

Undergraduate students in the Faculty of Science regularly participate in research with professors and graduate students. Being directly involved in the creation and exploration of knowledge is invaluable learning.



“From my research experience, I got a sense of what kind of work I wanted to do. In a few years, I advanced from my first step inside a lab to ranking in the top 10% of 6,500 submissions to the Undergraduate Awards. I am so grateful for the research opportunities at Ryerson.”

Morla Phan
Biomedical Sciences '17



Our Programs

This way to Your Future

Ryerson Science offers the best of both worlds – big ideas and solutions that matter. From learning how gene expression affects aging to creating wealth through financial models, we will help you innovate with impact.

FOUR YEAR FULL-TIME OR FIVE YEAR CO-OP?

All of our programs lead to a Bachelor of Science (BSc) degree, and practical work experience is available through co-op options in each one.

INVESTIGATE AND EXPERIENCE IT ALL

Ryerson is known for the research opportunities and experiential learning it provides students. If you love to form and test hypotheses, experiment in a lab, team up for competitions or take on work placements, you have all of those options here. We even have courses that teach you how to use the scientific method to develop a venture and build your career. After finishing your degree, you'll be ready to pursue higher education, enter a profession or launch your own business.

LOVE SCIENCE BUT NOT SURE WHICH FIELD TO PURSUE?

Undeclared Science is a one-year entry option that allows you time to explore foundation courses in Biology, Chemistry and Medical Physics before deciding which to select as your major. Once you know where your interests and goals lie, all of your completed courses will be credited to your new program.



GROUND CONTROL TO MAJOR BREAKTHROUGH

Biology student Mark Zaidi's Entropy Labs developed an economical and sustainable method to produce aerogel, the third-lightest material ever made and the world's best insulator. Currently used by NASA to line rockets, aerogel is now affordable for widespread use, thanks to Entropy.



THE EARLY BIRD GETS THE MEALWORM BOLOGNESE

Brothers Eli and Lee Cadesky founded C-fu Foods when they created the first ever cricket tofu ("c-fu"), a sustainable and nutritious source of protein, iron and calcium. Their startup won the 2017 MAKO Student Innovation Award.



Biology

From Single Cell to Living Well

Explore and understand the nature of all living organisms, from bacteria and cells to plants and animals. There are so many ways to know and change the world with a foundation in biology! Opportunities for research in leading industries and for laboratory training will prepare you for a career in many fields. If you are also interested in other disciplines, you can combine them for a specialization in biophysics, bioinformatics and computational biology, environmental biology or management science.

FACULTY PROFILE

Plant Decoder

Lesley Campbell

The Campbell Group Plant
Evolutionary and Ecology Lab

Dr. Campbell and her team conduct cannabis-related research and are generating new knowledge about this pharmaceutically important plant. Partnering with companies such as Tweed Marijuana Inc. and Beleave Inc., the lab is studying ideal environments for specific cannabis varieties and optimal methods for cannabinoid extraction.

