APPLIED COASTAL ECOLOGY (ACE)

Earn a Diploma in 2 years or a Post-Degree Diploma in 1 year

The Applied Coastal Ecology (ACE) program readies students for careers in coastal natural resources management, ecosystem restoration, environmental monitoring, and many others. ACE balances foundational learning in areas such as biology, geography, chemistry and oceanography with applied courses in areas such as salmon, ground fish and shellfish management, stream habitat restoration, rainforest ecology, wildlife management, and more.

ACE students get important technology training in computer database management, GIS mapping, surveying, technical writing, and presentation. Students participate in real-world, community-based projects to gain employment-ready experience and ultimately gain a strong sense of how coastal ecosystems react to the stresses imposed on them by human activity, and how to apply procedures to mitigate impacts and restore healthy ecosystems.

ACE field studies

At Coast Mountain College we are always exploring new ways to move our courses into the field. Our rugged geography and variable climates enhance our classrooms. Learn about our collaborative field day on Digby Island, view samples of our project work and check out the Applied Coastal Ecology photo gallery.

- Applied Coastal Ecology field studies (https://www.coastmountaincollege.ca/programs/study/science/ace-field-studies)

Dates and locations

<table>
<thead>
<tr>
<th>Intake</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>September and January</td>
<td>Prince Rupert Campus</td>
</tr>
</tbody>
</table>

Study on a full or part-time basis. Field School (https://coastmountaincollege.ca/programs/explore/field-schools) courses are available in the spring and summer.

Note: Speak with an Educational Advisor (https://coastmountaincollege.ca/student-services/academic-support/educational-advising) for assistance with course selection.

Faculty

<table>
<thead>
<tr>
<th>Faculty Member</th>
<th>Campus Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reto Riesen (<a href="https://coastmountaincollege.ca/about-cmtn/department-contacts/details/reto-riesen">https://coastmountaincollege.ca/about-cmtn/department-contacts/details/reto-riesen</a>)</td>
<td>Prince Rupert</td>
</tr>
<tr>
<td>Ken Shaw (<a href="https://coastmountaincollege.ca/about-cmtn/department-contacts/details/ken-shaw">https://coastmountaincollege.ca/about-cmtn/department-contacts/details/ken-shaw</a>)</td>
<td>Prince Rupert</td>
</tr>
<tr>
<td>Peter Freeman (<a href="https://coastmountaincollege.ca/about-cmtn/department-contacts/details/peter-freeman">https://coastmountaincollege.ca/about-cmtn/department-contacts/details/peter-freeman</a>)</td>
<td>Prince Rupert</td>
</tr>
</tbody>
</table>

The ACE certificate requires the completion of 24 credits of ACE or UC courses of which 12 must be ACE.

The ACE Diploma requires the completion of a total of 70 credits according to the categories shown below. The list of recommended courses outline a typical program for students, however additional courses may be available depending on scheduling and the student’s area of specialization. Full-time students can complete this program in a minimum of 2 years but may take longer depending on how many prerequisites are required. All course prerequisites are on a course by course basis. Due to course scheduling and the student’s area of interest, prospective students are advised to develop a personalized study program in consultation with the ACE Program Coordinator (kshaw@coastmountaincollege.ca) or an Educational Advisor (https://coastmountaincollege.ca/student-services/academic-support/educational-advising).

ACE Program Questions? Email Us (info@coastmountaincollege.ca)

ACE diploma requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Year Sciences: 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIOL 101 &amp; BIOL 102</td>
<td>Introductory Biology I - Cells, Diversity &amp; Physiology and Introductory Biology II - Genetics, Evolution &amp; Ecology</td>
<td>18</td>
</tr>
<tr>
<td>4 of the following First Year Sciences: 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHEM 111</td>
<td>Fundamentals of Chemistry I</td>
<td></td>
</tr>
<tr>
<td>CHEM 122</td>
<td>Principles of Chemistry II</td>
<td></td>
</tr>
<tr>
<td>GEOG 110</td>
<td>People and the Environment</td>
<td></td>
</tr>
<tr>
<td>GEOG 150</td>
<td>Physical Geog I: Biogeography, Meteorology and Climatology</td>
<td></td>
</tr>
<tr>
<td>GEOG 160</td>
<td>Physical Geography II: Geology, Geomorphology and Soils or GEOL 157 Intro to Northwest Geology</td>
<td></td>
</tr>
<tr>
<td>PHYS 101</td>
<td>Introduction to Physics I</td>
<td></td>
</tr>
<tr>
<td>PHYS 102</td>
<td>Introductory Physics II</td>
<td></td>
</tr>
</tbody>
</table>

