Engineering and Design

VIEWBOOK

Ottawa, Canada
carleton.ca/engineering-design

Carleton University

Challenge what's possible

Carleton University is united in driving real change for a more inclusive and sustainable tomorrow.

The Faculty of Engineering and Design at Carleton offers engineering, information technology, industrial design and architecture programs from our beautiful campus overlooking the Rideau River and the Rideau Canal in Ottawa, the national capital of Canada.

Many of our programs offer additional opportunities for specialization through concentrations and streams, giving you the flexibility to select a degree that best reflects your interests and career goals. You will be trained by professors who are renowned experts in their fields and engage in research on both the national and international stages. You will have access to state-of-the-art facilities and laboratories, design studios and advanced computer and networking platforms. With your future in mind, Carleton provides a stimulating and supportive community for your studies. You will work on challenging and rewarding team projects and conduct fieldwork with industry and government organizations that will prepare you for a rewarding career in a highly desirable field.

Join our connected and caring Engineering and Design community at Carleton.

Take a tour

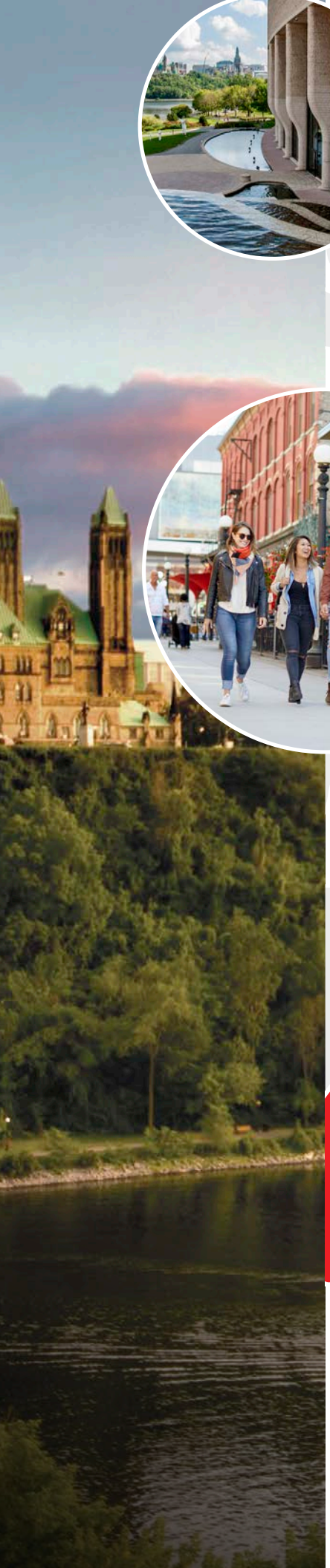
Attend our events

Study in Ottawa

CONNECTING YOU TO THE WORLD

The city of Ottawa is located within unceded traditional Anishinàbeg Algonquin territory. Over a million people call Ottawa home. It is an architecturally and environmentally stunning city surrounded by waterways, blending urban and rural beauty and providing year-round outdoor activities. It is a perfect blend of big-city resources and small-town connections.

The name Ottawa is derived from the Algonquin word Odawa, meaning “to trade.” It is a place of achievement and career opportunities, a research and development hub and heart of the federal government. The National Capital Region is a major economic engine, home to world-class industries, research centres and operations by major international companies.



Culture and engagement

Ottawa is home to seven of Canada's nine national museums and host to more than 50 local, national and international film, literary, music, food and cultural festivals.

Unique landmarks and experiences

Both a UNESCO World Heritage Site and a National Historic Site of Canada, the Rideau Canal is a 202 km historic waterway that connects a series of beautiful lakes and rivers. You can explore this major attraction all year — along its banks and sidewalks, on its water and as a 7.8 km skateway in the winter.

Ottawa's city centre

Discover shopping, dining, arts and entertainment in Ottawa's historic ByWard Market. Browse the outdoor farmers' market and artisan shops on the weekend, grab dinner with friends or stroll the bustling streets.

An entrepreneurial and global technology powerhouse

Ottawa boasts a vibrant entrepreneurial culture and is home to Kanata North, a global technology hub. The CU@Kanata innovation space allows our students to engage with more than 540 of its companies.

Central location

Carleton is 200 km from Montréal, 400 km from Toronto and 80 km to New York state. Ottawa is home to an international airport, two VIA Rail train stations and a stop on the Rider Express bus service.

The Academic Support Office helps engineering students with course selection, registration and learning support from first-year through to graduation.

Make the Transition

Carleton University offers a network of support services to help you make a successful transition to university. We continue that support throughout your degree to help you achieve your academic and personal goals.

Some first-year resources

- **Bachelor of Engineering** students have access to a dedicated team of professionals (known as the Academic Support Office) that can support with academic advising, peer tutoring and course registration assistance.
  - **Course registration:** detailed videos, checklists and a support team to assist with first-year course registration.
  - **Foundations of engineering course:** optional, self-paced online course offered in the summer to help students review key math and physics concepts.
  - **Elsie MacGill Learning Centre:** in-person or online peer-led tutoring sessions. Offered in a group or individual setting.
  - **Academic Advising:** full-time staff members who can support with course selection, program options, course availability, engineering electives and academic performance evaluation information.
- **Bachelor of Information Technology** students can access **bitdegree.ca** for information on their program. Academic advisors from both Algonquin College and Carleton University are available to help.
- **Bachelor of Architectural Studies** students can find information on registration, suggested electives, announcements and events at **carleton.ca/architecture**. Staff are available to answer program questions and help with registration. Academic advisors are available by appointment.
- **Bachelor of Industrial Design** students can access **carleton.ca/id** for important information on registration, computer requirements, suggested electives, Orientation Week activities and more. Staff are available to assist with questions and can direct you to academic advice.

Student services and support

Carleton is here to help you succeed. Our university-wide resources will help you maintain a positive educational and personal

experience. Use the search tool on the Current Students site for ongoing questions about services offered on campus. **students.carleton.ca**

Awards and Financial Aid
Access various financial aid and awards programs to reward academic achievement and to provide financial assistance. This includes undergraduate scholarships (entrance and prestige), bursary and work study programs and government-sponsored financial aid programs such as the Ontario Student Assistance Program (OSAP). **carleton.ca/awards**

Centre for Student Academic Support
Programs offered through Carleton's centralized learning support centre can help you with academic reading and note-taking, time and stress management, multiple-choice and general exam preparation and more. **carleton.ca/csa**s

Future Learning Lab
The Future Learning Lab and its Experiential Learning Hub is in the MacOdrum Library. The Hub features a teaching studio, a creation studio, and an experience studio. The three studios will support experiential learning through the use and the development of XR media and enhancement of Carleton's students' skills in new media and digital literacies. **library.carleton.ca**

Carleton's Future Learning Lab brings educators and students together to share, research and collaborate on innovative teaching and learning activities.


Carleton is home to state-of-the-art research and learning facilitates. Our students graduate with hands-on, practical knowledge.

Health and Counselling Services
Our multidisciplinary on-campus health and counselling clinic provides medical, mental health and counselling services, in addition to wellness resources, health promotion and care and support for Carleton students. **carleton.ca/health**

International Student Services Office
The office's services and programs contribute to positive international experiences for all Carleton students. With programming such as events, workshops, transition and engagement support, immigration and information support and more. **carleton.ca/isso**

Paul Menton Centre for Students with Disabilities
The centre offers a wide range of services including academic accommodations, attendant services, alternate formats, adaptive technology, note-taking, sign language interpretation, learning support and services specific to students' education-related visible and non-visible disability needs. **carleton.ca/pmc**

Recreation and Athletics
The Department of Recreation and Athletics provides a broad spectrum of sport, fitness and recreational opportunities for students and the Carleton community. This includes aquatic programs, fitness classes, league sports and more. **athletics.carleton.ca**

Student Experience Office
The office offers a variety of support throughout your program, such as: orientations, tours, information gathering sessions, leadership and professional development opportunities (Co-Curricular Record) and parent and family outreach newsletters/events. **carleton.ca/seo**

The Elsie MacGill Learning Centre supports first-year engineering students with the transition from high school to university.

Prepare for Your Career

With Carleton being in the National Capital Region, home to one of Canada's largest concentrations of government agencies and high-tech companies, we offer a unique opportunity to gain practical experience and solve real-world problems.