THE PLACES YOU'LL GO

Industry

Medical technologies,
research and development,
plant management

Health

Biotechnology, clinical
science, community health

Government

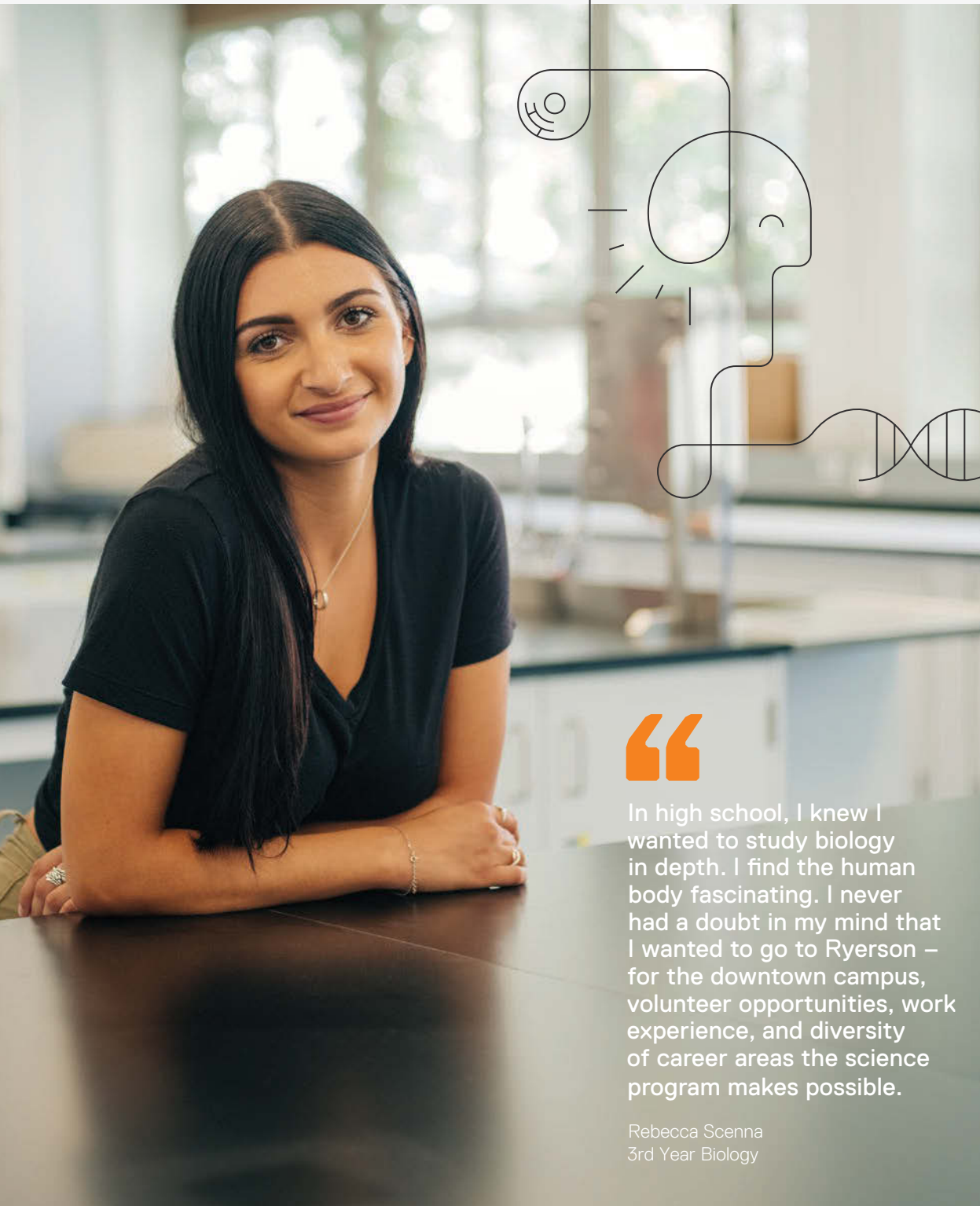
Agricultural science,
environmental policy,
research and development

Business

Healthcare administration,
insurance, entrepreneurship

Graduate School

Dentistry, law, pharmacy,
veterinary medicine



“

In high school, I knew I wanted to study biology in depth. I find the human body fascinating. I never had a doubt in my mind that I wanted to go to Ryerson – for the downtown campus, volunteer opportunities, work experience, and diversity of career areas the science program makes possible.

Rebecca Scenna
3rd Year Biology



“

Ryerson is a community of bright and diverse people who innovate and co-create knowledge. That’s why I chose to study here. Plus, the courses offered align with my passion for global health work. I am hoping to become a Public Health Physician to combine my love for science with social justice and advocacy.

Renee Bailey
4th Year Biomedical Sciences

Biomedical Sciences

All's Well That Mends Well

Do you want to know how molecular and cellular mechanisms drive health, infection and the development of disease in living organisms? With a deep understanding of biomedical sciences, such as molecular and cell biology, genetics and genomics, and microbiology, you can engage in medical research and prepare yourself to succeed in the biotechnology and pharmaceutical industries. Ryerson's close relationship with the biomedical industry means that great co-op, volunteer and research options are available to elevate your learning and value to employers.

FACULTY PROFILE

Cell Investigator

Roberto J. Botelho

Canada Research Chair in
Biomedical Sciences

The Botelho Lab at Ryerson studies organelle identity and function. What's an organelle? It's an "organ" within a cell that is vital for the cell to live. When organelles malfunction, cells become sick, which can lead to diseases like tuberculosis or cancer. Understanding the world of organelles leads to new ways to diagnose and treat diseases.

