



Faculty of Science

# Welcome!

The Faculty of Science is dynamic and vigorous, nationally and internationally recognized for its research excellence.

The University of Windsor is a student-centred university that takes great pride in enabling people to make a better world through education, scholarship, research and engagement.

We offer you progressive, high-quality programs taught by committed faculty members. Many have been honoured for their outstanding teaching abilities, passion and dedication including three Fellows of the Royal Society of Canada, our country's highest academic honour.

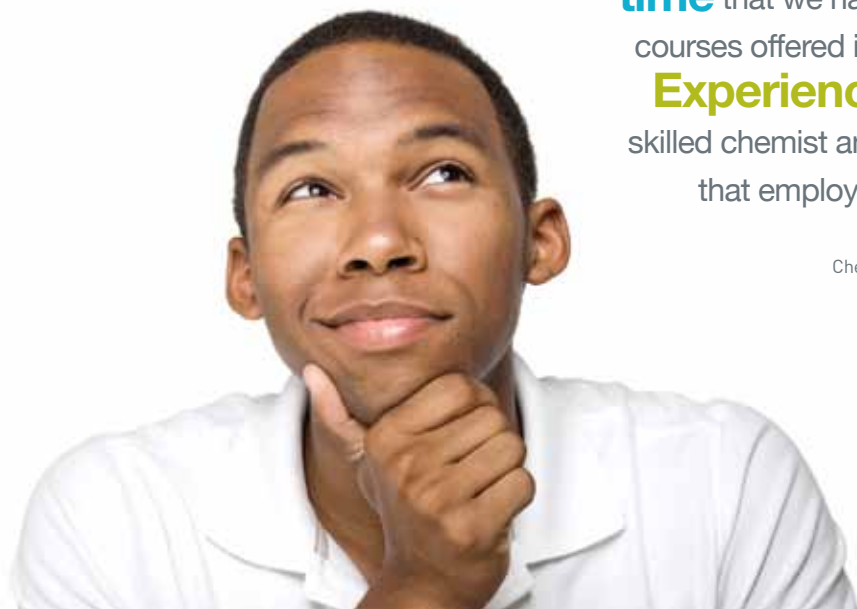
Our research receives global recognition and our scientists attract significant external private and public funding. You can be involved in research that provides a fantastic, experiential learning environment.

We have a rich diversity of programs and aggressively recruit outstanding students with competitive scholarships and bursaries.

Blaze your own trail - pursue a science degree at UWindsor!

“I really value the **extensive lab time** that we have access to as part of the courses offered in the Chemistry program. **Experience** is vital in becoming a skilled chemist and it's definitely something that employers are looking for.”

Nathan Renaud,  
Chemistry, fourth year





### DID YOU KNOW?

---

In 2010, UWindsor admitted more than 250 science students with averages higher than 90 per cent.

# Programs of Study

The academic disciplines in the Faculty of Science can be divided into Biotechnology, Computational Sciences, Environment, Life Sciences and Physical Sciences.

## Biotechnology

The biotechnology industry is a fast-growing sector of the Canadian economy with numerous opportunities for new graduates with advanced laboratory skills and a solid academic background.

Biotechnology is an applied science that uses state-of-the-art technologies in biochemistry, genetics, microbiology, molecular biology, chemistry, genomics, and proteomics.

Our Biotechnology program is designed to provide you with extensive training in both theory and practice.

The Biology and Biotechnology stream has a particular focus on DNA applications. Faculty members in Biological Sciences work in the fields of developmental and population genetics, signal transduction, bioremediation and cell cycle regulation.

The Biochemistry and Biotechnology program provides you with numerous opportunities to master the skills of isolation and characterization of proteins and nucleic acids. You will be exposed to the basics of inorganic, analytical, organic and physical

chemistry that contribute to solid foundations for an understanding of biochemistry and biology.

The following programs are available in the area of biotechnology:

### Biological Sciences

Honours Bachelor of Science

### Biochemistry

Honours Bachelor of Science

### Chemistry

Honours Bachelor of Science

## Computational Sciences

The computational sciences encompass study in the areas of mathematics, statistics, actuarial sciences, economics, computer science, physics and chemistry.

At UWindsor, we offer smaller classes and more flexibility in your program.

