Chemistry is all around us. Often called the central science, chemistry examines the processes that produce our food, clothes, medicines and hundreds of materials we use every day.

Where can we see chemistry in our daily lives?

Chemists have developed compounds such as cortisone, penicillin and AZT that save lives and relieve symptoms of disease.

Chemists have made important contributions to radiation therapy, water purification and DNA fingerprinting.

Chemists have also developed fertilizers and pesticides to improve food production, and developed new materials such as plastics, ceramics, and nanomaterials to benefit society.

And although some chemicals have had an adverse effect on the environment, it will be through chemistry that we will find a solution to these problems.

The Carleton advantage

The Department of Chemistry at Carleton University combines expertise in all the main areas of chemistry, including biochemistry and environmental chemistry.

The department carries out active research in a wide variety of areas, including:

- the synthesis of new polymeric materials for use in optical storage devices in the computer industry;
- development of new techniques for the removal of toxic materials from aquatic environments;
- the search for new antioxidants with properties superior to Vitamin E;
- development of new procedures for the detection of heavy metal contaminants in soil;
- the identification of components of fungal metabolites in agricultural products; and
- the synthesis of nanoscale materials for use in the microelectronics industry.

First-class facilities

As a student in our first-year Chemistry courses, you will be able to conduct your lab work in Carleton’s $5 million, 6,500 square foot Superlab. You will be assigned your own workspace, consisting of bench space, drawers and a shared fumehood. Sophisticated audio/visual equipment, preparation
labs, storage cabinets for chemical samples and a hallway lined with blackboards for student use add to this unparalleled resource for Carleton students.

Co-op opportunities
Our co-op option for Honours students allows you to integrate your classroom work with real work experience. You could be assigned to a four- or eight-month industrial work-term placement. Both you and the employer benefit from these longer work placements as they often allow you to see your projects through from start to finish.

Chemistry students can work on both co-op and summer projects with scientists at the National Research Council of Canada, Environment Canada, Health Canada and many other government agencies. Some students work in the area of high tech at such places as Canadian Bank Note (e.g., the inks and holograms used in passports and money are produced using sophisticated technology). Other employers include Syncrude Canada, the Department of National Defence, Environment Canada, and Natural Resources Canada.

Hands-on research
At Carleton, we also believe you should gain real research experience before you graduate. That is why, in addition to your regular course work, we provide you with a number of valuable hands-on opportunities to assist faculty members with research and teaching.

Summer research scholarships are available after each undergraduate year, and faculty members regularly hire undergraduate students as summer research assistants. As a senior undergraduate student, you may also obtain a paid position as a laboratory demonstrator or marker to assist faculty, technical staff and graduate students in the operation of first- and second-year labs.

The capital advantage
Over the years, the university has developed strong links with Ottawa-based hospitals, governmental departments, medical research facilities and high-tech organizations. Our location in the nation’s capital offers our students access to faculty members/lecturers involved directly in the scientific community, study space in national libraries, state-of-the-art laboratories and equipment, and excellent work and research opportunities.
Innovative programs
Nanotechnology

Students in the Bachelor of Science (BSc) Honours program in Chemistry can choose to pursue a concentration in Nanotechnology.

Nanotechnology techniques involve the synthesis and characterization of new materials containing only a few atoms deposited on a surface or a self-assembly of molecules.

Applications of nanotechnology have already given rise to a host of novel materials with enhanced strength and flexibility for the aerospace industry.

In medicine, new methods of drug delivery via controlled time release and new treatments for cancer have come about from nanotechnological advances. Undoubtedly, future applications of nanotechnology will be visible in many areas including the development of microchips for the electronics industry.

Choosing the right program

Bachelor of Science (Honours)
Bachelor of Science (General)
Honours and Combined Honours programs

If you are planning to attend graduate school and your goal is to become a professional chemist, you should consider the four-year Bachelor of Science (Honours) program. This program offers the following options:

- Chemistry
- Chemistry, co-op stream (including 12 months of work terms)
- Chemistry, with a concentration in Nanotechnology

It is also possible to complete a four-year Combined Honours degree in:

- Chemistry and Physics
- Chemistry and Earth Sciences

General programs

You can also choose to study Chemistry as a three-year General program. You can change from a BSc (General) to a BSc (Honours) program by taking additional credits and maintaining a certain Grade Point Average (GPA).

Course overview

Required courses in your first year include chemistry, physics, calculus and algebra. Electives can include one of biology, earth sciences or computer science, and one course in arts or social sciences.
You will begin to concentrate more on chemistry in second year with physical, organic and analytical chemistry courses, and computational chemistry as an option. Mathematics and a non-science course are also recommended.

In your third year, you can begin to specialize. You can also take optional courses in computational, industrial, biochemical, nano-, and environmental chemistry.

In the final year of the Honours program, you will undertake a research project with a faculty member that will help prepare you for independent work in graduate studies or employment upon graduation. This is a feature of our honours programs that is very attractive to potential employers.