3rd largest CO-OP PROGRAM in Ontario*

A no matching/ranking hiring process

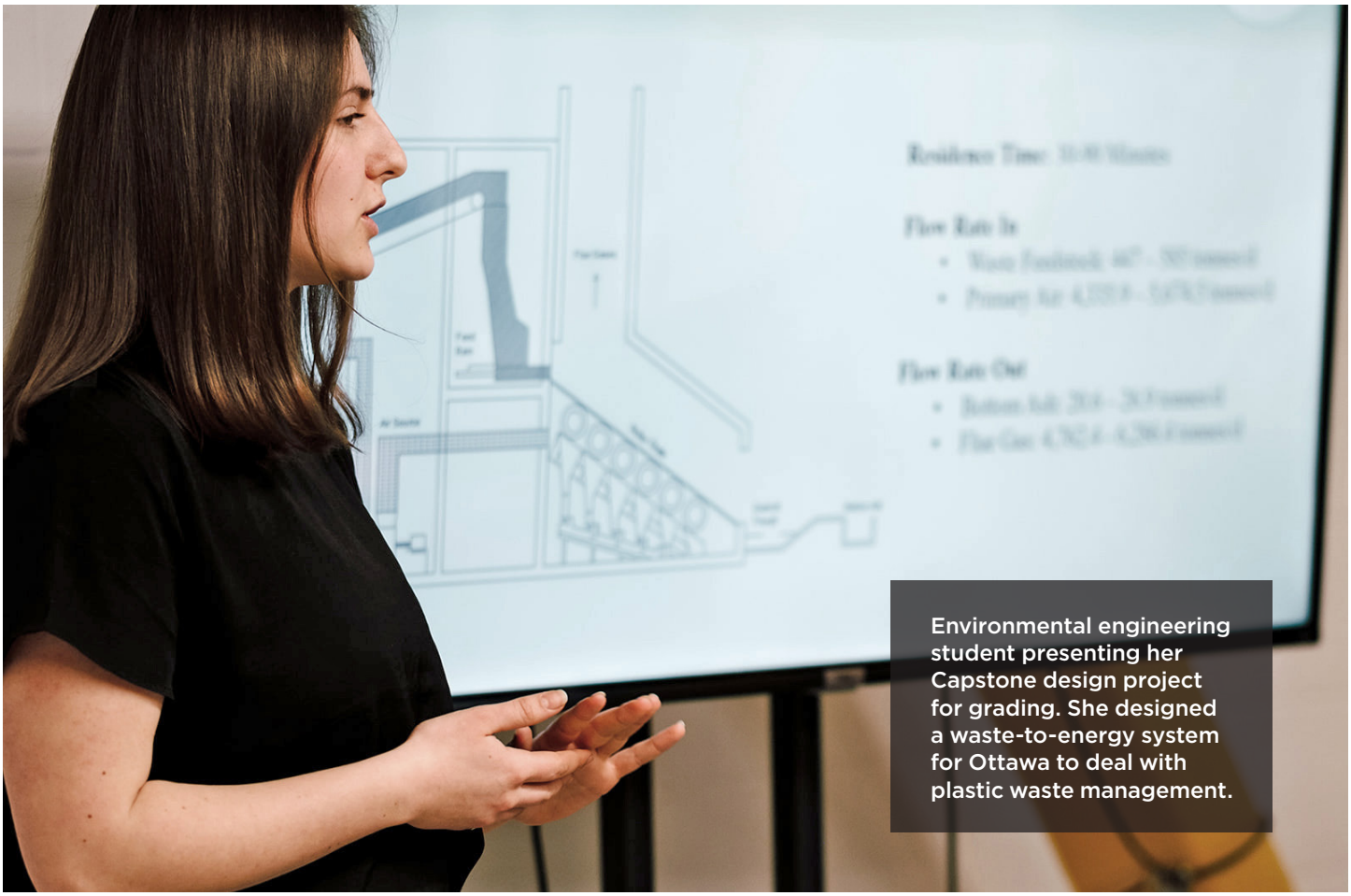
Access federal government agencies and companies in CANADA'S LARGEST TECHNOLOGY PARK

**For all of Carleton University in 2023.*

How Co-op works

Each of our engineering, information technology, industrial design and architecture programs includes a paid Co-op option with work terms of 4, 8, 12, or 16 months, giving students flexibility to choose the best fit for their education. With access to almost 3,000 possible employers, the program is an invaluable investment to help you kick-start your career.

Co-op work terms typically begin at the end of your second year, when you have developed the knowledge and confidence to make a substantial contribution to an employer. Typically, you will take an additional year of study to complete all academic and Co-op program requirements, develop your work skills and acquire relevant industry experience. **carleton.ca/co-op**



Environmental engineering student presenting her Capstone design project for grading. She designed a waste-to-energy system for Ottawa to deal with plastic waste management.

$24.30

Average hourly salary for a Bachelor of Engineering student*

$24.53

Average hourly salary for a Bachelor of Information Technology student*

$22.60

Average hourly salary for a Bachelor of Architecture and a Bachelor of Industrial Design student*

**Carleton University, 2023 Co-op Salary Survey*

International Internships

Career Services leads an International Internship Program, which connects students in all degree programs with a wide range of internship opportunities around the world for academic credit. **carleton.ca/career/international-internship-program**

Career Services and Co-operative Education

Career Services and Co-operative Education provides free career planning, offers advice and helps connect you with potential employers through networking events, job postings and career fairs. From the first year of your studies, you can access services and programs that will help you make a successful transition from school to work. **carleton.ca/career**

Capstone and Studio Projects

Capstone and Studio design projects for final year undergraduate engineering and design students are structured like start-ups or medium-sized departments, serving as an opportunity to explore new ideas which require ongoing commitment, critical thinking and improvisational skills.

Examples of Capstone and Studio projects include: creating new devices or support systems to relieve the pressure on the Canadian healthcare system, the rising costs and pressures of climate change, or designing building plans to support the housing crisis in metropolitan areas, and repurposing buildings and public spaces for community needs. In 2024, a team of eight engineering students collaborated with Health Canada to create a working x-ray device that accurately measured the amount of radiation absorbed each time it is used. The student team integrated mechanical, electrical and software engineering concepts (mechatronics) to create the product. Health Canada received the system, along with a detailed user manual for testing.

> Carleton was one of the first universities in Canada to adopt a team-style capstone project.

Carleton's Engineering and Design Community

Carleton is known for its vibrant student life and supportive culture. With over 170 clubs and societies, dedicated professional development programs and hands-on projects to choose from, there's something for everyone.

Clubs and Societies

Our student clubs and societies provide peer-to-peer academic, professional and community resources throughout the academic year. This includes welcome-week orientations, intramural sports, semi-formals, award ceremonies, professional competitions, a volunteer-run student café with discounted food options and more.

Engineering Design Centre

In 2022, Carleton opened the doors to its new Engineering Design Centre. The three-storey 2,322 square-metre facility is a space for students to access state-of-the-art equipment (like our resin and FDM printers and 3D scanners), dedicated bays for capstone projects and year-round student club work and additional study space.

Women in Engineering & IT Program

Supported by leading engineering and information technology organizations, our WiE&IT professional development program is one of the first of its kind in Canada and is helping to close the gender gap in STEM. The program runs throughout the academic year, offering women students in an engineering or information technology degree at Carleton with networking, mentorship, and career-ready skill development opportunities, along with access to a women's study lounge that provides peer-to-peer academic support.

> 28% of current engineering and information technology undergraduate students are women.

Women in Engineering & IT Program

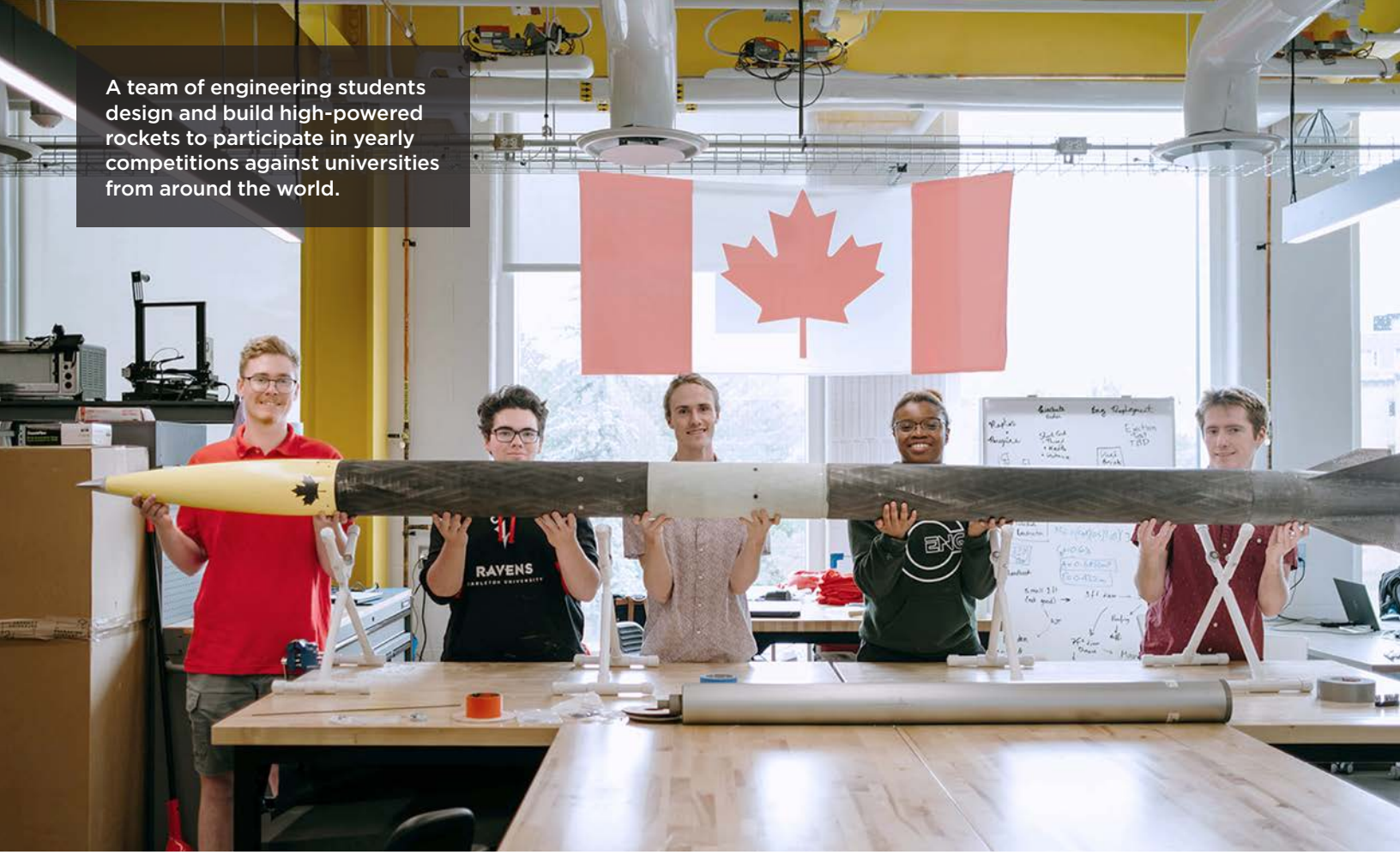
"Attending various networking and mentorship events has helped me make new friends and develop connections with engineers in the field."