You are not forced to make restrictive choices about your ultimate area of interest.

Informatics is a related area of study that involves the science of collecting, manipulating, storing and retrieving recorded information. Our programs that fall within this category are Computer Science, Biology

(bioinformatics), Mathematics, and our double major in Business and Computer Science.

You will have access to state-of-the-art equipment, talented and highly respected faculty and endless opportunities to get involved with research projects even as an undergraduate student.

The following programs are available in the areas of computational sciences and informatics:

#### **Computer Science**

Bachelor of Computer Science (General or Honours\*)

- Artificial Intelligence Specialization
- Games Specialization
- Multi-Media Specialization
- Network and Security Specialization
- Applied Computing\*

#### **Concurrent Bachelor of Computer Science/Bachelor of Education (five year)**

Bachelor of Computer Science / Bachelor of Education (Honours)

#### **Computer Science**

Bachelor of Science (Honours)

- Computer Information Systems\*
- Computer Science with Software Engineering Specialization\*

#### **Business Administration and Computer Science\***

Bachelor of Commerce (Honours)

#### **Mathematics and Statistics**

Bachelor of Mathematics (General or Honours)

#### **Mathematics and Statistics**

Bachelor of Mathematics (General or Honours)

#### **Mathematics and Computer Science**

Bachelor of Mathematics (General or Honours)

#### **Concurrent Bachelor of Mathematics/Bachelor of Education (five year)**

Bachelor of Mathematics / Bachelor of Education (Honours)

#### **Economics**

Bachelor of Science Economics (Honours)

Bachelor of Arts Economics (General or Honours)

#### **Business Administration and Economics**

Bachelor of Commerce (Honours)

#### **Chemistry and Biochemistry**

Bachelor of Science (Honours)

#### **Biochemistry**

Bachelor of Science (Honours)

#### **Biochemistry and Biotechnology**

Bachelor of Science (Honours)

#### **Chemistry**

Bachelor of Science (Honours)

#### **Chemistry and Physics**

Bachelor of Science (Honours)

## **Environment**

Earth and Environmental Sciences at UWindsor is a truly multi-disciplinary department with programs such as Environmental Science and Environmental Studies.

The University of Windsor is the home of the Great Lakes Institute for Environmental Research, which features world-class researchers and facilities. GLIER is located on the shores of the Detroit River, an international waterway on the border between Canada and the US. There is no better place to study the environment than here.

The following programs are available in the area of the environment:

#### **Biological Sciences**

Bachelor of Science (Honours)

#### **Environmental Science**

Bachelor of Science (Honours)

#### **Environmental Studies**

Bachelor of Environmental Studies (Honours)

\* Co-op available

## Life Sciences

Life sciences describe the study of well-being or overall condition of an organism through the use of observation, experimental investigation and theoretical explanation. As a student of the life sciences, you will learn techniques to analyze the health of organisms and ecosystems.

The following programs are available in the area of the life sciences:

### **Biology**

Bachelor of Science (Honours)

### **Biology and Biotechnology**

Bachelor of Science (Honours)

### **Behaviour, Cognition and Neuroscience**

Bachelor of Science (Honours)

### **Concurrent Bachelor of Science (Biological Sciences)/Bachelor of Education (five year)**

Bachelor of Science / Bachelor of Education (Honours)

### **Biochemistry**

Bachelor of Science (Honours)

### **Biochemistry and Biotechnology**

Bachelor of Science (Honours)

### **General Science**

Bachelor of Science (General)

## Physical Sciences

The physical sciences include chemistry, physics and earth sciences. Evolving technology and globalization trends have transformed our world and intensified the demand for well-educated, multi-skilled, dynamic professionals.

The following programs are available in the area of physical sciences:

### **Chemistry**

Bachelor of Science (Honours)

### **Chemistry and Physics**

Bachelor of Science (Honours)

### **Biochemistry**

Bachelor of Science (Honours)

### **Biochemistry and Biotechnology**

Bachelor of Science (Honours)

### **Chemistry and Education (five year)**

Bachelor of Science / Bachelor of Education (Honours)

### **Environmental Science**

Bachelor of Science (Honours)

### **Physics\***

Bachelor of Science (Honours)

### **Chemistry and Physics**

Bachelor of Science (Honours)

### **Physics (Medical Physics)\***

Bachelor of Science (Honours)

### **Physics (Physics and High Technology)\***

Bachelor of Science (Honours)

\* Co-op available

# Experiential Learning

Practical skills are important in all areas of science. Field placements, course practicums, research projects and summer undergraduate employment are available.