THE PLACES YOU'LL GO

Industry

Biomedical science,
medical technologies,
pharmaceuticals

Health

Biotechnology, clinical
science, genetic counselling

Government

National defense, science
policy, technology and
innovation

Business

Healthcare administration,
product analysis, project
management

Graduate School

Law, medicine, pharmacy

Chemistry

When Life Gives You Lemons, Investigate Their Properties and Form New Substances

Chemistry is a part of everything we do, such as creating new and useful products, protecting the environment or fighting disease. As a chemistry student, you will combine research and application to expand current practices and improve the quality of life. You may opt to specialize in chemistry combined with a biology minor or applied physics, if those areas also interest you. A lot of learning takes place in the laboratory, making this an ideal program if you enjoy using knowledge and research to engage in real-world chemical science.

FACULTY PROFILE

Microbe Slayer

Dan Foucher

[The Foucher Research Group](#)

Dr. Foucher and his team of researchers work to chemically improve products such as antimicrobial cleaners in an effort to advance human health and technology. Antimicrobials kill or slow the spread of micro-organisms such as bacteria, viruses and mold. The group's work has led to more stable antimicrobial products with a positive impact on our daily health. Dr. Foucher has also partnered with Whoosh!, an award-winning Canadian start-up whose mission is to "clean life's dirty moments."

THE PLACES YOU'LL GO

Industry

Data science, medical technologies, environmental technology

Health

Clinical pathology, community health, environmental public health

Government

Agricultural science, science policy, research and development

Business

Healthcare administration, product analysis, project management

Graduate School

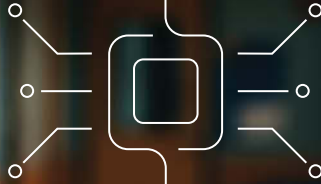
Law, medicine, pharmacy, veterinary medicine



“

I love the hands-on nature of chemistry and the flexibility it provides for innovation, like developing new molecules and materials. I chose Ryerson for the downtown community and the opportunity to conduct research in the chemistry program, which I did this summer. After graduation, I hope to find a career in the cosmetic chemistry industry.

Vanessa Ruscetta
3rd Year Chemistry



I've always had a deep passion for computers and chose to study at Ryerson for its downtown location and fantastic co-op program. I love being involved in the Ryerson Science Society (RSS), which supports science students and organizes fantastic events throughout the year. After I graduate, I want to work in the fields of machine learning and AI, helping push the bounds of what computers are capable of.

Michael Teitelbaum
3rd Year Computer Science

Computer Science

Byte Club

If you want to influence the hyperconnected digital landscape, become fluent in programming languages, and learn about data structures, networks, operating systems, and cyber technologies, this is the program for you. You can study software engineering, computer vision, robotics, artificial intelligence and platform-based development. While you're at it, explore human-computer interaction, computer graphics, virtual reality, and computer security. Offering part-time study and first-year direct entry, you may opt to concentrate in software engineering or specialize in management science.

FACULTY PROFILE

Attention Grabber

Neil Bruce

Ryerson Vision Lab

Dr. Bruce asks some of the big questions in the cutting-edge field of computer vision. How do we choose what to pay attention to – and how do machine vision systems make those choices? How can we build effective brain-computer interfaces and decode and understand neural activity? His research in computer vision, deep-learning, human perception, neuroscience and visual computing aims to solve these and other puzzles.

THE PLACES YOU'LL GO

Industry

Artificial intelligence, robotics, software programming, game design

Health

Health informatics, medical robotics, healthcare IT

Government

Information systems security, information technology, national defense

Business

Data modelling, software architecture and development, web applications

Graduate School

Law, computer science, data science

Financial Mathematics

Good Things Come to Those Who Rate

If you're attracted to the fast-paced and competitive world of finance, this is the program that will teach you to drive our economy forward by leveraging cash flow and creating wealth. Gaining an advanced expertise in mathematics, you will analyze markets, manage investments and evaluate risk. In addition to in-class study, there are opportunities for work placement, research and practical investing experience. You will also work on real-world case studies on current issues within the financial industry.

FACULTY PROFILE

Risk Analyst

Niushan Gao

The Financial Math Lab

Collaborating with partners in Switzerland and Singapore, Dr. Gao is developing mathematical models that measure the risk of large financial institutions. One potential application of his work is to help government regulators assess the investment mix at major banks to prevent them from failing in the face of major economic shocks.