Hands-On Projects

"My capstone team, the Carleton Crash Dummy, built an autonomous track system to help the Ottawa Police understand the impacts of collisions between cyclists and vehicles. It was a team effort and I'm thankful we had a workshop bay to work in during the year."

Student Events

"You can feel the difference once you step on campus. I wanted to study somewhere where I could belong to a community—I'm not just another student here."



A team of engineering students design and build high-powered rockets to participate in yearly competitions against universities from around the world.

Aerospace Engineering

Carleton University is home to Canada's first established Bachelor of Engineering degree program in Aerospace Engineering. Canada's aerospace sector represents a highly innovative, dynamic and competitive industry. In 2022, the aerospace industry contributed almost $25 billion and supported over 215,000 jobs from coast to coast to coast. Carleton aerospace engineering has a worldwide reputation for leadership in fields including commuter and business aircraft, gas turbines for propulsion and power generation, aircraft simulators, communications satellites, guidance systems and emerging fields like unmanned aerial vehicle (UAV) technology.

Streams

There are four streams in the Aerospace Engineering program:

- **Stream A**: Aerodynamics, Propulsion and Vehicle Performance specializes in aircraft aerodynamics, performance, control and propulsion technologies
- **Stream B:** Aerospace Structures, Systems and Vehicle Design focuses on lightweight structures and materials for aircraft and spacecraft
- **Stream C:** Aerospace Electronics and Systems concentrates on modern aircraft and spacecraft electronics for navigation, guidance, communication and remote sensing
- **Stream D:** Space Systems Design emphasizes spacecraft design and mission planning, with courses dedicated to orbital mechanics, spacecraft design, communication, propulsion and dynamics

Your career

- aircraft communication, navigation and control systems
- aircraft/spacecraft manufacturing, certification, modification and repair/overhaul
- launch vehicles, spacecraft, satellite systems and operations
- piloted and autonomous aircraft, including aerodynamics, structures, avionics and propulsion systems

Sample employers

- Bombardier
- CAE
- Canadian Space Agency
- General Dynamics Canada
- Honeywell
- National Research Council Canada
- NAV Canada
- Telesat Canada

Other programs for consideration

You might also be interested in electrical engineering or communications engineering.

Architectural Conservation and Sustainability Engineering students travelled to Ouarzazate, Morocco to perform an architectural survey of the Kasbah of Taourirt — a 1.6 hectare, four-level complex that is considered part of the country's national heritage. The architectural drawings prepared by the Carleton team are being used as part of a Getty Conservation Institute project to develop and apply a methodology for documentation, emergency stabilization and integrated conservation planning for the rehabilitation of earthen architecture settlements.

Architectural Conservation and Sustainability Engineering

Carleton's Architectural Conservation and Sustainability Engineering program—the first of its kind in Canada—is educating students in sustainable building design and heritage conservation throughout the building life cycle. Architectural conservation and sustainability engineers apply their knowledge in sustainability to the design of new and retrofit of existing buildings and structures, considering life-cycle costs, impacts of selected materials, and energy needs and consumption. They also bring their expertise to the rapidly growing field of conservation—repairing and adapting structures with various levels of heritage designation.

Your career

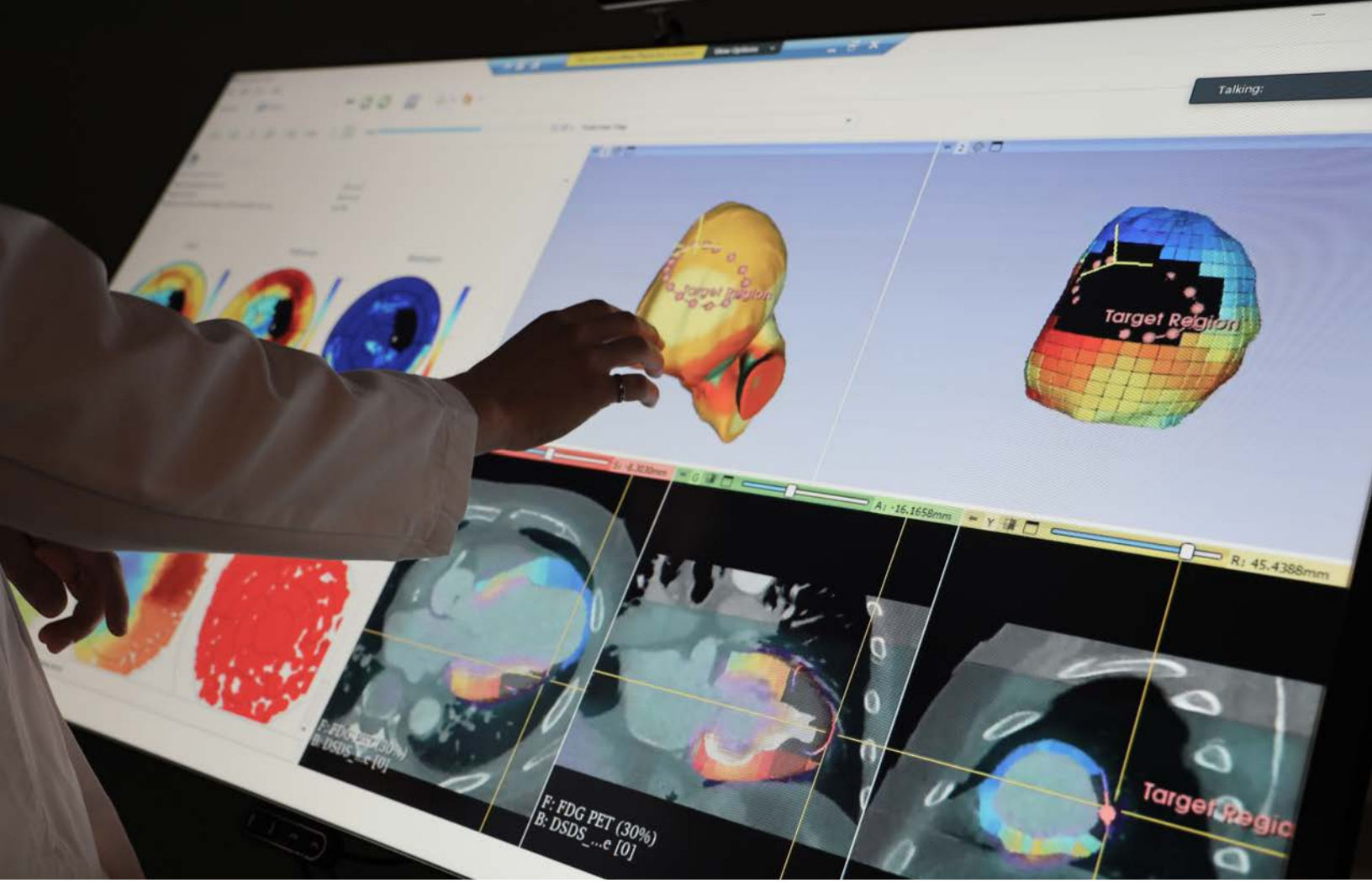
- conservation of heritage structures
- digital tools for new and historic building surveying and recording
- green building design and assessment
- life cycle assessment of green building technologies and materials
- structural analysis of historic buildings and computational modelling

Sample employers

- Canada Green Building Council
- Canada Mortgage and Housing Corporation
- City of Ottawa – Heritage Planning Section
- Heritage Conversation Directorate
- Natural Resources Canada and Environment and Climate Change Canada
- National Research Council Canada
- Public Works and Government Services Canada

Other programs for consideration

You might also be interested in civil engineering, environmental engineering or sustainable and renewable energy engineering.



Biomedical and Electrical Engineering

The field of health care relies increasingly on technology with biomedical and electrical engineers leading the way. Biological signals, such as those from the heart and brain, are routinely used for both diagnostic and therapeutic purposes. Computer tools are used to collect and analyze data, such as gene sequence databases that contain millions of entries. Sensors, actuators and electronics make medical devices work—and can even be used to deliver drugs inside the human body. Advances in medical imaging techniques such as MRI and PET scans lead to the early diagnosis, better treatment and prevention of disease.

Your career

- biomedical informatics and telemedicine
- biomedical instrumentation and biosensor design
- biosignal processing and imaging diagnostic technologies
- medical school
- clinical and health care engineering
- general electrical, electronics and instrumentation engineering

Sample employers

- Abbott Point of Care
- Bruyère Research Institute
- CHEO
- National Research Council Canada
- Ottawa Hospital Research Institute
- University of Ottawa Heart Institute

Other programs for consideration

You might also be interested in electrical engineering, computer systems engineering or biomedical and mechanical engineering.

Biomedical and Mechanical Engineering

Biomedical engineers apply engineering principles to aspects of medicine to improve healthcare diagnosis, monitoring and therapy. They help create prostheses, artificial organs, drug delivery systems and a range of surgical and life-support systems. By combining a foundation of mechanical engineering with the rapidly growing discipline of biomedical engineering, biomedical and mechanical engineers analyze and solve problems related to biomechanical engineering, biotechnology and medicine. These industries continue to grow in Canada as our population ages with an increased life expectancy, which places increased demands on our healthcare system.

Your career

- advanced drug therapy techniques
- biomedical devices including artificial organs, limbs, joints, heart valves, cardiovascular devices and dental implants
- medical school
- clinical engineering involving medical technology in hospitals
- interactive robots for biomedical applications, such as surgery and physiotherapy

Sample employers

- Bruyère Research Institute
- Canadian Nuclear Laboratories
- CHEO
- Ciena
- National Research Council Canada
- Mitacs
- Ottawa Hospital Research Institute

Other programs for consideration

You might also be interested in biomedical and electrical engineering or mechanical engineering.

Civil engineers test the strength of concrete to make our buildings and structures durable.