Co-operative education rounds out your education by incorporating practical experience. By combining semesters of study with semesters of full-time, paid employment in career-related positions, you will be able to:

- Apply classroom knowledge to the workplace
- Gain hands-on experience related to your academic program
- Network with employers and professionals
- Explore career options and clarify your career goals
- Learn how to compete confidently in the job market
- Earn a salary to help offset the cost of tuition (all work placements are paid, full-time positions)

Faculty of Science offers the following co-op options:

## Computer Science Co-op

Bachelor of Computer Science (Honours)

- Computer Science
  - Artificial Intelligence Specialization
  - Games Specialization
  - Multi-Media Specialization
  - Network and Security Specialization
- Applied Computing

Bachelor of Science (Honours)

- Computer Information Systems
- Computer Science with Software Engineering Specialization

Bachelor of Commerce (Honours)

- Business Administration and Computer Science

## Physics Co-op

Bachelor of Science (Honours)

- Physics
- Physics (Physics and High Technology)
- Physics (Medical Physics)

“ My first co-op placement was at Proto Manufacturing Ltd. where **I was employed** as a lab technician and my second was a research position at TRIUMF (Canada’s Lab for Particle and Nuclear Physics). The Medical Physics co-op program combines academics with **professional development**. Sometimes academics alone cannot facilitate a career – one needs **experience in the field**. My co-op program has allowed me to do that. ”

Khadija Sheikh,  
Medical Physics (Co-op), third year



# Academics

## Sample first-year schedule

At the University of Windsor, you typically take five courses per semester, plus labs and/or tutorials. Specific course selections will depend on your specific program. The following chart indicates the courses that a typical, first-year science student would take. Your specific course selection may differ.

PROGRAM	FALL SEMESTER	WINTER SEMESTER
Biological Sciences	Cell Biology General Chemistry I Calculus Science elective Arts or Social Science elective	Biological Diversity General Chemistry II Statistics Science elective Arts or Social Science elective
Chemistry and Biochemistry	General Chemistry I Cell Biology or Linear Algebra I Differential Calculus Introductory Physics I Arts or Social Science elective	General Chemistry II Biological Diversity or Elective Integral Calculus Introductory Physics II Elective
Computer Science	Algorithms and Programming I Key Concepts in Computer Science Elements of Calculus or Differential Calculus Linear Algebra I Arts or Social Science elective	Algorithms and Programming II Mathematical Foundations Statistics or Integral Calculus Elective Elective
Earth and Environmental Sciences	Introduction to Environmental Science Cell Biology General Chemistry I Elements of Calculus Elective	Introduction to Earth Science Biological Diversity General Chemistry II Statistics for the Sciences Elective Elective
Economics	Introduction to Economics I Computer Concepts for End-Users Differential Calculus Linear Algebra I Elective	Introduction to Economics II Mathematical Foundations Integral Calculus Elective one Elective two
Mathematics and Statistics	Linear Algebra I Differential Calculus Algorithms and Programming I Arts or Social Science elective Elective	Mathematical Foundations Integral Calculus Algorithms and Programming II Elective one Elective two
Physics	Introductory Physics I General Chemistry I Linear Algebra I Differential Calculus Elective	Introductory Physics II General Chemistry II Theoretical Methods Integral Calculus Elective

## Scholarships

The University of Windsor provides an impressive and competitive array of awards and financial aid programs that encourage and recognize academic achievement and help support students with financial difficulties.

### Renewable Entrance Scholarship

80 – 83.9%	\$400/term, renewable for up to a total of 8 terms
84 – 86.9%	\$600/term, renewable for up to a total of 8 terms
87 – 89.9%	\$800/term, renewable for up to a total of 8 terms
90 – 93.9%	\$1,250 /term, renewable for up to a total of 8 terms
94 – 95.9%	\$1,500/term, renewable for up to a total of 8 terms
96 – 97.9%	\$1,750/term, renewable for up to a total of 8 terms
98 – 100%	\$2,000/term, renewable for up to a total of 8 terms

To renew an Entrance Scholarship, you must be registered full-time and maintain an A- cumulative average.