THE PLACES YOU'LL GO

Industry

Actuarial science, computational mathematics, data science, risk analysis

Consulting

Financial accounting, financial planning, investment services

Finance

Accounting, advising, banking, financial analysis, market research

Government

Auditing, budget analysis, financial examining

Business

Business intelligence, information technology, insurance risk management

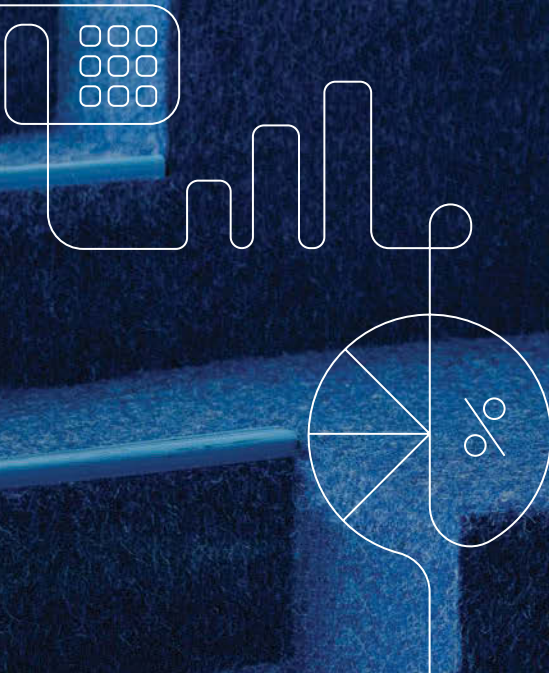
Graduate School

Law, economics, mathematics, MBA



Financial math is a perfect combination of two subjects I love: math and business. It's rare in other university programs to apply mathematical concepts to the field of finance, so I chose Ryerson for that and the immersive culture. After I graduate, I plan to complete the Chartered Financial Analyst (CFA) designation and open my own business as a financial planning consultant.

Alexandra Fogel
3rd Year Financial Mathematics





“There are so many cool things you can use math for, from proving basic theories to actual rocket science. I came to Ryerson because there are so many courses offered and I like the option of taking very different math courses alongside each other. Currently, I’m very interested in mathematical biology and environmental statistics. I hope to be a researcher in one of those areas.”

Susan Stanley
3rd Year Mathematics and its Applications

Mathematics and its Applications

Easy as π

In this program, you can study math on its own, combine it with computer science or economics, or specialize in management science. The flexibility and range of mathematics is exciting if you're a person who loves to solve problems using logic, principles and your own imagination. As a graduate from this program which offers work placement and research opportunities, you'll become a valued and in-demand professional who can innovate solutions for business, government or industry.

FACULTY PROFILE

Personality Digitizer

Pawel Pralat

Fields-CQAM Lab on
Computational Methods in
Industrial Mathematics

One of Dr. Pralat's fascinating industry partnerships is with IMC Business Architecture (IMCBA), which uses innovative computational tools to assess personality traits. Currently, a prototype system is able to estimate a customer's MindTime type by analyzing recorded speech. Gaining automatic data on personality through spoken word allows for greater insight into human emotion and motivation.

THE PLACES YOU'LL GO

Industry

Actuarial science, computational mathematics, data science, risk analysis

Consulting/Finance

Accounting, banking, financial planning, statistical analysis

Health

Biomathematics, biostatistics, mathematical medicine, public health

Government

Auditing, budget analysis, business analysis, statistics

Graduate School

Law, economics, mathematics, MBA

Medical Physics

You Ain't Screened Nothing Yet

Combine your interests in medicine and physics to explore the ways in which physics is applied in the diagnosis and treatment of illnesses. You will apply physics-based concepts and methodologies to procedures such as medical imaging, radiation therapy, radiation protection and dosimetry. If you're interested in helping businesses improve and achieve their goals, you may want to specialize in management science. Medical physics is a unique field that prepares you to make a difference in healthcare and medicine.

FACULTY PROFILE

Cancer Warrior

Michael Kolios

[The Kolios Lab](#)

Dr. Kolios is part of a diverse group of scientists and engineers partnering with St. Michael's Hospital to create new ways of imaging and treating cancer using ultrasound and optics. Always involving undergraduates in his work, Kolios' research is paving the way for new cancer therapies that minimize damage to surrounding cells and make tumours more sensitive to treatment. The end goal: people living longer, healthier lives.