Civil Engineering

Everything in our built environment—from towers reaching to the sky, to bridges spanning provinces, to dams holding back rivers—is the work of civil engineers. They plan, design, build, maintain, rehabilitate and manage the infrastructure that houses people, moves goods and supplies power and water. Whether working on one-of-a-kind structures or the roads we drive every day, civil engineers make meaningful contributions to the development, evolution and safety of our physical world.

Specializations

- You will develop a broad background in engineering in your first two years of study before specializing in one of the following areas:
- **Structural engineering:** the construction and functioning of safe, reliable buildings and bridges, as well as the analysis and assessment of existing structures
- **Transportation engineering:** the planning and design of safer systems and facilities for travelling and transportation on land, by water or in the air
- **Geotechnical engineering:** the evaluation of soil and rock behaviour as a foundation for roads, bridges, buildings, tunnels and mines, and use as a construction material
- **Municipal engineering:** the range of tasks handled by municipal governments, such as road or bridge maintenance, water and wastewater treatment, waste management and urban planning

Your career

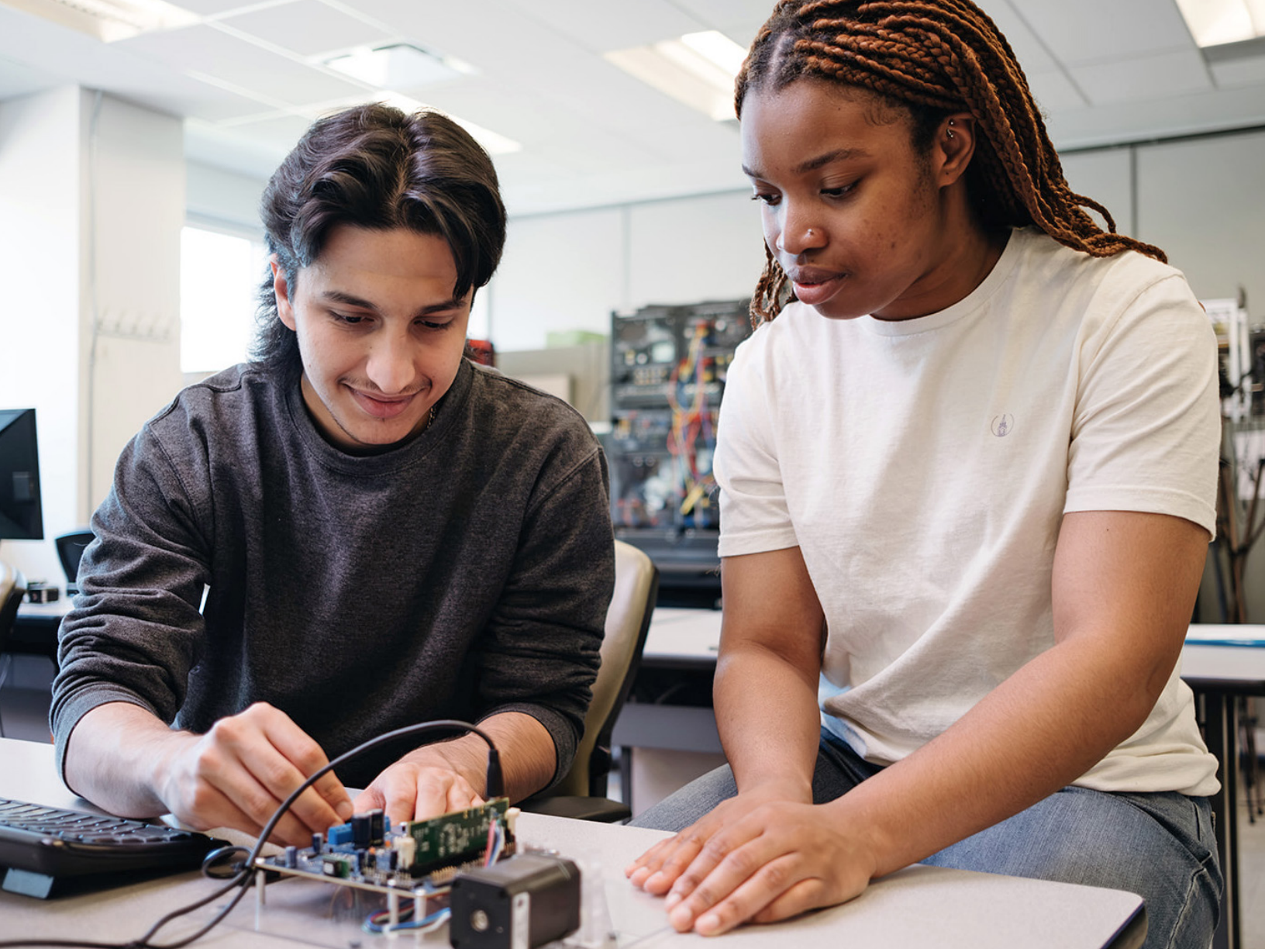
- build, evaluate and maintain infrastructure
- design structural, geotechnical, transportation or municipal systems
- infrastructure safety
- security and comfort
- on-site construction management and supervision

Sample employers

- AECOM Canada
- City of Ottawa
- EllisDon
- National Research Council Canada
- PCL Construction

Other programs for consideration

You might also be interested in architectural conservation and sustainability engineering or sustainable and renewable energy engineering.



Communications Engineering

Communications engineers are the architects of cloud computing, satellites, smart phones, internet applications, social networking technologies, wireless systems, and integrated voice, data and video communications. They are responsible for designing, building and operating the robust and secure telecommunications and networked information systems that have permeated our culture and determined the future of business and entertainment.

Your career

- AI and machine learning for networking
- cloud computing smart applications, data centre networks and next-generation internet applications
- communication security, privacy and trust
- computer networks and emerging applications
- next-generation 5G/6G wireless networks, satellite communications and navigation
- smart and Internet of Things (IoT) applications

Sample employers

- Blackberry QNX
- Ciena
- Communications Research Centre Canada
- Ericsson
- National Research Council Canada
- Nokia
- Public Services and Procurement Canada
- Telesat

Other programs for consideration

You might also be interested in computer systems engineering, electrical engineering or network technology.

Computer Systems Engineering

Computer systems, particularly embedded microcontrollers and digital signal processors and related hardware, have become essential components in almost every area of modern life. Computer systems engineers design complex computer systems—such as smart phones and communication networks, cloud and Internet of Things (IoT) based systems, intelligent cars and smart highways—that can interact with one another to solve problems or improve productivity and keep us connected to the world around us.

Your career

- Aerospace, autonomous and embedded systems
- robotics, smart vehicles and artificial intelligence
- cloud computing and social network applications
- smart cities and Internet of Things (IoT)

Sample employers

- Autodesk Canada
- Ciena
- Communications Research Centre Canada
- General Dynamics Mission Systems Canada
- National Research Council Canada
- Shopify

Other programs for consideration

You might also be interested in software engineering or communications engineering.

Electrical Engineering

In our Electrical Engineering program, design, develop, test and manage components and systems that enable everyday life, ranging from semiconductor chips to power systems. You can specialize in radio frequency and microwave circuits and applications, communication circuits, integrated circuit design and fabrication, semiconductor and nanoscale technology and devices or electrical energy and power. We are also one of the few universities in Canada with its own facilities for manufacturing integrated circuits.

Your career

- communication devices and networks, fiber optics and photonics, microwave and satellite communications
- electrical power systems and the smart grid
- high-speed and application-specific integrated circuit design
- vehicular electronic controls and navigation

Sample employers

- CHEO
- Communications Research Centre Canada
- Ericsson
- General Electric Canada
- Hatch
- Honeywell
- National Research Council Canada
- University of Ottawa Heart Institute

Other programs for consideration

You might also be interested in biomedical and electrical engineering, engineering physics or sustainable and renewable energy engineering.

Engineering Physics

As an engineering physics student, you will gain a broad and strong foundation in material science, applied physics, electronics and nanotechnology, and learn to apply it in the development of new technologies which include nanotechnology, semiconductor devices, optics and photonics, telecommunications and quantum technologies. During your program, you can design your own integrated circuit in our fabrication facility—one of the few facilities of its kind in Canada. You will also specialize in integrated semiconductor devices and technology or optical devices and systems.

Your career

- biomedical physics, sensors and instrumentation
- biomedicine
- energy systems
- microelectronics and process engineering
- nanotechnology
- photonics technology and communications

Sample employers

- AECOM
- Ciena
- Communications Research Centre
- Department of National Defence
- National Research Council Canada
- Nokia
- Perimeter Medical Imaging AI
- Stantec

Other programs for consideration

You might also be interested in electrical engineering or optical systems and sensors.

Understanding the impact of pollution and human activities on people and our environment is at the core of environmental engineering. Here are two students completing field work near campus.

Environmental Engineering

Environmental engineers design innovative treatment technologies to minimize our environmental footprint, develop clean energy sources and protect our ecosystem, resources and public health. Our environmental engineering program covers a range of topics from life-cycle analysis and environmental impact assessment to the design process in four broad areas: air pollution control; groundwater flow and contaminant transport; solid and hazardous waste management; and water and waste-water treatment. This program also has a first-year internship opportunity.

Your career

- design and improve treatment systems for water, wastewater and solid waste
- improve outdoor and indoor air quality
- prevent flooding and protect against drought
- provide clean energy alternatives to reduce greenhouse gas emissions
- restore distributed ecosystems

Sample employers

- Environment and Climate Change Canada
- Health Canada
- J.L. Richards & Associates Limited
- National Capital Commission
- Natural Resources Canada
- Stantec
- Suncor Energy Inc.
- Telesat
- WSP Canada

Other programs for consideration

You might also be interested in sustainable and renewable energy engineering, architectural conversation and sustainability engineering or civil engineering.