Information subject to change, please refer to our online catalogue for the most current revision. Printed - 04/29/19
## Computer Science

3 Credits of Computer Science:  
- CPSC 111 Introduction to Computer Science

## English

6 Credits of the following First Year English:  
- ENGL 101 University Writing  
- ENGL 102 Introduction to Literature  
- ENGL 151 Technical Writing I  
- ENGL 152 Technical Writing II

### Second Year Courses

15 Credits of Second Year Courses:  
- GEOG 204 Spatial Analysis and Geographic Information Systems (GIS)

4 of the following:  
- BIOL 211 Principles of Ecology  
- OCGY 208 Intro Physical, Chemical and Geological Oceanography  
- OCGY 209 Introduction to Biological Oceanography  
- ENV 201 Environmental Work Placement  
- BIOL 2XX (When available)  
- ANTH 2XX (When available)  
- GEO 2XX (When available)  
- CHEM 2XX (When available)

### ACE Courses

22 Credits of the following ACE Courses:  
- ACE 101 Applied Service Learning  
- ACE 121 Fisheries Management & Coastal Policy  
- ACE 134 Fishes of the Pacific Northwest Rearing  
- ACE 141 Monitoring & Measuring Aquatic and Inter  
- ACE 142 Coastal Forest Measurements  
- ACE 154 Surveying  
- ACE 170 Mariculture Technology  
- ACE 175 Wildlife Conservation & Monitoring Population Management  
- ACE 182 Stream Habitat Assessment & Restoration  
- ACE 190 Temperate Rainforest Ecology  
- ACE 195 Environmental Monitoring: Principles & Techniques  
- ACE 196 Instrument Technology  
- Other Ace courses as available

### Electives

6 Credits of the following Electives:  
- MATH 101 Calculus I: Differential Calculus  
- MATH 115 Precalculus  
- MATH 131 Introduction to Statistics

## ACE post-degree diploma requirements

Students holding a B.Sc degree and complete the following requirements will be eligible to earn a ACE POST-DEGREE DIPLOMA; The B.Sc must include: 6 credits 1st year chemistry, 6 credits 1st year biology, and 6 credits 2nd year biology.

### Code  Title  Credits
<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 150</td>
<td>Micro Economics</td>
<td></td>
</tr>
<tr>
<td>ECON 151</td>
<td>Macro Economics</td>
<td></td>
</tr>
<tr>
<td>ANTH 1XX</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GEOG 1XX</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SOCI 1XX</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIOL 2XX</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others as available</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Total Credits 70

1. Min 6 credits lab biology  
2. 12 credits 1st year

## Code  Title  Credits

### 2nd Year CMTN Earth and Science Courses

12 Credits of Earth and Science Courses:  
- OCGY 208 Intro Physical, Chemical and Geological Oceanography  
- OCGY 209 Introduction to Biological Oceanography  
- BIOL 211 Principles of Ecology  
- BIOL 2XX

### GIS

3 Credits of GIS:  
- GEOG 204 Spatial Analysis and Geographic Information Systems (GIS)

### ACE

12 Credits of the following ACE Courses:  
- ACE 134 Fishes of the Pacific Northwest Rearing  
- ACE 141 Monitoring & Measuring Aquatic and Inter  
- ACE 142 Coastal Forest Measurements  
- ACE 154 Surveying  
- ACE 175 Wildlife Conservation & Monitoring Population Management  
- ACE 182 Stream Habitat Assessment & Restoration  
- ACE 196 Instrument Technology

### ACE or other CMTN Course

3 Credits of ACE or other CMTN Course

### Total Credits 30

1. Please refer to the academic schedule or list above.

Please contact the ACE Program Coordinator (kshaw@cmtn.bc.ca) to work out details and timing of your specific program of studies.

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In order to meet the changing demands of the industry, the ACE program periodically makes small course modifications and adjustments to the timing of course offerings.

1. Apply (https://apply.educationplannerbc.ca/cmtn) direct to Applied Coastal Ecology (ACE)
2. Submit proof of English 12 or equivalent
3. Biology 11, Chemistry 11, Foundation of Math 11 or Equivalent are required to complete the program. Students can be admitted without all three however, students will be required to upgrade throughout the program

The ACE program has multiple entry and exit points depending on your prior studies. Students with Biology 11, Chemistry 11, Foundation of Math 11, and English 12 or equivalents meet all of the course prerequisites and can complete the Diploma within 2 years. Course registration and program planning is on a course by course basis, depending on the student meeting the pre-requisites of each course. Students missing these courses can enter the program and upgrade in the Career and College Prep (CCP) (https://coastmountaincollege.ca/program/career-college-preparation-ccp) program.