### Outstanding Scholars Award

Depending upon your academic average and program of study, you could be eligible for the University's Outstanding Scholars Program. The program's intent is to build leaders or mentors, and reward academically strong students entering a particular program. Recipients of the Outstanding Scholars award are also mentored in their first year, in preparation for appointments. To maintain eligibility, students must achieve a minimum A- at the end of each semester along with other criteria. [www.uwindsor.ca/outstandingscholars/eligibility](http://www.uwindsor.ca/outstandingscholars/eligibility)

INCOMING SCHOLARSHIP AVERAGE	AWARD (per term)	GUARANTEED APPOINTMENT* (per term, beginning in term 3)	MAXIMUM VALUE
85 - 89.9%	\$750	\$1,000	\$12,000
90 - 94.9%	\$1,000	\$1,000	\$14,000
95 - 100%	\$1,250	\$1,000	\$16,000

\* Honorarium granted for academic appointment conducted under faculty supervision: 100 hours per term.

**Participating programs:** Chemistry (not Biochemistry), Computer Science (all Honours programs), Economics (not Business and Economics), Environmental Science, Mathematics and Statistics, and Physics.

### DID YOU KNOW?

In the winter 2011 semester, the Faculty of Science had 107 Outstanding Scholars.

For more information on these and other scholarships, awards and bursaries, visit [www.uwindsor.ca/awards](http://www.uwindsor.ca/awards)

Dr. Barb Zielinski and Dr. Lynda Corkum



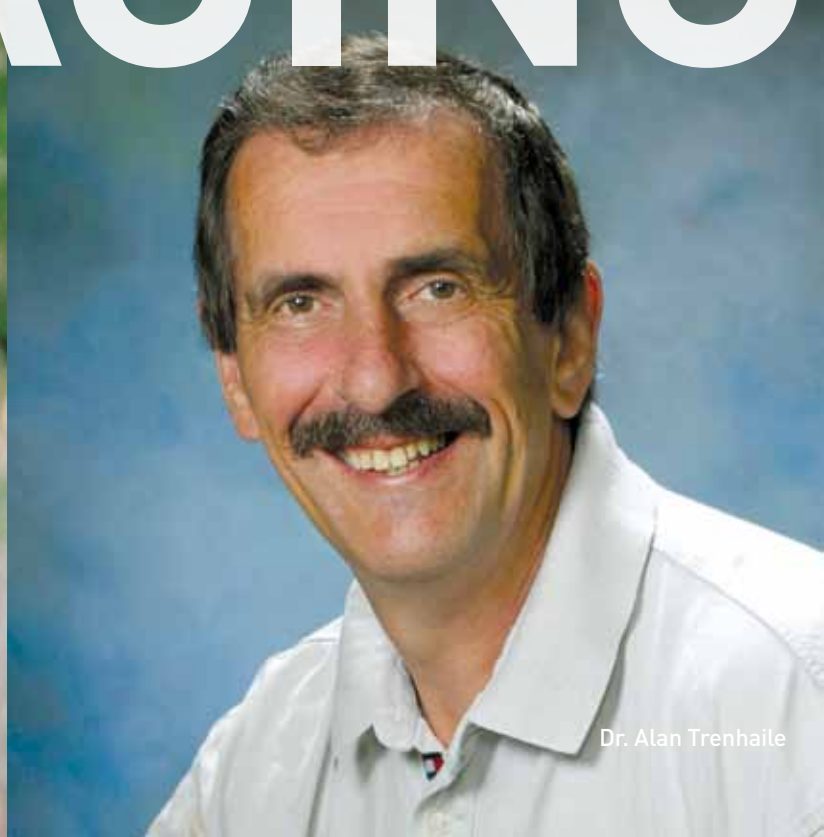
Dr. Akshai Aggarwal, Dr. Siyaram Pandey and Dr. Richard Frost



# ENGAGING



Dr. Daniel Mennill



Dr. Alan Trenhaile

# Teaching Excellence

## Dr. Akshai Aggarwal, School of Computer Science

Ontario Confederation of University Faculty Association (OCUFA) Award winner as one of the top professors in the province, and Alumni Association Distinguished Teaching Award winner

“Dr. Aggarwal is a devoted teacher. His in-depth knowledge and experience make him one of the most respected and admirable instructors. As a thesis supervisor, he provides his consistency and enthusiasm in encouraging and inspiring students to explore an unknown world.”