Mechanical Engineering

Almost anything that is built to move can be considered mechanical. Mechanical engineers use their understanding of science and engineering to analyze, design, manufacture and maintain mechanical systems in vehicles, aircraft, heating and cooling systems, manufacturing, energy plants, machinery, medical devices, and terrestrial and extraterrestrial exploration. Carleton's mechanical engineering program is one of the largest in Canada. The versatile mechanical engineering discipline will open doors to a vast range of careers for students.

Your career

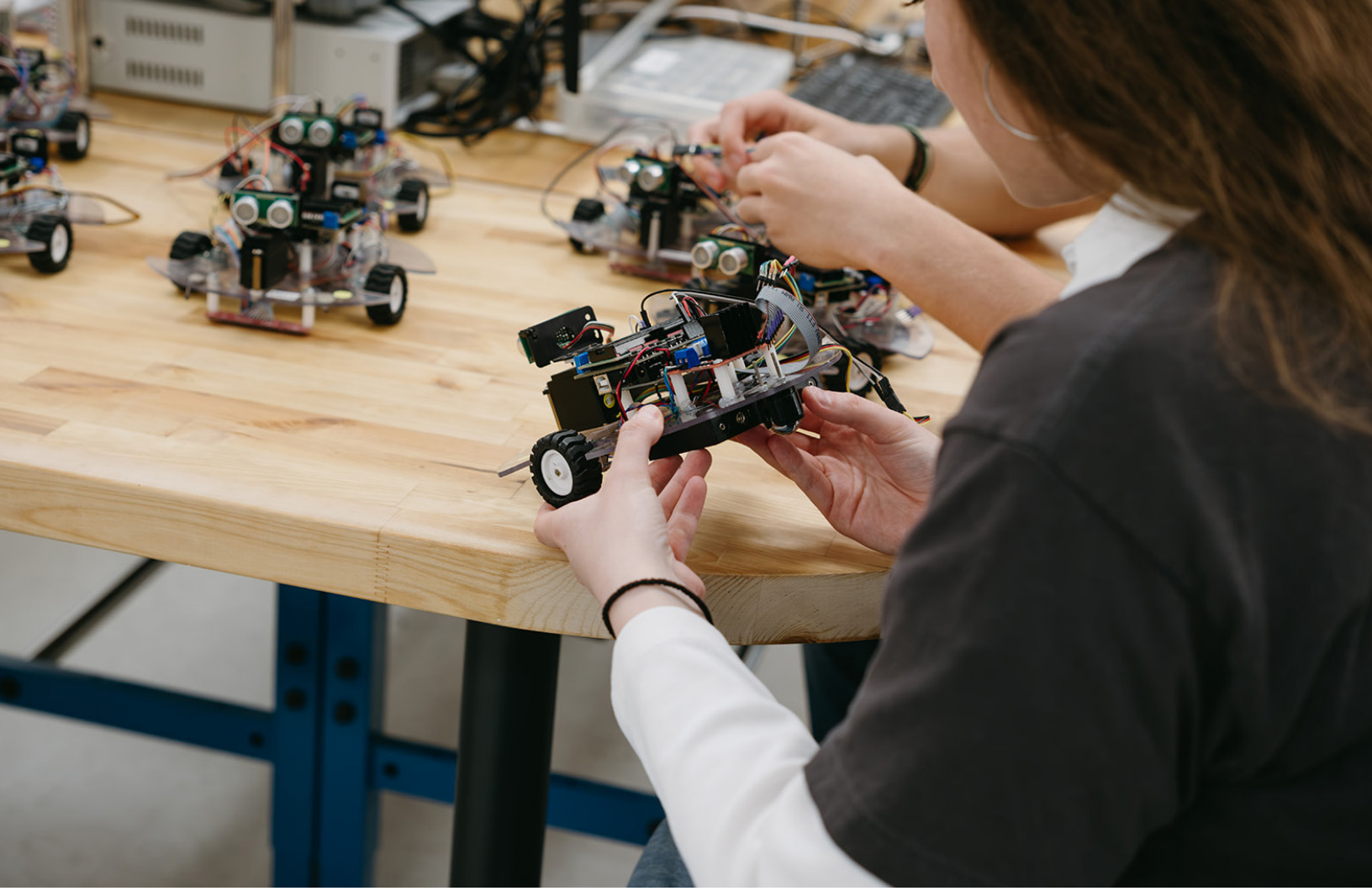
- ground, sea and air transportation
- heating, ventilation and air conditioning
- manufacturing and robotics
- power generation and energy conservation
- resource extraction and processing

Sample employers

- Bombardier
- Canadian Nuclear Laboratories
- Flex
- Ford Motor Company of Canada
- Gastops
- Modern Niagara
- National Research Council Canada
- Siemens Canada

Other programs for consideration

You might also be interested in biomedical and mechanical engineering, sustainable and renewable energy engineering or aerospace engineering.



Mechatronics Engineering

Prospective students are advised that the program is still subject to formal approvals.

From developing robotic systems used in industrial automation to designing medical equipment used to 3D print biomaterials, there is a growing need for mechatronics engineers. With our new Mechatronics Engineering program, you will learn how to create, operate, test and maintain the next generation of “smart” machines, vehicles and systems—which are electro-mechanical devices controlled by computers. Our broad range of mechanical, electrical, software engineering and specialized mechatronics courses will prepare you for in-demand careers in various industries, working on new and emerging technologies.

Your career

- aeronautics and avionics
- automation and manufacturing
- telecommunication
- healthcare
- product and software design
- robotics

Sample employers

- Apple
- General Dynamics Mission Systems Canada
- General Motors
- Google
- Leonardo DRS
- Microsoft
- National Research Council Canada
- Nokia

Other programs for consideration

You might also be interested in mechanical engineering, electrical engineering or software engineering.

Software Engineering

Software engineers develop reliable, economical and high-quality software systems that provide the “brains” for hardware and bring to life the modern computer infrastructure. Solve challenges related to the development, operation and maintenance of large and complex software systems such as massively parallel internet applications and mission-critical control systems. We go beyond simple programming and instead teach modern software engineering principles, tools, integration and analysis techniques.

Your career

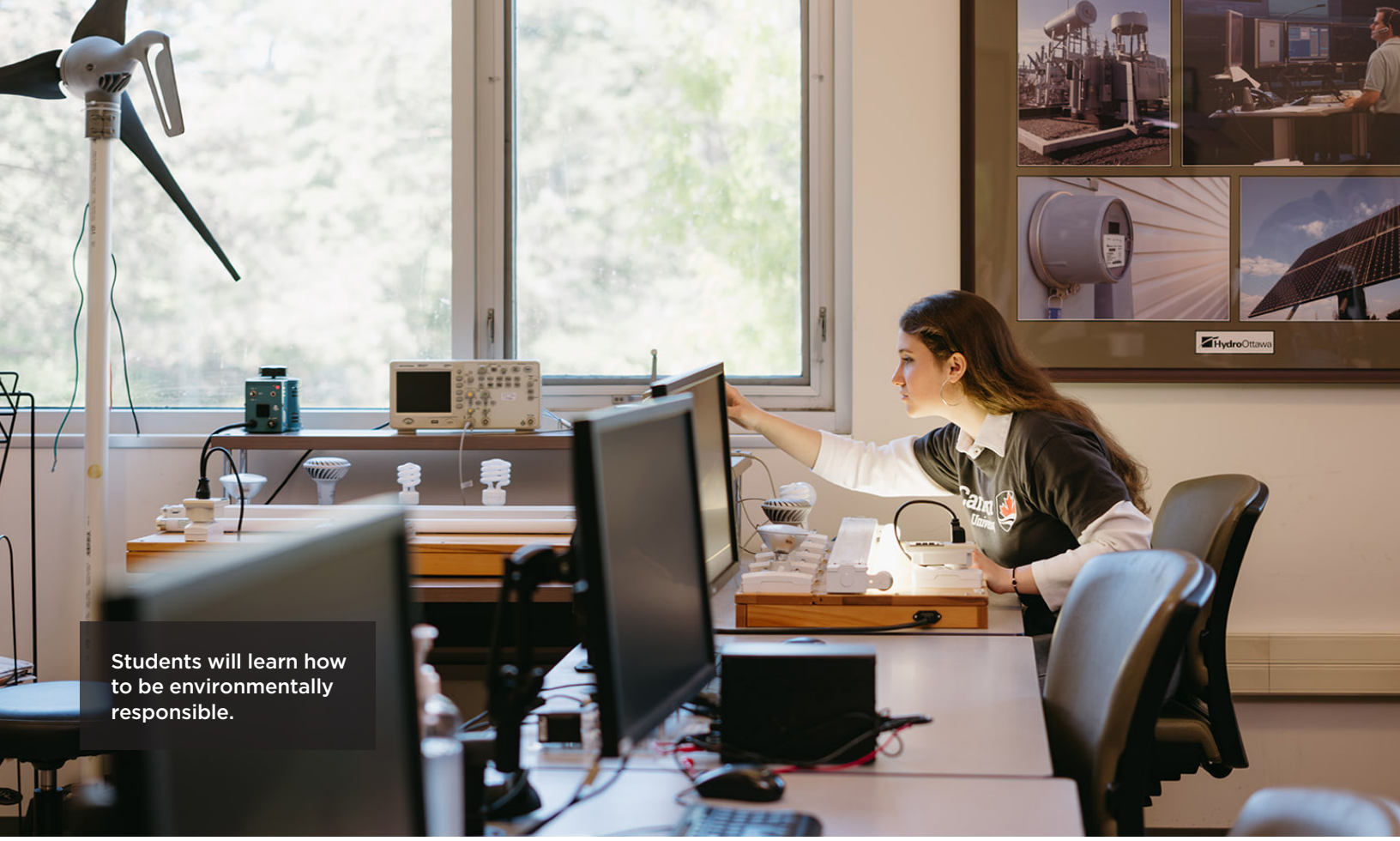
- embedded systems in aerospace and automative domains
- Internet of Things (IoT) systems
- machine learning and artificial intelligence for autonomous systems
- scalable web applications such as social networking, e-commerce systems and cloud computing
- smartphone and smart-tablet applications

Sample employers

- Apple
- Blackberry QNX
- Ericsson
- Ford Canada
- Google
- IBM
- National Research Council Canada
- Shopify

Other programs for consideration

You might also be interested in computer systems engineering, communications engineering or biomedical and electrical engineering.



