Specific requirements for the Environmental Science major in CALS are divided into three areas: 1) knowledge of agricultural and life sciences, 2) knowledge of basic sciences, and 3) knowledge of environmental science. In addition, all students must choose a concentration or "track" (listed on next page) in which they need to complete at least 14 credit hours.

I. General knowledge of agriculture and life sciences.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDAE 208</td>
<td>Agricultural Policy and Ethics</td>
<td>3 cr</td>
</tr>
<tr>
<td>BCOR 102 or NR 103</td>
<td>Ecology</td>
<td>4 cr</td>
</tr>
<tr>
<td>CDAE 2</td>
<td>World Food, Pop. &amp; Development</td>
<td>3 cr</td>
</tr>
<tr>
<td>MMG 101</td>
<td>Biology of Microorganisms</td>
<td>4 cr</td>
</tr>
<tr>
<td>PSS 21</td>
<td>Introduction to Ecological Agriculture</td>
<td>3 cr</td>
</tr>
</tbody>
</table>

II. Basic sciences.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCOR 11,12</td>
<td>Principles of Biology</td>
<td>4 cr</td>
</tr>
<tr>
<td>CHEM 31,32</td>
<td>Introductory Chemistry</td>
<td>4 cr</td>
</tr>
<tr>
<td>CHEM 42</td>
<td>Introductory Organic Chem</td>
<td>4 cr</td>
</tr>
<tr>
<td>*or CHEM 141, 142</td>
<td>Organic Chemistry I, II</td>
<td>4, 4 cr</td>
</tr>
<tr>
<td>PSS 161 **or GEOL 55</td>
<td>Introductory Soil Science **or Environmental Geology</td>
<td>4 cr **or 3 cr</td>
</tr>
<tr>
<td>MATH 19, 20 **or MATH 21, 22</td>
<td>Intro Calculus</td>
<td>3, 3 cr</td>
</tr>
<tr>
<td>NR 140 or STAT 141</td>
<td>Statistics</td>
<td>4-3 cr</td>
</tr>
</tbody>
</table>

* The full year course in organic chemistry (141, 142) is recommended for those students intending to pursue graduate studies.

**Introductory Soil Science is required for many advanced Plant & Soil Science courses and is recommended for most students.

III. Environmental science foundation courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENSC 1</td>
<td>Intro to Environmental Sciences</td>
<td>3 cr</td>
</tr>
<tr>
<td>ENSC 101</td>
<td>Pollutant Movement through Air, Land, and Water</td>
<td>4 cr</td>
</tr>
<tr>
<td>ENSC 130</td>
<td>Global Environmental Assessment</td>
<td>3 cr</td>
</tr>
<tr>
<td>ENSC 201</td>
<td>Recovery and Restoration of Altered Ecosystems</td>
<td>3 cr</td>
</tr>
<tr>
<td>ENSC 202</td>
<td>Ecological Risk Assessment</td>
<td>3 cr</td>
</tr>
</tbody>
</table>

Prior to the junior year, select a track in which to take at least 14 credits. Up to three credits each of ENSC 195 (Internship) and ENSC 196 (Independent Research) can be applied toward the track. These experiences are highly
Advising Tracks (please see http://www.uvm.edu/~ensc/ for more details):

- **Agriculture and The Environment**: impacts of agriculture on the environment and strategies for minimizing environmental degradation.
- **Conservation Biology and Diversity**: endangered species and ecosystems, and strategies for conserving the diversity of the earth's life forms.
- **Ecological Design**: use of ecological systems to improve environmental quality.
- **Environmental Analysis and Assessment**: techniques for measuring environmental impacts and managing environmental data.
- **Environmental Biology**: ecological and molecular analysis of endangered populations, phenomena affecting biological diversity, the interrelationship of organisms and their environments, and conservation genetics.
- **Environmental Chemistry**: analytical methods for measuring and monitoring air, ground, and water pollutants.
- **Environmental Geology**: Earth science, geomorphology, and the analysis of ground water.
- **Environmental Resources**: environmental processes in air, soil, and water.
- **Water Resources**: effects of pollutants on the structure and function of aquatic ecosystems.

To graduate, all students earn a minimum of 122 credits (120 academic credits plus 2 credits for PE)

**College of Agriculture and Life Sciences Core Curriculum Checklist Environmental Science Major**

The College of Agriculture and Life Sciences has a core curriculum that ensures that students learn a set of skills and competencies, rather than prescribing a set of courses. The following explains the new core and how Environmental Science courses help fulfill its requirements.

I. Knowledge: Students develop a fundamental base of knowledge that will serve as a foundation for lifelong learning.

A. Sciences: (Students use the scientific method to understand the natural world and the human condition.)

1. **Physical and Life Sciences**: Competency may be met by the satisfactory completion of two courses.
   Met by basic science requirement of Biology and Chemistry
2. **Social Sciences**: Competency may be met by the satisfactory completion of two courses in such subjects as: anthropology, community development, economics, geography, history, political science, psychology, public policy, and sociology.