Fiona Du MSc '04, Senior Application Program, Information Technology, University of Windsor

## Dr. Barb Zielinski and Dr. Lynda Corkum, Biological Sciences

Alumni Association Excellence in Mentoring Award winners

“Dr. Corkum really cares about her students and puts every effort into helping them become better scientists. While doing so, she also manages to express a lot of concern and support for their personal development.”

Dr. David Chalcraft BSc Honours in Biology '94, assistant professor, Biology, East Carolina University; adjunct assistant professor in the Dept. of Zoology, North Carolina State University

“I was lucky enough to secure a position in the laboratory of Dr. Barbara Zielinski and remained with her throughout my undergraduate career. Dr. Zielinski would often take time to walk me through processes and always kept an open-door policy.”

Jessica Vaisica BSc Honours in Biochemistry and Biotechnology '06, PhD in Biochemistry candidate, University of Toronto

## Dr. Lana Lee, Chemistry and Biochemistry

Alumni Association Excellence in Mentoring Award winner

“Mentors like Dr. Lee are important to help those at the undergraduate level acquire the skills to be competitive enough to enter medical school.”

Joel Liem BSc '96, allergy and clinical immunologist, Windsor Allergy Asthma Associates, director of the Windsor Allergy Asthma Education Centre

## Dr. Siyaram Pandey, Chemistry and Biochemistry

Alumni Association Distinguished Teaching Award winner

“Dr. Pandey’s patience was instrumental in my learning experience. He demonstrated that, if you have an interest in a topic, there is no limit to what you can learn.”

Jennifer Vergel de Dios, BSc Honours Biology and Psychology '05, University of Toronto School of Medicine

## Dr. Richard Frost, School of Computer Science

Leadership in Faculty Teaching Award winner, Alumni Association Distinguished Teaching Award winner

“Dr. Frost has inspired me by setting an example and treating me equally in our collaborations, which is why I have developed enthusiasm for research.”

Rahmatullah Hafiz, BSc '07, PhD Candidate, Computer Science

## Dr. Alan Trenhaile, Earth and Environmental Sciences

Alumni Association Distinguished Teaching Award winner, OCUFA Award winner

“As a teacher today, I still refer to the materials that Dr. Trenhaile has produced. It was through his dedication to research and his drive to enlighten academics that I have been able to transfer a wealth of knowledge to my own classes.”

S. L. Neuts HonsBA '90 and BEd '99, vice principal, Walkerville Collegiate Institute

## Dr. Daniel Mennill, Biological Sciences

Alumni Association Distinguished Teaching Award winner

“Dr. Mennill is an extremely dynamic and energetic lecturer. Throughout my undergraduate degree and all the courses I’ve taken, he definitely stands out as a person who is very passionate about what he does.”

Julie Koloff, BSc '08, MSc '10

# Research Excellence

Our faculty members include prestigious Canada Research Chairs and Fellows of the Royal Society of Canada. We have a well-deserved reputation for excellence that continues to grow.

In the past three years, professors in the Faculty of Science received more than \$42 million in external funding in support of their research. Here are just a few of our researchers:

#### **Dr. Gordon Drake, Physics**

In 2006, Dr. Drake was named editor of the internationally respected *Physical Review A*, which focuses on atomic, molecular and optical physics. This is the first time the editorship has been based outside the US.

#### **Dr. Hugh MacIsaac, Biological Sciences**

Dr. MacIsaac is director of the Canadian Aquatic Invasive Species Network. Unique in the world, it resolves problems caused by invasive species in our national waterways.

#### **Dr. Lisa Porter, Biological Sciences**

Dr. Porter's research focuses on mechanisms that regulate cell growth to develop novel therapeutics for specific forms of cancer. She and her team employ advanced tissue culture techniques and animal models to study the implications that these mechanisms can have, not only in breast cancer, but also in brain cancer.