Your first-year experience
First-year seminar
Carleton introduces you to issues of contemporary science in Seminar in Science (NSCI 1000), a first-year seminar course. You will attend six special lectures given by prominent Canadian researchers, as well as small group seminars led by a professor who acts as both your mentor and teacher.

Through assignments, presentations and discussions, you will develop the analytical and communication skills needed for success in the world of science.

A sample first year
- 1.0 credit in General Chemistry
- 1.0 credit in Introductory Mechanics and Thermodynamics and Introductory Electromagnetism and Wave Motion or in Elementary University Physics
- 0.5 credit in Calculus
- 0.5 credit in Linear Algebra
- 0.5 credit in Seminar in Science (NSCI 1000)
- 0.5 credit in computer science
- credit in arts or social sciences electives

Note: there are requirements for the Bachelor of Science that will help you choose your electives. Consult the Regulations and Programs sections of the Carleton University Undergraduate Calendar at carleton.ca/cuuc.
Future opportunities

The workplace
A Bachelor of Science degree in Chemistry opens the door to a variety of careers. Chemists are needed in both the private and public sectors in jobs ranging from research to marketing. Companies hire Carleton graduates to conduct research on drugs, paints, petrochemicals and mineral extraction. Government laboratories hire our chemists for research on pollution control, drugs, water quality, crime detection and a host of other areas. The Combined Honours stream prepares you for careers in chemistry, physics or geology, depending on the program you choose.

Our General degree program will prepare you for the more technical areas of chemistry or for a career in another field, such as technical sales.

Graduate studies
Graduates of any of our Honours programs are generally well qualified to go on to graduate studies in Chemistry. If you think that you may wish to pursue an advanced degree, you are encouraged to investigate graduate programs early in order to ensure that your program is suited to meet the relevant graduate-level requirements.

Professional programs
Many professional programs, including teaching, medicine, dentistry, business and law, encourage well-rounded applicants from a variety of backgrounds to apply. Chemistry provides a strong foundation for such programs.

William Turnbull, fourth-year Chemistry student
The Chemistry program at Carleton is truly amazing. Whether you’re in a lecture, or doing an experiment in the lab, the instructors are there to guide you every step of the way. They show a passion for teaching that you won’t find anywhere else. Countless opportunities are available for students to get hands-on experience doing research in a laboratory environment. Carleton has empowered me with the skills I need to succeed in graduate studies, in the workplace, and in my future.
FAQs

1. Why would I choose an Honours program?
   Honours programs have many advantages including offering more courses in your chosen field, as well as preparing you for graduate studies, professional programs and employment.

2. When do I have to declare a major?
   You will need to choose a major by the end of your first year. Course registration is generally easier for students who have declared a major, so even if you are not 100 per cent certain, it is best to choose a major upfront and change it later if you need to.

3. Where can I go for academic advice?
   The first place to go is the Chemistry Department, where academic advisors are familiar with all aspects of Chemistry programs. In addition, our Student Academic Success Centre offers a range of services including academic advising and free study-skill development workshops. carleton.ca/sasc

   You can also take advantage of our Science Student Success Centre, which was created specifically to address the needs of science students. Personnel from the Centre advise students on how to manage their workload, prepare for class, take good notes, and study for exams. They also are available to meet one-on-one with students to help them draft an individual study plan, discuss career goals, or answer any questions. carleton.ca/ssssc

Admission requirements

For admission to the Chemistry program, you must have the Ontario Secondary School Diploma (OSSD) or equivalent including a minimum of six 4 U/M courses.

Your six 4 U/M courses must include Advanced Functions and two of Biology, Chemistry, Earth and Space Science, or Physics. Calculus and Vectors is also strongly recommended.

It is Carleton University policy to consider your best performance in any eligible course in the admissions assessment. Since the number of qualified applicants may be greater than the number of available spaces, cut-off averages and required marks may vary. Please refer to our website at admissions.carleton.ca/requirements for the current admission requirements.

For more information

...about Chemistry programs at Carleton, please visit carleton.ca/chemistry or consult the Carleton University Undergraduate Calendar website at carleton.ca/cuuc.
Do you want more information? Please contact us at:

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**Undergraduate Recruitment Office**  
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Toll-free in Canada: 1-888-354-4414  
Fax: 613-520-3847  
Email: liaison@carleton.ca  
Website: carleton.ca/admissions

This document is available in a variety of accessible formats upon request. A request can be made on the Carleton University website at: carleton.ca/accessibility/request.
For more information on all of Carleton’s undergraduate programs, visit

admissions.carleton.ca

where you can browse program descriptions, career possibilities, and electronic versions of all of our program guides. You can also check out financial aid options, book a tour, sign up for our monthly newsletter, watch Carleton videos, and connect with us on social media.

You may also wish to consult our current

Admissions Viewbook

We look forward to hearing from you!