   **ENSC Requirement, 2 courses** (6 credits):
   CDAE 2 World Food, Pop. & Development
   2nd course

B. Humanities and Fine Arts: (Students develop an understanding and appreciation for the creative process and human thought.) Competency may be met by the satisfactory completion of two courses in such subjects as art, classics, history, literature, music,
II. Skills: Students develop abilities and use tools to effectively communicate, analyze, problem solve, think critically and work with others.

A. Communication Skills: (Students express themselves in a way that is easily understood at a level that is appropriate for the audience.)

1. Oral: (Students show confidence and efficacy in speaking before a group.) Competency may be met by the satisfactory completion of AGRI 1 and an additional course or series of courses in which students present a minimum of three graded speeches, in total, to a group.

ENSC Oral Communications Requirement, 1 course plus 3 graded presentations:
AGRI 1 Foundations: Communication Methods (AGRI 183 or Speech 11 if transfer student)
ENSC 130, 201 and 202 will fulfill the 3 speech requirement

2. Written: (Students effectively communicate in writing.) Competency may be met by the satisfactory completion of any English writing course and additional course or series of courses that uses the writing process (redrafting) for a minimum of three graded papers in total.

ENSC Written Communications Requirement, 1 course plus 3 redrafted papers:
ENG 1 or ENG 50 (3 credits)
ENSC 130, 201 and 202 will fulfill the 3 paper requirement

B. Information Technology: (Students demonstrate mastery of technology for communication, data gathering and manipulation, and information analysis.) Competency may be met by the satisfactory completion of AGRI 1 and an additional course or series of courses that uses computers for a minimum of two or more applications in total.

AGRI 2 Foundations: Information Technology (AGRI 85 or CS 2 if transfer student)
Any ENSC course will fulfill the application requirement

C. Quantitative Skills: (Students demonstrate the ability to understand and use numbers.)

1. Mathematics: (Students demonstrate the use of numbers for problem solving.) Competency may be met by the satisfactory completion of MATH 9 or higher. Met by ENSC MATH 19 and 20 requirement

2. Statistics: (Students demonstrate the use of numbers for data analysis and inference.) Competency may be met by the satisfactory completion of STAT 111 or higher or NR 140. Met by ENSC Statistics requirement (STAT 141 or NR 140)

3. Quantitative Skill Application: (Students apply mathematics or statistics skills in a course relevant to their major.) Competency may be met by the satisfactory completion of one course that utilizes principles from math or statistics.
ENSC 101, 130, 201 or 202 will fulfill the utilization requirement

D. Critical Thinking Skills: (Students demonstrate reasoning ability to comprehend, and judge and present written/oral arguments and to solve problems. Students learn how to distinguish between fact, conjecture, and intuition.) Competency may be met by the satisfactory completion of any course or series of courses in which students solve problems, and analyze, judge and construct arguments.
ENSC 101, 130, 201 and 202 will fulfill the competency
E. Interpersonal Skills: (Students demonstrate the ability to work well with other people by understanding and using skills of leadership, conflict resolution, and group process.)

*Competency may be met by satisfactory completion of any course or series of courses that includes leadership, working in diverse groups, conflict resolution, and group process.*

ERSC 101, 130, 201 and 202 will fulfill the utilization requirement

III. Values: Students are exposed to values that are expressed through relationships with community, the environment and themselves that are consistent with the mission of the College of Agriculture and Life Sciences and the University of Vermont campus compact known as “Our Common Ground.”

A. Citizenship & Social Responsibility: (Students develop an understanding, appreciation and empathy for the diversity of human experience and perspectives. Students are exposed to solving problems for a community and contributing to the common good.)

*Competency may be met by satisfactory completion of AGRI 1 (or equivalent) and one other course or series of courses that exposes students to these values.*

EDSS 011 Race and Culture or equivalent
ERSC 201 and 202 will fulfill the other course requirement

B. Environment Stewardship: (Students develop sensitivity for the interconnected relationship between human beings and the natural world and the responsibility for stewardship of the environment.)

*Competency may be met by satisfactory completion of two courses that expose students to these values.*

Any two ENSC courses will fulfill this requirement

C. Personal Growth: (Students develop an understanding and appreciation of a healthy lifestyle and a love for learning that will lead to continuous growth and development. Students continue to improve the self by developing and affirming the values of respect, integrity, innovation, openness, justice and responsibility.)

*Competency may be met by satisfactory completion of AGRI 1, two credits of physical education, and one other course or series of courses that expose students to these values.*

AGRI 1: Foundations: Communication Methods
2 credits of PE
ERSC 130 and 202 fulfill the additional course requirement