THE PLACES YOU'LL GO

Industry

Computational physics, industrial physics, research and development

Health

Medical diagnostics, medical dosimetry, medical informatics, radiation therapy

Government

Environmental science, regulatory authorities, technological innovation

Business

Healthcare administration, product analysis, entrepreneurship

Graduate School

Law, medicine, veterinary medicine, medical physics, physics



“

“The students I met at the Science Agora Open House were so caring and open-minded, so I wanted to come to Ryerson. And now that I’m here, I love the way the professors teach – there are so many interesting personalities. For my career, I would like to work in the clinical research field of radiology. I think it’s going to be amazing!”

Meiyun Cao
3rd Year Medical Physics

Career Preparation and Co-op

From Learning to Earning

We offer industry-leading resources to help you land a job – before and after graduation. Tailored to your needs and aspirations, our programs, resources, staff and opportunities build the experience and confidence employers value and help you translate knowledge into action. Your career starts right here – and right now.

CAREER & CO-OP CENTRE

Ryerson's career hub offers specialized resources and staff to help you land your dream job. Explore co-ops, internships and field placements to set yourself apart. All you need to do is book a free appointment with a Faculty of Science Career Education Specialist or contact a Resume and Online Profile Advisor.

EMPLOYER EXHIBITIONS AND NETWORKING EVENTS

The Faculty of Science invites you and other students to meet with industry representatives at events like Fintech Careers Week, Life and Physical Science Careers Week, the STEM Career Fair and the Inclusivity in STEM conference.

THE ULTIMATE JOB SEARCH GUIDE

Career Compass is Ryerson's resource for post-secondary students and recent graduates. A one stop guide to launching your career, it contains advice from alumni and industry leaders; tips on career planning, social media and building a personal brand; suggestions for how to approach interviews and networking; and tools for discovering your unique skill set.

WORKING FOR RYERSON

Career Boost, Ryerson's student-employment service, offers part-time positions during the academic year and full-time placements during the summer. Use it to gain hands-on experience, build a professional portfolio, make industry connections and advance your career. The Career Boost program portfolio also includes paid work experience opportunities off campus.

CO-OPS AND INTERNSHIPS

Pursue career-related work placements while continuing your degree. Through work terms, you gain real-world experience, develop professional skills, explore career options and build a network that will be critical after graduation. All seven programs at the Faculty of Science offer a co-op option and the Career Centre offers full-service support as you search for a placement.

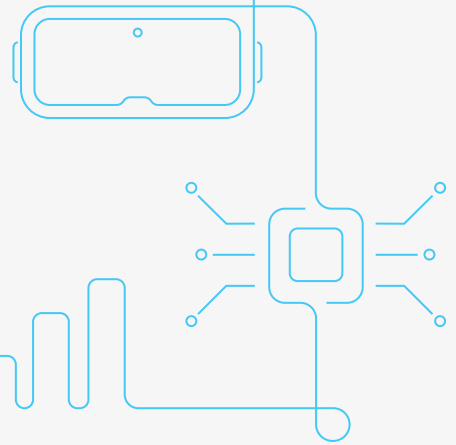
IN THE FIELD

Wildlife biologist? Web developer? Subatomic physics researcher? Our co-op students and graduates have done it all – at diverse organizations ranging from IBM and CIBC to Johnson & Johnson, SickKids Hospital, Environment Canada, and the MaRS Discovery District.



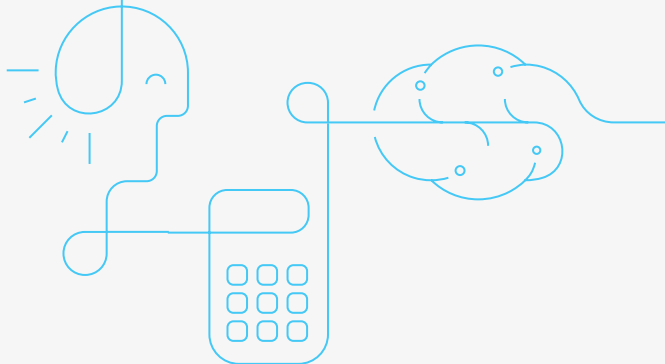
“The coaching and seminars at Ryerson’s Co-Op Office are fantastic. I got my first interview at Rogers with their help and I ended up working at the DMZ because of the diversity of my co-op experiences.”

Justin Prajza
Mathematics and Computer Science '17



“Our experiences in previous Ryerson co-ops and internships were a big factor in our ability to get the job.”

