**BASC CIVIL ENGINEERING, ENVIRONMENTAL AND WATER RESOURCES OPTION**

Civil engineers design the infrastructure on which their communities depend, such as buildings and their foundations, bridges, canals, dams, transportation facilities, municipal sewer and water networks, and wastewater and solid waste treatment systems.

Civil engineering students at the University of Ottawa can take advantage of world-class teaching laboratories, multimedia classrooms and outstanding computer facilities. Students develop expertise in computer applications, field and laboratory testing, and project management, and they are well-equipped to serve their communities upon graduation.

This program is offered in English and in French.

French courses are available in first year and almost all of second year. Most third and fourth year courses are offered in English only.

**Program Requirements**

Co-operative education is available with this program.

Requirements for this program have been modified. Please consult the 2021-2022 calendars (https://catalogue.uottawa.ca/en/archives/) for the previous requirements.

### Compulsory First-Year Courses:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHM 1311</td>
<td>Principles of Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>CVG 1107</td>
<td>Civil Engineering Graphics and Seminars</td>
<td>3</td>
</tr>
<tr>
<td>ENG 1112</td>
<td>Technical Report Writing</td>
<td>3</td>
</tr>
<tr>
<td>GNG 1103</td>
<td>Engineering Design</td>
<td>3</td>
</tr>
<tr>
<td>GNG 1105</td>
<td>Engineering Mechanics</td>
<td>3</td>
</tr>
<tr>
<td>GNG 1106</td>
<td>Fundamentals of Engineering Computation</td>
<td>3</td>
</tr>
<tr>
<td>MAT 1320</td>
<td>Calculus I</td>
<td>3</td>
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<tr>
<td>MAT 1322</td>
<td>Calculus II</td>
<td>3</td>
</tr>
<tr>
<td>MAT 1341</td>
<td>Introduction to Linear Algebra</td>
<td>3</td>
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<tr>
<td>PHY 1122</td>
<td>Fundamentals of Physics II</td>
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3 course units from:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Units</th>
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<tbody>
<tr>
<td>ECO 1192</td>
<td>Engineering Economics</td>
<td>3</td>
</tr>
<tr>
<td>GNG 2101</td>
<td>Introduction to Product Development and Management for Engineers and Computer Scientists</td>
<td>3</td>
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### Compulsory Second-Year Courses:

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<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>CVG 2107</td>
<td>Geotechnical Materials and Processes</td>
<td>3</td>
</tr>
<tr>
<td>CVG 2116</td>
<td>Introduction to Fluid Mechanics</td>
<td>3</td>
</tr>
<tr>
<td>CVG 2132</td>
<td>Fundamentals of Environmental Engineering</td>
<td>3</td>
</tr>
<tr>
<td>CVG 2140</td>
<td>Mechanics of Materials I</td>
<td>3</td>
</tr>
<tr>
<td>CVG 2141</td>
<td>Civil Engineering Materials</td>
<td>3</td>
</tr>
<tr>
<td>CVG 2149</td>
<td>Civil Engineering Mechanics</td>
<td>3</td>
</tr>
<tr>
<td>CVG 2171</td>
<td>Surveying and Measurements</td>
<td>3</td>
</tr>
<tr>
<td>CVG 2181</td>
<td>Numerical Modelling in Civil Engineering</td>
<td>3</td>
</tr>
<tr>
<td>MAT 2322</td>
<td>Calculus III for Engineers</td>
<td>3</td>
</tr>
<tr>
<td>MAT 2377</td>
<td>Probability and Statistics for Engineers</td>
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3 course units from:

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<thead>
<tr>
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<th>Units</th>
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<tbody>
<tr>
<td>HIS 2129</td>
<td>Technology, Society and Environment Since 1850</td>
<td>3</td>
</tr>
<tr>
<td>PHI 2394</td>
<td>Scientific Thought and Social Values</td>
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### Compulsory Third-Year Courses:

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<th>Units</th>
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<tbody>
<tr>
<td>CVG 3106</td>
<td>Soil Mechanics II</td>
<td>3</td>
</tr>
<tr>
<td>CVG 3109</td>
<td>Soil Mechanics I</td>
<td>3</td>
</tr>
<tr>
<td>CVG 3116</td>
<td>Hydraulics</td>
<td>3</td>
</tr>
<tr>
<td>CVG 3120</td>
<td>Hydrology</td>
<td>3</td>
</tr>
<tr>
<td>CVG 3132</td>
<td>Physical/Chemical Unit Operation of Water and Wastewater Treatment</td>
<td>3</td>
</tr>
<tr>
<td>CVG 3140</td>
<td>Theory of Structures I</td>
<td>3</td>
</tr>
<tr>
<td>CVG 3147</td>
<td>Structural Steel Design I</td>
<td>3</td>
</tr>
<tr>
<td>CVG 3148</td>
<td>Reinforced Concrete Design I</td>
<td>3</td>
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</tbody>
</table>

3 course units of science electives | 3 Units |

### Compulsory Fourth-Year Courses:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Units</th>
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</thead>
<tbody>
<tr>
<td>CVG 4001</td>
<td>Introduction to Civil Engineering Project</td>
<td>3</td>
</tr>
<tr>
<td>CVG 4113</td>
<td>Hydraulics of Water Supply and Sewer Systems</td>
<td>3</td>
</tr>
<tr>
<td>CVG 4130</td>
<td>Advanced Environmental Engineering</td>
<td>3</td>
</tr>
<tr>
<td>CVG 4133</td>
<td>Solid Waste Management</td>
<td>3</td>
</tr>
<tr>
<td>CVG 4150</td>
<td>Highway and Transportation Engineering</td>
<td>3</td>
</tr>
<tr>
<td>CVG 4175</td>
<td>Field Investigations and Environmental Impact Assessment of Civil Engineering Projects</td>
<td>3</td>
</tr>
<tr>
<td>CVG 4907</td>
<td>Civil Engineering Design Project</td>
<td>3</td>
</tr>
<tr>
<td>GNG 4170</td>
<td>Engineering Law</td>
<td>3</td>
</tr>
</tbody>
</table>

3 complementary electives course units at the undergraduate level | 3 Units |

9 course units of technical electives in environmental or water resources engineering | 9 Units |

**List of Optional Courses**

**Water Resources Electives:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>CVG 4110</td>
<td>Hydraulics of Open Channels</td>
<td>3</td>
</tr>
<tr>
<td>CVG 4122</td>
<td>Groundwater and Seepage</td>
<td>3</td>
</tr>
<tr>
<td>CVG 4186</td>
<td>Special Topics in Water Resources Engineering</td>
<td>3</td>
</tr>
<tr>
<td>GEO 3342</td>
<td>Introduction to Hydrogeology</td>
<td>3</td>
</tr>
<tr>
<td>GEO 4301</td>
<td>Selected Topics in Earth Sciences</td>
<td>3</td>
</tr>
<tr>
<td>MCG 4102</td>
<td>Finite Element Analysis</td>
<td>3</td>
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</table>

**Environmental Engineering Electives:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Units</th>
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</thead>
<tbody>
<tr>
<td>CHG 4301</td>
<td>Air Pollution Control Processes</td>
<td>3</td>
</tr>
<tr>
<td>CHG 4302</td>
<td>Environmental Biotechnology</td>
<td>3</td>
</tr>
<tr>
<td>CHG 4385</td>
<td>Adsorption Separations for Environmental Applications</td>
<td>3</td>
</tr>
<tr>
<td>CVG 4135</td>
<td>Water Treatment in Northern Communities</td>
<td>3</td>
</tr>
<tr>
<td>CVG 4188</td>
<td>Special Topics in Environmental Engineering</td>
<td>3</td>
</tr>
<tr>
<td>GEO 4301</td>
<td>Selected Topics in Earth Sciences</td>
<td>3</td>
</tr>
</tbody>
</table>

This is a copy of the 2023-2024 catalog.

Other Electives:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Units</th>
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</thead>
<tbody>
<tr>
<td>CVG 4180</td>
<td>Special Directed Studies</td>
<td>3</td>
</tr>
<tr>
<td>CVG 4260</td>
<td>Thesis</td>
<td>6</td>
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</tbody>
</table>

Note(s)

1. Complementary elective courses at the undergraduate level includes GNG 2101, GNG 4170, and GNG 4120, but excludes all courses offered by the Faculty of Science and the Faculty of Engineering as well as all courses that have a science, mathematics or engineering content. For a complete list of courses please refer to the list of complementary elective courses (https://www2.uottawa.ca/faculty-engineering/undergraduate-studies/courses-and-course-sequences/complementary-electives/) on the Faculty of Engineering website.

2. Permission from Associate Chair is required.