Students will learn how to be environmentally responsible.

Sustainable and Renewable Energy Engineering

To minimize environmental impact and support sustainable development, we need to generate, distribute and use non-renewable energy resources more effectively. Sustainable development will require the clever integration of renewable energy technologies into existing infrastructure, along with vastly improved efficiencies in non-renewable energy use. This program provides analytical and hands-on skills for designing, building, operating and enhancing sustainable energy systems that combine energy generation, distribution and utilization.

Streams

There are two streams in the program, both of which provide courses in basic and applied sciences. In combination with stream-specific topics such as electronics, smart-grid systems, heat transfer and thermodynamics, technology for generating and converting energy, and environmental issues.

- **Stream A: Smart Technologies for Power Generation and Distribution:** emphasizing Electrical Engineering aspects of the energy sector. Choose this stream to focus on electrical engineering.
- **Stream B: Efficient Energy Generation and Conversion:** emphasizing Mechanical Engineering aspects of the energy sector.

Your career

- energy-related industries
- power utilities and government agencies
- engineering consulting services specializing in efficient generation
- distribution and utilization of energy
- manufacturing industry sectors related to renewable energy projects
- transportation systems with hybrid propulsion technology

Sample employers

- Enbridge Gas Inc.
- Housing developers
- Hydro Ottawa
- National Research Council Canada
- Siemens
- Stantec

Other programs for consideration

You might also be interested in environmental, mechanical, or architectural conservation and sustainability engineering.

Architects have deep concern for society, culture and the urban environment. Their work reflects and shapes culture.

Architectural Studies

Our Architectural Studies program brings creative thinking to the design of buildings and communities. Use drawing, modelling and visualization technologies to engage in important social, political and environmental issues. Whether you choose Design, Urbanism, or Conservation and Sustainability (one of our three majors), you will learn to balance the demands of function, aesthetics, technology and economics. Developing skills in drawing, model-making, photography, video, digital media, writing and oral presentation will be central to your education.

Majors

A brief description of each major:

- **Conservation and Sustainability:** for the adaptive re-use of the existing building stock, the conservation of historic buildings, and the principles of sustainable design.
- **Design:** for a professional career in architecture with an emphasis on building design.
- **Urbanism:** to explore design at the scale of the block, neighbourhood and city, and promote stewardship of the built environment.

Your career

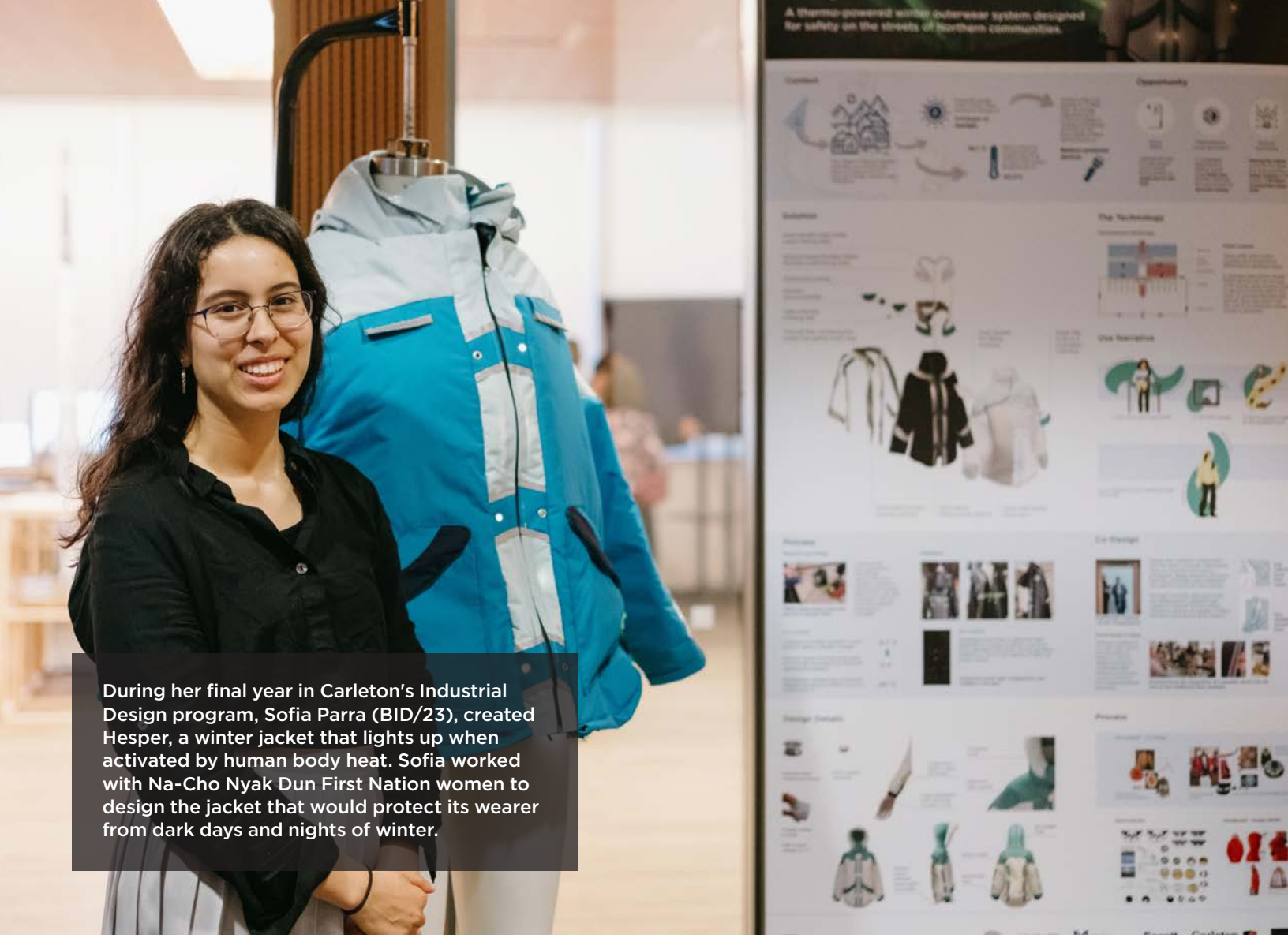
- art and production design in the television and film industries
- building conservation and heritage preservation
- furniture, graphic design and multimedia design
- public policy formulation
- sustainable design
- film, animation, theatre and stage design
- urban design and city planning

Sample employers

- Diamond Schmitt Architects
- Hobin Architecture
- IBI Group
- KPMB Architects
- Mattamy Homes
- National Capital Commission
- Parkin Architects Limited
- Stantec
- Various museums

Other programs for consideration

You might also be interested in industrial design or architectural conservation and sustainability engineering.



During her final year in Carleton's Industrial Design program, Sofia Parra (BID/23), created Hesper, a winter jacket that lights up when activated by human body heat. Sofia worked with Na-Cho Nyak Dun First Nation women to design the jacket that would protect its wearer from dark days and nights of winter.

Industrial Design

Industrial designers use a process-oriented approach to design products, systems, services and experiences. This unique and hands-on program blends design studio with applied and social sciences. Here, you will learn how to use your drawing and modelling abilities to communicate product concepts. Through progressive stages of design development, you will learn how these concepts evolve in relation to materials, technologies and manufacturing processes, ecological issues, and the users' abilities and perceptions.

Your career

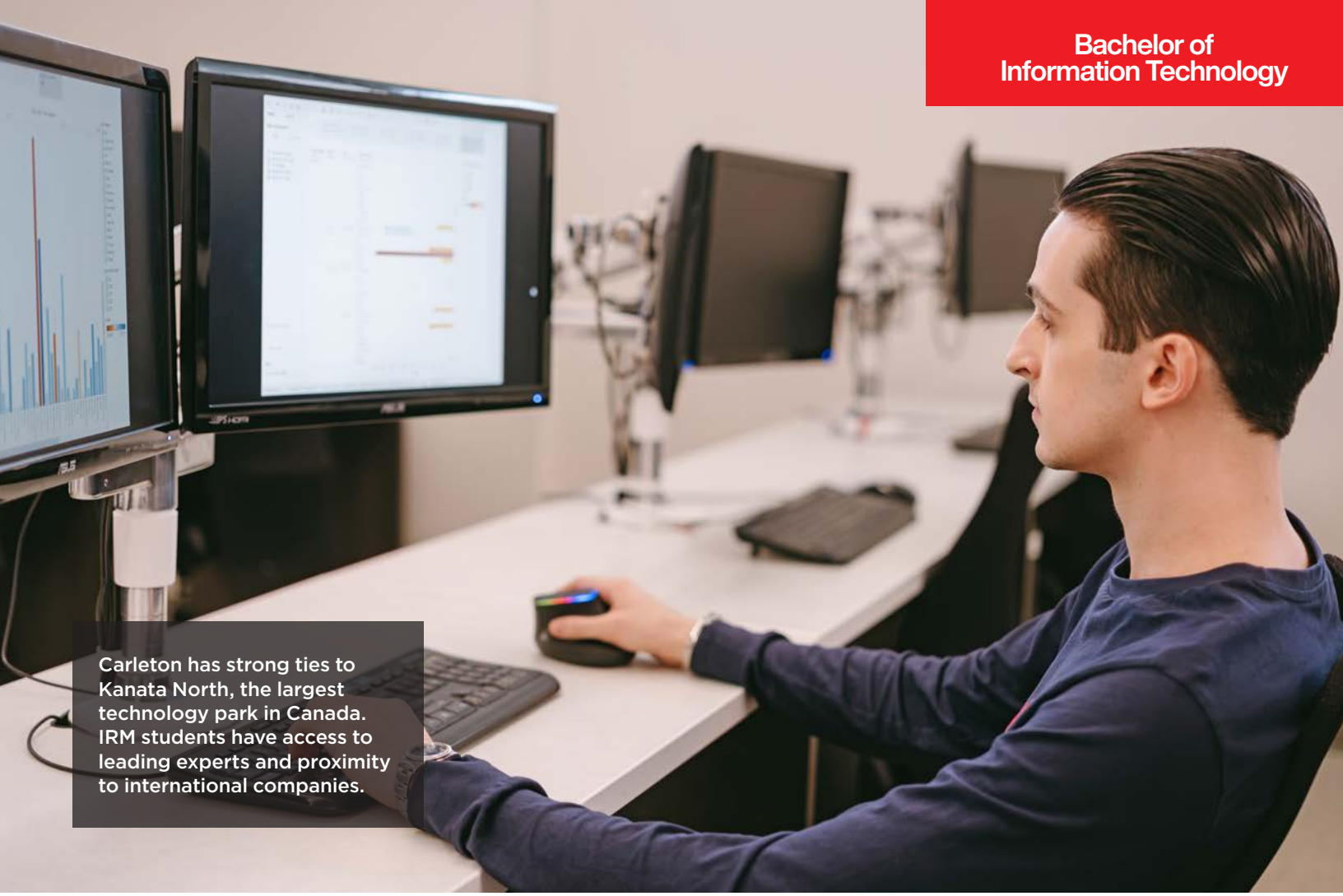
- consumer electronics
- sports and recreation
- exhibit design
- furniture
- software apps, websites and customer experiences
- health care
- industrial machinery
- lighting and special effects
- transportation and toy manufacturing