#### **Dr. Stephen Loeb, Chemistry**

Dr. Stephen Loeb is the Canada Research Chair in Supramolecular Chemistry and Functional Materials in the Centre for Catalysis and Materials Research. Dr. Loeb and other researchers at the Centre are seeking to uncover new catalysts for the production of polymers, bulk chemicals, specialty products and pharmaceuticals. The team will use funding from the Canada Research Chair to help develop approaches to the alteration of traditional polymers and the discovery of new polymers and solid-state materials.

#### **Dr. Aaron Fisk, Earth and Environmental Sciences**

Dr. Fisk's research examines the structure, function, and flow of nutrients in aquatic food webs. Dr. Fisk is developing tools to study ecosystem structure that will provide new information on how ecosystems function and react to environmental stressors.

### **Dr. Sherah VanLaerhoven, Biological Sciences**

Dr. VanLaerhoven is an active forensic scientist, one of only two forensic entomologists in Canada. She was named a recipient of Canada's Top 40 Under 40™ award which celebrates the achievements of 40 Canadians in the private, public, and not-for-profit sectors, who have reached a significant level of success before age 40. The winners were selected from more than 1,400 nominees.

### **Dr. Sudhir Paul, Mathematics and Statistics**

Dr. Paul was recognized by the American Statistical Association for his outstanding contributions to statistical methodology, especially contingency tables, discrete generalized linear models, over-dispersion, zero-inflation, familial correlations, toxicology, for excellence in teaching, and for service to the statistical profession.

### **Canada Research Chairs**

**Dr. Aaron Fisk**, Trophic Ecology

**Dr. Robin Gras**, Probabilistic Heuristics and Bioinformatics

**Dr. Douglas Haffner**, Environmental Health

**Dr. Daniel Heath**, Conservation Genetics

**Dr. Stephen Loeb**, Supramolecular Chemistry and Fundamental Materials

**Dr. Jeremy Rawson**, Molecular Materials

### **Fellows of the Royal Society of Canada**

**Dr. Gordon Drake**, Physics

**Dr. Brian Fryer**, Earth and Environmental Sciences and Great Lakes Institute for Environmental Research

**Dr. William McConkey**, Physics

### **Other Research Chairs**

**Dr. Roman Maev**, Physics, NSERC/Chrysler Canada/University of Windsor Industrial Research Chair in Applied Solid State Physics and Materials Characterization

**Dr. Hugh MacIsaac**, Biological Sciences and Great Lakes Institute for Environmental Research, Department of Fisheries and Oceans Canada Invasive Species Research Chair

**Dr. Bulent Mutus**, Chemistry and Biochemistry, University of Windsor Research Leadership Chair (Senior)

**Dr. Lisa Porter**, Biological Sciences, Assumption University/University of Windsor Cancer Research Chair

To find out more, visit:  
[www.uwindsor.ca/science](http://www.uwindsor.ca/science)

# Focus on Students

The University of Windsor is a student-centred university that takes great pride in enabling people to make a better world through education, scholarship, research and engagement.

We are committed to learning excellence. The Faculty of Science invested more than \$1.7 million to improve undergraduate teaching labs and the infrastructure to support teaching. This included the addition of a resource centre specifically for use by first-year chemistry and physics students. Resource centres are also available to students in the areas of computer science, earth and environmental sciences, economics, and mathematics and statistics.

## International opportunities

No matter what your program, you can apply to spend one or two semesters (typically in year three) studying at another university overseas. Most courses taken this way will be recognized for credit in UWindsor programs. Many partner schools are in English-speaking countries such as Australia, Ireland, New Zealand, and the United Kingdom. For others, such as France, Germany, Italy, Spain, second-language proficiency is suggested. For co-op students, it is possible to combine a full-semester study exchange with a winter semester work placement overseas. For details, visit the student exchange website at [www.uwindsor.ca/exchange](http://www.uwindsor.ca/exchange)

## Student life

As a student in the Faculty of Science, you'll have many opportunities to get involved, both on campus, and in the community, network with others with similar interests, meet new people, increase academic performance and find your school spirit. Get involved and make a difference!

