BASC CIVIL ENGINEERING

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 Description</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHM 1311</td>
<td>Principles of Chemistry</td>
<td>1</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>Introduction to 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>
</tr>
<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>
<td>3</td>
</tr>
<tr>
<td></td>
<td>3 course units from:</td>
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Compulsory Second-Year Courses:

<table>
<thead>
<tr>
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<th>Course Description</th>
<th>Units</th>
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</thead>
<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>
<td>3</td>
</tr>
<tr>
<td>MAT 2384</td>
<td>Ordinary Differential Equations and Numerical Methods</td>
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Compulsory Third-Year Courses:

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<thead>
<tr>
<th>Course Code</th>
<th>Course Description</th>
<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>
</tr>
<tr>
<td></td>
<td>3 course units of science electives</td>
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Compulsory Fourth-Year Courses:

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<th>Course Description</th>
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<tbody>
<tr>
<td>CVG 4001</td>
<td>Introduction to Civil Engineering Project</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>
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<tr>
<td></td>
<td>9 course units of technical electives in geotechnical and/or structural engineering</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>9 course units of technical electives in environmental and/or water resources engineering</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>3 complementary electives course units at the undergraduate level</td>
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</table>

Total: 132 Units

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.

List of Optional Courses

Geotechnical Electives:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Description</th>
<th>Units</th>
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</thead>
<tbody>
<tr>
<td>CVG 4107</td>
<td>Rock Mechanics</td>
<td>3</td>
</tr>
<tr>
<td>CVG 4108</td>
<td>Geotechnical Design</td>
<td>3</td>
</tr>
<tr>
<td>CVG 4161</td>
<td>Mechanics of Unsaturated Soils</td>
<td>3</td>
</tr>
<tr>
<td>CVG 4184</td>
<td>Special Topics in Geotechnical Engineering</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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Structural Electives:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Description</th>
<th>Units</th>
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<tbody>
<tr>
<td>CVG 4142</td>
<td>Structural Dynamics</td>
<td>3</td>
</tr>
<tr>
<td>CVG 4143</td>
<td>Structural Steel Design II</td>
<td>3</td>
</tr>
<tr>
<td>CVG 4145</td>
<td>Reinforced Concrete Design II</td>
<td>3</td>
</tr>
<tr>
<td>CVG 4146</td>
<td>Structural Design in Timber</td>
<td>3</td>
</tr>
<tr>
<td>CVG 4147</td>
<td>Sustainable Building Design</td>
<td>3</td>
</tr>
<tr>
<td>CVG 4148</td>
<td>Theory of Structures II</td>
<td>3</td>
</tr>
<tr>
<td>CVG 4172</td>
<td>Advanced Concrete Technology</td>
<td>3</td>
</tr>
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This is a copy of the 2024-2025 catalog.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
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</thead>
<tbody>
<tr>
<td>CVG 4173</td>
<td>Construction Management</td>
<td>3</td>
</tr>
<tr>
<td>CVG 4181</td>
<td>Special Topics in Structural Engineering</td>
<td>3</td>
</tr>
<tr>
<td>MCG 4102</td>
<td>Finite Element Analysis</td>
<td>3</td>
</tr>
</tbody>
</table>

**Water Resources Electives:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</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 4113</td>
<td>Hydraulics of Water Supply and Sewer Systems</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>
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**Environmental Engineering Electives:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</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 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 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>

**Other Electives:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</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>
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</tbody>
</table>

**Note(s):**

1. Except for the structural and geotechnical option.
2. Except for the engineering management and entrepreneurship option.
3. Except for the engineering management and entrepreneurship option and structural and geotechnical option.
4. Except for the environmental and water resources option.
5. Permission from Associate Chair is required.