Sample employers

- Adidas
- Autodesk
- Government of Canada
- IBM
- The Luminaires Group
- Mountain Equipment Company
- Reebok
- Spin Master Toys
- Starfish Medical
- Umbra

Other programs for consideration

You might also be interested in interactive multimedia and design.



Carleton has strong ties to Kanata North, the largest technology park in Canada. IRM students have access to leading experts and proximity to international companies.

Information Resource Management

Organizations generate and use an unprecedented amount of digital data, which has fundamentally changed the ways in which we work, communicate and provide services. Carleton's Information Resource Management (IRM) program blends a strong theoretical education with practical experience that enables students to graduate with both a Bachelor of Information Technology degree and a Library and Information Technician diploma. Students benefit from facilities, teaching staff, resources and expertise at both Carleton University and Algonquin College.

Your career

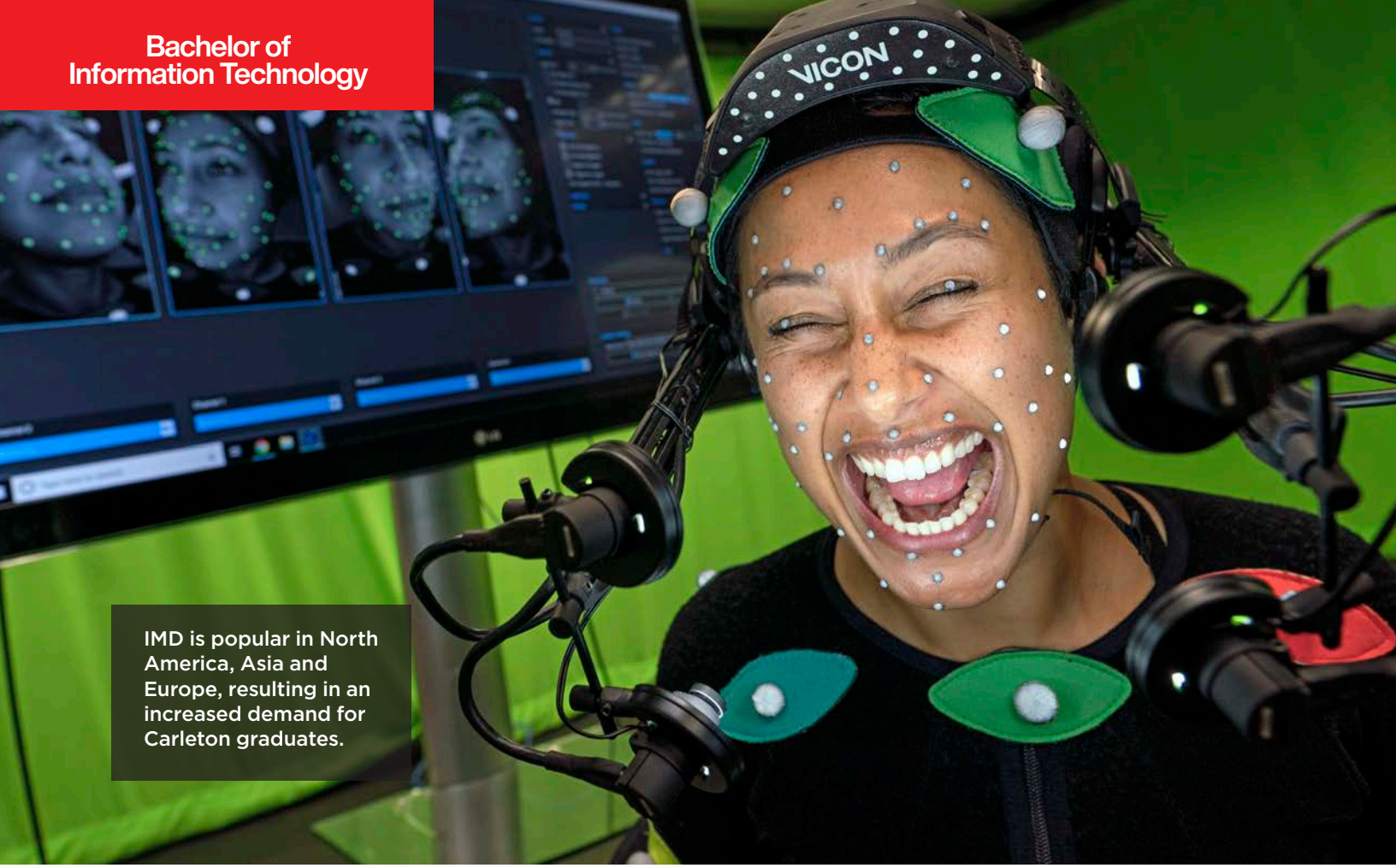
- information management
- research data management
- research institutes
- libraries: public, academic, special and school
- web design
- user interface design and construction
- e-commerce

Sample employers

- Adobe Canada
- CGI
- IBM Canada
- Library and Archives Canda
- NAV Canada
- Shopify
- Telus

Other programs for consideration

You might also be interested in interactive multimedia and design or media production and design.



IMD is popular in North America, Asia and Europe, resulting in an increased demand for Carleton graduates.

Interactive Multimedia and Design

From video games and animated shorts to visual effects and interactive websites, interactive multimedia and design professionals determine the shape of digital media, design interfaces and script the way that users will interact with the products they create. Carleton's Interactive Multimedia and Design (IMD) program blends a strong theoretical education with a practical experience that enables students to graduate with both a Bachelor of Information Technology degree and an Applied Arts diploma. Students benefit from facilities, teaching staff, resources and expertise at both Carleton University and Algonquin College.

Streams

Interactive Multimedia and Design is a streamed program. Available streams include:

- Animation & Visual FX
- Game Design & Development
- Web & User Experience/Interfaces

Your career

- computer animation
- video game design and development
- user interface/experience design
- digital video and audio effects
- multimedia development
- dynamic web application design
- graphic design
- e-commerce

Sample employers

- Adobe Canada
- EA Sports
- IBM Canada
- ImageWorks
- Method Studios
- Shopify
- Sony Canada
- Ubisoft

Other programs for consideration

You might also be interested in industrial design, architectural studies or media production and design.

Carleton has strong ties to Kanata North, the largest technology park in Canada. Network Technology students have access to leading experts and proximity to international companies.

Network Technology

Carleton's multidisciplinary Network Technology (NET) program gives students education and practical experience in mobile networking, IT security issues, cloud computing, social networking and network management; and the physics of communications prepares students to design, install, operate and manage complex information networks such as those that make up the Internet. Graduate with both a Bachelor of Information Technology degree and an Advanced Diploma in Technology from Algonquin College.

Your career

- government
- network design and management
- finance
- system integration
- telecom operation
- education
- business enterprise requiring network design, management and operation
- health institutions

Sample employers

- Bell Canada
- Ericsson
- Health Canada
- IBM Cognos
- Nokia
- Ottawa Paramedic Service
- Royal Canadian Mounted Police (RCMP)
- Statistics Canada

Other programs for consideration

You might also be interested in communications engineering or optical systems and sensors.

Optical Systems and Sensors

The science of generating and harnessing light has affected virtually all segments of modern society and industry, including the way we communicate, harness energy from the sun, enable autonomous cars to navigate our streets, manufacture automobiles and aircraft, and measure our world. This program combines computer programming, automation, signal processing and optics courses with physical mathematics and business. Graduate with both a Bachelor of Information Technology degree and an Advanced Diploma in Technology from Algonquin College.

Your career

- autonomous vehicles
- defence and security
- industrial automation
- laser industry
- medical imaging/biosensors
- optical communications
- optical component design
- remote sensing

Sample employers

- Ciena
- Honeywell
- Mitsubishi
- Nokia
- OZ Optics
- Royal Canadian Mounted Police (RCMP)
- Viavi Solutions

Other programs for consideration

You might also be interested in electrical engineering or engineering physics.