Computer Science alumni
Olsi Spahiu '18 and
Mitchell Mohorovich '18
spent their summer of
2017 at Amazon



Admissions

Prerequisite Subjects

Degree Program/Format	Ontario	American Curriculum (Honours or Advanced Placement Recommended)	International Baccalaureate (HL or SL)	Other Education Systems
Science [BSc (Hons)] FT: Four Year; Five Year Co-operative <ul style="list-style-type: none"> · Biology · Chemistry · Medical Physics · Undeclared (first-year studies only) 	English/Anglais (ENG4U/EAE4U preferred), Advanced Functions (MHF4U), and two of Physics (SPH4U), Chemistry (SCH4U) or Biology (SBI4U)	Grade 12 English, senior-level Math with Calculus, and two of Biology, Chemistry or Physics	English, Math, and two of Biology, Chemistry or Physics Math Studies is not acceptable	English, Math with Calculus, and two of Biology, Chemistry or Physics
Biomedical Sciences [BSc (Hons)] FT: Four Year; Five Year Co-operative	English/Anglais (ENG4U/EAE4U preferred), Advanced Functions (MHF4U), and two of Physics (SPH4U), Chemistry (SCH4U) or Biology (SBI4U)	Grade 12 English, senior-level Math with Calculus, and two of Biology, Chemistry or Physics	English, Math, and two of Biology, Chemistry or Physics Math Studies is not acceptable	English, Math with Calculus, and two of Biology, Chemistry or Physics
Computer Science [BSc (Hons)] FT: Four Year; Five Year Co-operative PT: First-Year Entry	English/Anglais (ENG4U/EAE4U preferred), Advanced Functions (MHF4U), one of Physics (SPH4U) or Chemistry (SCH4U) or Biology (SBI4U), and either Calculus and Vectors (MCV4U) (preferred) or Mathematics of Data Management (MDM4U)	Grade 12 English, senior-level Math with Calculus and one of Physics, Chemistry or Biology	English, Math and one of Physics, Chemistry or Biology Math Studies is not acceptable	English, Math with Calculus and one of Physics, Chemistry or Biology
Mathematics and its Applications (BSc) FT: Four Year; Five Year Co-operative	English/Anglais (ENG4U/EAE4U preferred), Advanced Functions (MHF4U), one of Calculus and Vectors (MCV4U) or Mathematics of Data Management (MDM4U), and one of Physics (SPH4U) (recommended), Biology (SBI4U) or Chemistry (SCH4U)	Grade 12 English, senior-level Math with Calculus, and one of Physics (recommended), Biology or Chemistry	English, Math, one of Physics (recommended), Biology or Chemistry Math Studies is not acceptable	English, Math with Calculus and one of Physics (recommended), Biology or Chemistry
Financial Mathematics [BSc (Hons)] FT: Four Year; Five Year Co-operative	English/Anglais (ENG4U/EAE4U preferred), Advanced Functions (MHF4U), one of Calculus and Vectors (MCV4U) or Mathematics of Data Management (MDM4U), and one of Physics (SPH4U) (recommended), Biology (SBI4U) or Chemistry (SCH4U)	Grade 12 English, senior-level Math with Calculus, and one of Physics (recommended), Biology or Chemistry	English, Math, one of Physics (recommended), Biology or Chemistry Math Studies is not acceptable	English, Math with Calculus and one of Physics (recommended), Biology or Chemistry

Legend: FT Full Time, PT Part Time

Ryerson Entrance Scholarships

If you attend a Canadian secondary school with a final average of 80% and higher, and meet the terms and conditions for a scholarship, you are guaranteed a renewable entrance scholarship according to the following values.

Final Admission Average	Total Value	Awarded in Year One	Annual Renewable Amount
95%+	\$16,000	\$4,000	\$4,000
90-94.9%	\$8,000	\$2,000	\$2,000
86-89.9%	\$4,000	\$1,000	\$1,000
80-85.9%	\$2,000	\$500	\$500

You may also qualify for a President's Entrance Scholarship (\$40,000), an International Secondary School Merit Scholarship (\$5,000), or a Terence Grier Entrance scholarship (full first-year tuition). Visit www.ryerson.ca/admissions/scholarships-awards to find out more.



ENGLISH-LANGUAGE REQUIREMENTS

If English is not your first language, or if you've lived in Canada for four years or less, you are required to present proof of English language proficiency at a satisfactory level. Visit ryerson.ca/elr.

HOW TO APPLY

Visit ryerson.ca/admissions/undergraduate/apply for detailed instructions and related links.

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Faculty of Science
ryerson.ca/science

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Science**