## Clubs on Campus

- Science Society
- Pre-Dental Club
- Pre-Med Club
- BCN Students Association (Behaviour, Cognition and Neuroscience)
- Biology Club
- Biotechnology Association
- Chemistry and Biochemistry Association
- Computer Science Society
- Jull Earth Sciences Club (In memory of Dr. Robert K. Jull)
- Math + Stats Club
- Physics Club

## Tutoring Services for Science Students

- Beyond Ordinary Motivation Club

# Career Options

Some career options in the sciences may include:

## Biology

- Professional programs such as medicine, dentistry, pharmacy or other health-related sciences
- R&D in industry or government
- Environmental research and monitoring

## Biology/Biotechnology

- R&D
- Quality control
- Clinical research
- Manufacturing and production
- Government and regulatory affairs
- Information systems

## Biochemistry and Chemistry

- Professional programs such as medicine, dentistry or pharmacy
- Biopharmaceutical and biotechnology industries
- University or government research laboratories
- Clinical investigations and medical research

## Computer Science

- Computer science, programming
- Computer, network or database administration
- Software engineering
- Systems analysis
- Game development
- Artificial Intelligence

## Economics

- Government and public policy analysis
- Banking
- Finance
- Corporate or competitive strategy
- Economic research/consultation
- Stockbrokering
- Forecasting

## Environmental Science

- Environmental consulting companies
- Resource industries
- Industrial compliance, environmental law
- Government (environmental quality control/monitoring)
- Environmental management and conservation

## Mathematics and Statistics

- Actuarial science
- Statistician
- Teaching
- Computer science
- Consulting
- Entry into law or medical programs

## Physics

- Industry, government research, medicine, and financial services
- High-technology industry
- Medical Physics

## Professional preparation

The Faculty of Science provides an excellent foundation for a wide range of professional career choices. Our on-campus counsellors can guide you in selecting your professional career. “What program should I take to go into medicine?” The fact is, it really doesn’t matter. Medical schools are moving toward requiring applicants to be making progress toward a four-year honours degree, which provides a good career alternative should your plans change. At least one local physician was accepted into medical school with a degree in mathematics. We know the requirements of the medical schools in Canada and the US and can offer the most up-to-date information.

Our Pre-Med Club, open to various pre-professional students, offers interview preparation and debriefing, seminars by former students now in medical school, and recommendations on volunteer opportunities to enhance your chances of success. Many of our graduates go on to pursue a Master’s (MSc) or Doctoral (PhD) degree. Ultimately, we encourage you to study a subject you love. This is the true recipe for success.



## Visit us

### Campus Tours

1 p.m. Weekdays  
Except holidays (limited tours during December and April)

1 p.m. Saturdays  
During October, November, March and May

Book on-line [www.uwindsor.ca/tour](http://www.uwindsor.ca/tour)  
Toll-Free: (Canada/US): 1-800-864-2860  
Please call one week in advance.

### Contact Information

#### Office of Liaison & Student Recruitment

University of Windsor  
Windsor, Ontario N9B 3P4  
519-973-7014  
Toll-Free: (Canada/US): 1-800-864-2860  
[liaison@uwindsor.ca](mailto:liaison@uwindsor.ca)

#### Faculty of Science

519-253-3000 Ext. 3009  
[science@uwindsor.ca](mailto:science@uwindsor.ca)  
[www.uwindsor.ca/science](http://www.uwindsor.ca/science)

#### Biological Sciences

[www.uwindsor.ca/biology](http://www.uwindsor.ca/biology)

#### Chemistry and Biochemistry

[www.uwindsor.ca/chemistry](http://www.uwindsor.ca/chemistry)

#### Computer Science

[www.cs.uwindsor.ca](http://www.cs.uwindsor.ca)

#### Earth and Environmental Sciences

[www.uwindsor.ca/earth](http://www.uwindsor.ca/earth)

#### Economics

[www.uwindsor.ca/economics](http://www.uwindsor.ca/economics)

#### Mathematics and Statistics

[www.uwindsor.ca/math](http://www.uwindsor.ca/math)

#### Physics

[www.uwindsor.ca/physics](http://www.uwindsor.ca/physics)

For the most up-to-date program offerings,  
visit [www.uwindsor.ca/calendar](http://www.uwindsor.ca/calendar)

Have a question? Ask a Liaison Officer:  
[www.uwindsor.ca/questions](http://www.uwindsor.ca/questions)