Carleton's Media Production and Design students develop skills in writing, shooting video and photos, using data and graphics to program and design engaging online stories.

Media Production and Design

The Bachelor of Media Production and Design will teach you how to engage, inform, entertain and ultimately contribute to a broader and deeper understanding of how we connect with each other to build stronger societies. Develop a strong foundation in writing and narrative skills across digital media formats, including text, photography, 360° video, graphics and augmented reality, as well as expertise in computer programming, data management and research. Carleton's Media Production and Design (MPD) program is offered jointly between the Faculty of Public and Global Affairs' Journalism program and the Faculty of Engineering and Design's School of Information Technology.

Your career

- data analysts/conceptualizers
- digital communication experts
- information-based storyteller
- immersive storyteller
- interactive educational resource designer
- online content designer
- social media specialist

Sample employers

- Blue Ant Media
- Bell Media
- CBC
- CTV
- Government of Canada
- Magmic
- Various creative agencies
- Various social media corporations

Other programs for consideration

You might also be interested in interactive multimedia and design or information resource management.

Ontario admission requirements

For admission to undergraduate programs, Ontario students must have the Ontario Secondary School Diploma (OSSD) with six 4U/M courses. 4U English is recommended. 4U/M credits for Co-op courses will not be considered as part of the six courses. Higher averages are required for admission to programs for which the demand for places by qualified applicants exceeds the number of places available. The overall average required for admission is determined each year on a program by program basis. All programs have limited enrolment. Admission is not guaranteed and all requirements are subject to change. The admission average required for entry to the Co-op option of the programs listed below may be higher than the cut-off range listed for the program itself. **admissions.carleton.ca/apply**

How to apply
All interested students must apply online through the Ontario Universities' Application Centre (OUAC) website at **ouac.on.ca**.

If you are from outside Ontario, or outside Canada, see Carleton University's website at **admissions.carleton.ca/apply** for specific program requirements for all bachelor programs.

Degree program	Areas of study	Required prerequisite courses	Minimum cut-off range
Bachelor of Architectural Studies*	• Architecture◆	• English (ENG4U) • Physics (SPH4U) • Advanced Functions (MHF4U)	75-77%
Bachelor of Engineering	• Aerospace◆ • Biomedical and Mechanical◆ • Mechanical◆ • Mechatronics◆† • Sustainable and Renewable Energy◆	• Advanced Functions (MHF4U) • Chemistry (SCH4U) • Physics (SPH4U) • One credit from Calculus (MCV4U), Biology (SBI4U), or Earth and Space Science (SES4U) (Calculus [MCV4U] recommended)	82-86%
	• Architectural Conservation and Sustainability◆ • Biomedical and Electrical◆ • Civil◆ • Communications◆ • Computer Systems◆ • Electrical◆ • Engineering Physics◆ • Environmental◆ • Software◆		75-85%
Bachelor of Industrial Design*◆		• Advanced Functions (MHF4U) • Physics (SPH4U)	75-77%
Bachelor of Information Technology	• Information Resource Management (IRM)◆	• English (ENG4U) • One Math credit (4U)	75-77%
	• Interactive Multimedia and Design (IMD)*◆	• Advanced Functions (MHF4U)	
	• Network Technology (NET)◆	• One Math credit (4U)	
	• Optical Systems and Sensors (OSS)◆	• One Math credit (4U) (Physics [SPH4U] strongly recommended)	
Bachelor of Media Production and Design◆		• English (ENG4U) • One Math credit (4U)	75-77%

◆ Co-operative education available

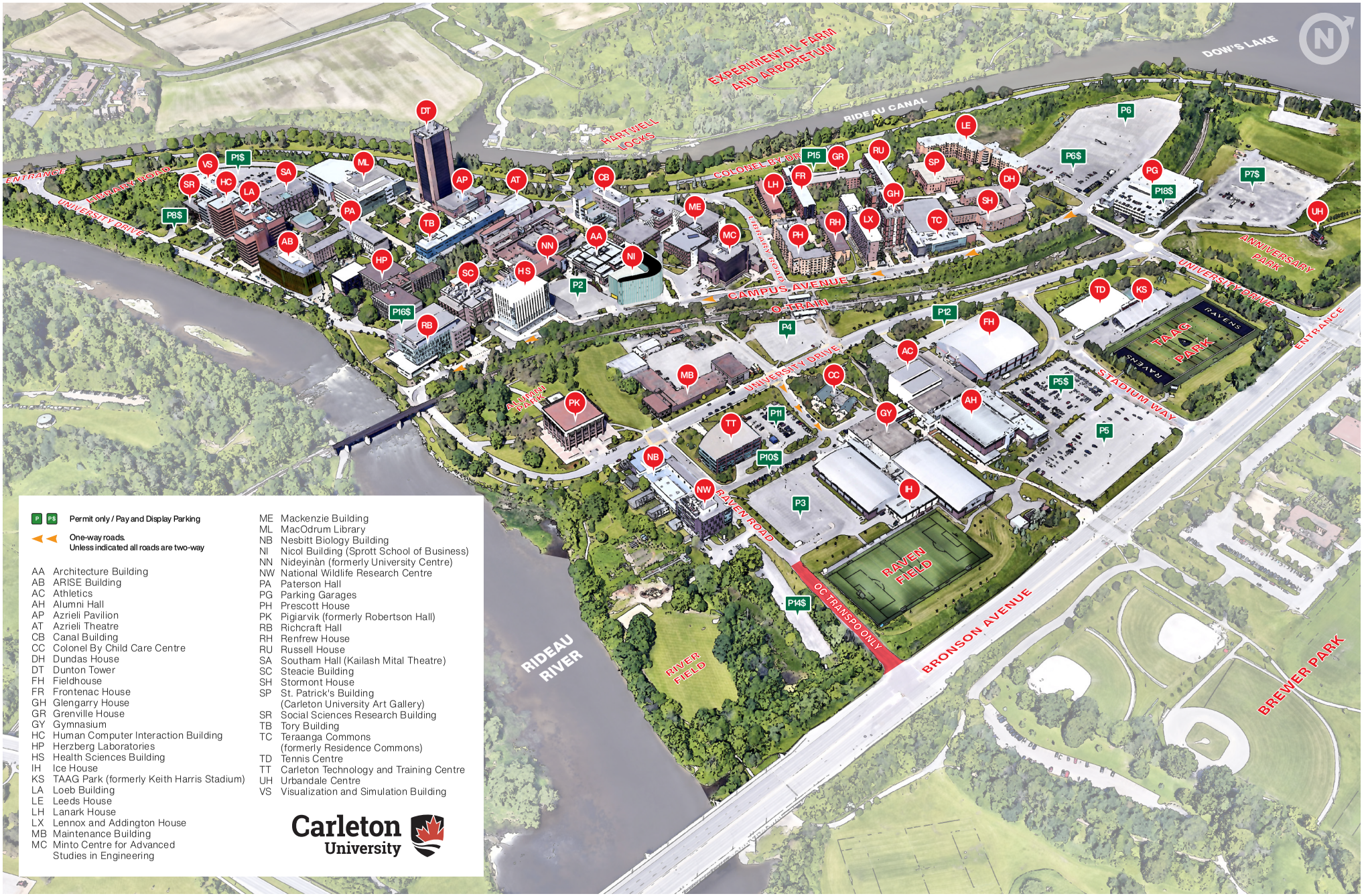
*The following deadlines apply to select programs for the fall term (September to December). Additional admission material may be required.

Application deadline: March 1
Portfolio deadline: March 3

†Prospective students are advised that the program is still subject to formal approvals.

Visit Carleton

CARLETON.CA/CAMPUS



P P$ Permit only / Pay and Display Parking

One-way roads. Unless indicated all roads are two-way

AA Architecture Building
AB ARISE Building
AC Athletics
AH Alumni Hall
AP Azrieli Pavilion
AT Azrieli Theatre
CB Canal Building
CC Colonel By Child Care Centre
DH Dundas House
DT Dunton Tower
FH Fieldhouse
FR Frontenac House
GH Glengarry House
GR Grenville House
GY Gymnasium
HC Human Computer Interaction Building
HP Herzberg Laboratories
HS Health Sciences Building
IH Ice House
KS TAAG Park (formerly Keith Harris Stadium)
LA Loeb Building
LE Leeds House
LH Lanark House
LX Lennox and Addington House
MB Maintenance Building
MC Minto Centre for Advanced Studies in Engineering
ME Mackenzie Building
ML MacOdrum Library
NB Nesbitt Biology Building
NI Nicol Building (Sprott School of Business)
NN Nideyinàn (formerly University Centre)
NW National Wildlife Research Centre
PA Paterson Hall
PG Parking Garages
PH Prescott House
PK Pigiarvik (formerly Robertson Hall)
RB Richcraft Hall
RH Renfrew House
RU Russell House
SA Southam Hall (Kailash Mital Theatre)
SC Steacie Building
SH Stormont House
SP St. Patrick's Building (Carleton University Art Gallery)
SR Social Sciences Research Building
TB Tory Building
TC Teraanga Commons (formerly Residence Commons)
TD Tennis Centre
TT Carleton Technology and Training Centre
UH Urbandale Centre
VS Visualization and Simulation Building

Carleton University

Discover these and many other reasons why Carleton is your best choice:

3rd
Largest CO-OP PROGRAM in Ontario

TOP 5
for COMPREHENSIVE UNIVERSITIES in Canada*

170+
active clubs and societies

Undergraduate Recruitment Office

315 Pigiarvik (ᐱᑎᐊᖅᑲᒃ)
1125 Colonel By Drive
Ottawa ON K1S 5B6 Canada
1-613-520-3663
1-888-354-4414
(toll-free in Canada)
admissions@carleton.ca

*Maclean's University Rankings, 2024

Faculty of Engineering and Design

3010 Minto Centre
1125 Colonel By Drive
Ottawa ON K1S 5B6 Canada

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