English proficiency is required for all students entering CMTN programs. Please visit our English Language Alternatives (https://coastmountaincollege.ca/admissions/requirements/language-requirements/domestic-english-language-requirements) page to see how this requirement can be met.

Need help with the application process? Contact an Educational Advisor (https://coastmountaincollege.ca/student-services/academic-support/educational-advising).

ACE diploma program fees

Students should note that the most common academic schedule is **35 credits per year** to complete the diploma; which requires successful completion of 70 credits. The certificate may be completed in 24 credits, and those fees are not displayed. Please contact the ACE Program Coordinator (kshaw@cmtn.bc.ca) for details.

<table>
<thead>
<tr>
<th>Fees</th>
<th>Domestic</th>
<th>International</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full-time:</td>
<td>35 credits</td>
<td>35 credits</td>
</tr>
<tr>
<td>Tuition:</td>
<td>$3,259.90</td>
<td>$13,854.58</td>
</tr>
<tr>
<td>Student Union Fees:¹</td>
<td>$124.56</td>
<td>$124.56</td>
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<tr>
<td>Mandatory Fees (includes 24 credits of required lab fees):</td>
<td>$622.16</td>
<td>$688.16</td>
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<tr>
<td>Health Insurance:</td>
<td>Not Applicable</td>
<td>$230.00</td>
</tr>
<tr>
<td>Tuition and Mandatory Fees Total:</td>
<td>$4,006.62</td>
<td>$14,897.30</td>
</tr>
<tr>
<td>Books:²</td>
<td>$800.00</td>
<td>$800.00</td>
</tr>
<tr>
<td>Tools:²</td>
<td>$100.00</td>
<td>$100.00</td>
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<tr>
<td>Field School Fees (Cost will vary depending):²</td>
<td>$800.00</td>
<td>$800.00</td>
</tr>
<tr>
<td>Lab Fee per course with required lab (Lab fees are mandatory and cannot be waived. These non-refundable fees also apply to students with lab exemptions. Number of required labs may differ with course selection choice):</td>
<td>$46.62</td>
<td>$46.62</td>
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</tbody>
</table>

Estimated Program Cost: $5,706.62 $16,597.30

Fees are effective as of August 7, 2018

¹ These fees are term based and may vary due to the length of the program.

² Please note that these are approximate costs and may vary depending on courses taken.

ACE post-degree diploma fees

Students can complete the Post-Degree Diploma in 1 year.

<table>
<thead>
<tr>
<th>Fees</th>
<th>Domestic</th>
<th>International</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full-time:</td>
<td>30 Credits</td>
<td>30 Credits</td>
</tr>
<tr>
<td>Tuition:</td>
<td>$2,794.20</td>
<td>$11,875.35</td>
</tr>
<tr>
<td>Student Union Fees:¹</td>
<td>$83.04</td>
<td>$83.04</td>
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<tr>
<td>Mandatory Fees (includes 24 credits of required lab fees):</td>
<td>$446.70</td>
<td>$512.70</td>
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<tr>
<td>Health Insurance:</td>
<td>Not Applicable</td>
<td>$230.00</td>
</tr>
<tr>
<td>Tuition and Mandatory Fees Total:</td>
<td>$3,323.94</td>
<td>$12,701.09</td>
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<tr>
<td>Books:²</td>
<td>$800.00</td>
<td>$800.00</td>
</tr>
<tr>
<td>Tools:²</td>
<td>$100.00</td>
<td>$100.00</td>
</tr>
<tr>
<td>Field School Fees (Cost will vary depending):²</td>
<td>$800.00</td>
<td>$800.00</td>
</tr>
<tr>
<td>Lab Fee per course with required lab (Lab fees are mandatory and cannot be waived. These non-refundable fees also apply to students with lab exemptions. Number of required labs may differ with course selection choice):</td>
<td>$43.95</td>
<td>$43.95</td>
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</tbody>
</table>

Estimated Program Cost: $5,023.94 $14,401.09

Fees are effective as of August 7, 2018

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Fees are effective as of August 7, 2018

1 These fees are term based and may vary due to the length of the program.
2 Please note that these are approximate costs and may vary depending on courses taken.

University transfer agreements

Start here, finish anywhere!

ACE Diploma graduates are able to move onto University Degree completion with a number of transfer pathways. The majority of courses within the program transfer directly to colleges and universities in British Columbia through the BC Transfer System. The ACE program also has a number of specific transfer agreements with institutions that facilitate a seamless transfer between programs.

