Environmental engineers ensure that we have clean water to drink, clean air to breathe, clean soil in which to grow our crops and clean energy to sustain our growth. The goal of environmental engineering is to offer sustainable and green solutions to many of the issues and challenges facing our society, and to provide a clean and healthy environment for us and our ecosystem. Environmental engineers use engineering and science principles to design innovative treatment technologies that help to minimize our environmental footprint, prevent pollution, reduce greenhouse gas emissions, improve air quality, ensure drinking water safety and achieve environmental sustainability.

The Carleton advantage
Carleton University’s Bachelor of Engineering (BEng) degree program in Environmental Engineering is one of only a few in Canada. Our program includes a modified common engineering core program, a group of courses specific to environmental engineering, and additional courses in biology and chemistry.

Carleton offers the following advantages:
- a wide choice of complementary courses from other faculties, such as Arts and Social Sciences;
- an emphasis on problem-solving and hands-on laboratory work;
- a challenging final-year project; and
- excellent scholarships for high-standing students.

Our laboratory and research facilities
As an Environmental Engineering student, you will benefit from modern, well-equipped laboratories and computer facilities on campus. Our proximity to, and close association with, Environment Canada and its laboratories are an asset.

Your co-op opportunities
As a student in the Environmental Engineering program you will have the opportunity to apply to the Co-operative Education Program. Co-op integrates degree-related, paid work terms into your degree program. A minimum of four work terms are required to obtain the Co-op designation on your degree. Often, the four consecutive work terms following third year take place with the same employer. Our program is closely associated with government departments and agencies as well as private firms, giving students valuable work experience and contacts that will benefit them in the future. The pattern of work and study terms for the co-op option is shown in the following table.

<table>
<thead>
<tr>
<th>Calendar Year</th>
<th>Fall</th>
<th>Winter</th>
<th>Summer</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>study term 1</td>
<td>study term 2</td>
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<tr>
<td>2</td>
<td>study term 3</td>
<td>study term 4</td>
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<td>study term 5</td>
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<td>4</td>
<td>work term</td>
<td>work term</td>
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<tr>
<td>5</td>
<td>study term 7</td>
<td>study term 8</td>
<td></td>
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</tbody>
</table>

Choosing the right program
The BEng program in Environmental Engineering is fully accredited by the Canadian Engineering Accreditation Board. When you graduate from this program, you will meet the educational requirements for registration as a professional engineer.

A wide range of topics are covered in the program—from life cycle analysis and environmental impact assessment to the design of industrial wastewater treatment processes and waste containment systems for solid and hazardous waste management. At Carleton, we want our environmental engineering graduates to develop clean energy sources, reduce our environmental footprint, and protect our ecosystem, resources and public health. Carleton’s Environmental Engineering program mixes fundamental concepts and theory with analysis and design, so that our graduates can meet the challenges facing our environment.
The first year of the program is based largely on common core courses. In the second year, unique elements of the Environmental Engineering program are introduced, along with additional courses in biology and chemistry. You will take the first program-specific course (Process Analysis for Environmental Engineering) in your second year. Third year introduces environmental engineering courses that cover the unifying fundamental concepts and processes underlying the analysis and design courses offered in fourth year. Fourth year courses are applied and focus on the assessment and design of traditional and new innovative technologies for water and wastewater treatment, air quality control, waste management, and contaminated site remediation.

The courses of a typical environmental engineering program are shown below.

### Study Term 1
- Introduction to Engineering
- Calculus for Engineering or Physics
- Linear Algebra for Engineering or Science
- General Chemistry I
- Problem Solving and Computers

### Study Term 2
- Introductory Electromagnetism and Wave Motion
- Mechanics I
- Differential Equations and Infinite Series for Engineering or Physics
- General Chemistry II
- Communications Skills for Engineering Students

### Study Term 3
- Introductory Biology I
- Multivariable Calculus for Engineering or Physics
- Mechanics of Solids I
- Thermodynamics and Heat Transfer
- Numerical Methods

### Study Term 4
- Engineering Geoscience
- Foundations for Environmental Chemistry
- Process Analysis for Environmental Engineering
- Introductory Biology II
- Fluid Mechanics I

### Study Term 5
- Chemistry of Environmental Pollutants
- Environmental Engineering Systems Modeling
- Geotechnical Mechanics
- Water Resources Engineering
- Civil Engineering Materials

### Study Term 6
- Introduction to Statistical Modeling I
- Water Treatment Principles and Design
- Municipal Hydraulics
- Contaminant and Pollutant Transport in the Environment
- Engineering Economics

### Study Term 7
- Design Project
- Air Pollution and Emissions Control
- Wastewater Treatment Principles and Design
- Waste Management
- Contaminant Hydrogeology
- Engineering elective

### Study Term 8
- Engineering elective
- Design Project (continued)
- Professional Practice
- Environmental Planning and Impact Assessment
- Two complementary studies electives

Note: As study terms and courses offered may vary, please refer to the Carleton University Undergraduate Calendar at calendar.carleton.ca/undergrad for specific program requirements.

### Your future opportunities
As an environmental engineer, you will find employment opportunities in industry, municipalities, consulting firms, federal and provincial regulatory agencies, and research establishments. Your many options include designing treatment technologies and facilities, developing clean energy alternatives, providing safe drinking water, helping improve air quality and assessing waste management strategies.

### Admission requirements
For admission to the Environmental Engineering program, you must have an Ontario Secondary School Diploma (OSSD) or equivalent, including a minimum of six 4U courses. Your six courses must include four prerequisite courses:

- Advanced Functions
- Chemistry
- Physics
- one of:
  - Calculus and Vectors*
  - Biology
  - Earth and Space Science
* Strongly recommended for applicants to all engineering programs.

Although it is not an admission requirement, at least one 4U course in either English or French is recommended. Equivalent courses may be substituted at the appropriate 4U level.

If you are from outside Ontario, or outside Canada, see Carleton University’s website at admissions.carleton.ca/apply for your specific program requirements.

Since the number of qualified applicants may be greater than the number of available spaces, cut-off averages and required marks may vary.

### For more information
Please visit carleton.ca/cee or consult the Carleton University Undergraduate Calendar at calendar.carleton.ca/undergrad.