Explore our pathways to degree completion:

BC Transfer System

The BC Transfer Guide (http://www.bctransferguide.ca) is the main resource to look up the transfer of courses between institutions within the province.

Royal Roads Transfer Agreement

Transfer direct into the third-year of a Royal Road’s Bachelor of Science degree (https://www.coastmountaincollege.ca/programs/explore/degree-partnerships/transfer-agreements/royal-roads-bachelor-of-science-in-env-science-or-env-management) and graduate with a degree in Environmental Science or Environmental Management.

UBC Transfer Agreement

Transfer directly into the third-year of UBC’s Natural Resources Conservation Bachelor of Science (BSc) (https://www.coastmountaincollege.ca/programs/explore/degree-partnerships/transfer-agreements/ubc-bachelor-of-science-in-natural-resources-conservation) and major in Science and Management or Global Perspectives.

In addition to these pathways, more general agreements exist for degree completion within Canada and internationally. Prospective and current students should check out the Degree Partnership (https://www.coastmountaincollege.ca/programs/explore/degree-partnerships) page for more specific details and consult with the ACE Program Coordinator (kshaw@cmtn.bc.ca) in planning their program.

Career opportunities

Students gain the knowledge and practical skills to acquire employment with a large variety of employers including, Environmental Organizations, Federal Government (i.e. Fisheries and Oceans Canada and others), Provincial Government, Environmental Consulting Firms, First Nations Governments, Government Funded Programs, Mariculture and Forestry Industries, Eco-tourism, and International Development projects.

Example jobs

- DFO Stock Assessment Technician
- Nisgaa Fisheries Management
- Northcoast Skeena First Nations Stewardship Society Creel Survey
- Oona River Fish Hatchery
- Archipelago Marine Research
- Babine Lake Stock Assessment
- Assistant Forester
- SFU Fisheries Environmental Toxicology Lab

Program graduates

The ACE program was first initiated in 1996, under the name Coastal Integrated Resources Management (CIRM). It was created in response to growing demands from employers for locally trained experts in the environmental field. In the fall of 2005, the program was expanded and renamed Applied Coastal Ecology to better reflect the new program model.

The ACE program has attracted students from as far away as Japan and Africa, as well as a host of Canadian cities and provinces spanning from coast to coast. A significant portion of our enrolment comes from outside of Prince Rupert.

ACE graduates are generally well-known for their passion and commitment to the environment and the sustainable management of the great wealth of natural resources found in coastal ecosystems across the planet.

Employment & career prospects

Graduates have had exceptional professional and academic opportunities.

- 100% of graduates have found meaningful employment or have gone on to further their education following completion of the program
- 83% of graduates who found employment did so in a field related to their studies

We find our graduates engaged in employment across a wide range of related fields:

Consulting Firms

- Archipelago Marine
- J.O. Thomas and Associates
- Oona River Resources Association
- Triumph Timber
- First Nations
- Self-employed contracting

Consulting firms generally look for employees that have both the foundational academic training needed to solve problems, as well as the practical hands-on skills needed to carry out consulting contracts in both field and office settings. Many consulting firms have stated that they prefer to hire graduates who possess hands-on experience/skills as well as the necessary academic training. The ACE program has deliberately included a well-integrated mix of both academic and hands-on courses.
which together create a balance and prepare graduates to be effective and efficient and hit the ground running.

**Government**
- Fisheries and Oceans Canada
- Ministry of Air, Land and Water
- First Nations governments
- Local municipal governments
- Teaching institutions

The ACE program utilizes various government agencies. Government representatives are used as guest lecturers and also serve as expert advisors on the program’s advisory committee. The committee has representation from several levels of government - from local to federal. This ensures the program’s curriculum remains up to date with governmental policies and procedures and makes ACE grads an attractive prospect to these agencies.

**Private industry**
- Technologists and biologists at mariculture operations ranging from Marine Harvest Canada to smaller-scale private operations
- BC Hydro and any other organization that requires environmental monitoring as part of their business
- Wildlife protection and fish-stream enhancement offices
- Non-governmental environmental organizations such as World Wildlife Fund, T Buck Suzuki Foundation, and EcoTrust Canada
- Guiding or working as wildlife interpreters for eco-tourism operations
- Various forestry operations
- Laboratory technicians
- A variety of international placements

The growth of coastal ecology related opportunities with private industry has experienced a significant increase in recent years. Graduates have done exceptionally well in these settings, and in some cases make up the bulk of the technical expertise for such employers.