

Overview of Crop and Soil Sciences (CSS) Major

This major features crop production, utilization of soils, and stewardship of the environment. Crop production agriculture feeds the world, and agriculture impacts our environment more than any other single industry! In the CSS program, students learn the fundamentals of plant science and improvement, and soil and environmental stewardship for feeding the world, protecting the environment, and producing quality turfgrass.

As a student in CSS you will learn the fundamentals of soil, plant, and environmental sciences to prepare you for careers ranging from integrated pest management to international development, from environmental legislation to biotechnology, from crop production to city planning. Students find employment in agribusiness (e.g. agricultural sales and consulting), soils-related activities (such as soil conservation and land-use planning), and other areas of environmental concern (e.g., biological control of pests and water quality assessment/control), as well as crop production (such as turf maintenance and farm management).

Graduates from the CSS program include professionals who monitor and work to improve water quality, who serve as agricultural loan officers for banks, who develop environmentally acceptable methods for protecting crops from pests, who advise municipalities on use of the land resource, and who maintain the greens and fairways at golf courses. Because of its breadth and diversity, the CSS major is divided, for advising and curricular purposes, into four undergraduate options.

Agronomy (formerly Agroecology) Option Students in this option concentrate on the biology and increasingly complex technology of food, feed, fuel, and fiber production. Graduates typically move into farming or into sales, consulting, and managerial positions that directly and indirectly support agricultural production, a most vital component of the world's economy.

Crop Genetics & Breeding Option Producing better quality and higher yielding crops has been a long-standing objective of crop breeders. New techniques of genetic engineering are now being brought to bear on crop improvement. Students in this option learn the newest methods of molecular biology and are well prepared for careers in research and industry.

International Agriculture Option The world's ever-expanding population must be fed; at the same time, we must be good stewards of the Earth's resources. Many countries have not been able to bring food production and resource conservation into balance. Students in the International Agriculture option are interested in finding simultaneous solutions to these concerns. Employment opportunities exist with various private and public agencies.

Turfgrass Management Option Using basic principles of the natural sciences and agricultural technology, turf managers have skills that make them highly employable in golf-course management, sports turf complexes, lawn maintenance services, the landscaping industry, and sod production.

Academic Preparation

All admission offers to Crop and Soil Sciences are made through the University's Admissions Office. Successful applicants for freshman admission meet the guidelines found at

http://www.admiss.vt.edu/apply/freshman/what_do_we_look_for.php. Students seeking to transfer after one year of college work should earn at least a 3.0 grade point average and complete transferable coursework in English, mathematics, and lab sciences. Students planning to transfer under the Guaranteed Admission Initiative for the College of Agriculture and Life Sciences should follow the academic guidelines noted at <http://www.admiss.vt.edu/apply/transfer/articulation.php>.

Requirements for a Major All the curricula for the various options contain a core of courses to assist the student in developing knowledge and ability sciences (biology and chemistry), computational skills (mathematics and statistics), communication skills (both writing and speaking) as well as crop, soil, and environmental sciences. A list of courses specified for each option may be obtained upon request from the department or at www.cses.vt.edu. In the following listing, semester hour credits are shown at the right.

Core Curricular Requirements (All Options)

Agricultural Economics/Economics	6
Biology	3-6
Chemistry	8
Communications	3
Creativity and Aesthetic Experience (CLE 6)	1/3
Crop and Soil Environmental Sciences	14
English (writing)	9
Ideas, Cultural Traditions, and Values (CLE 2)	6
Mathematics	3-6
Statistics	3
Some Option-Specific Course Requirements and Electives	
Agricultural and Applied Economics (in addition to above)	0-9
Biochemistry	0-9
Biology (in addition to above)	0-18
Chemistry (in addition to above)	0-8
Crop and Soil Environmental Sciences (in addition to above)	6-21
Entomology	0-6
Geology	0-4
Horticulture	0-8
Physics	0-3
Plant Pathology, Physiology, and Weed Science	0-11
Total Credits for B.S. Degree (minimum)	120

Requirements for a Minor

The department offers minors in crop and soil environmental sciences, turfgrass management, and wetland science. The requirements for each include CSES/ENSC 3114 and 3124 (or 3134) and 15 or 16 more credit hours selected from courses from within and outside the department. Consult the department office (240 Smyth) or web site (www.cses.vt.edu) for more information on a minor.

Satisfactory Progress

By the end of the academic year in which the student has attempted 60 hours (including transfer, advanced placement, advanced standing and credit by examination) "satisfactory progress" will include meeting the following minimum criteria:

- having a grade point average of at least 2.0
- passing at least 24 semester credits that apply to the Curriculum for Liberal Education
- passing the following: CHEM 1035, 1036, 1045, 1046
- CSES 1004
- CSES 3114 and 3124
- 6 hours of MATH and/or STAT
- declaring an option within CSES

Opportunities to Excel

Students with outstanding records can qualify for the Honors Program and graduate "in honors" in crop and soil sciences.

Other opportunities for personal and professional growth and for recognition include department-sponsored agronomy and turf clubs, membership in Alpha Zeta and Gamma Sigma Delta or other honoraries, and several scholarships. B.S. graduates are certifiable in the professional registry of the American Society of Agronomy.

Graduate courses and research opportunities lead to M.S. and Ph.D. specializations in soil mineralogy, soil microbiology, soil chemistry and biochemistry, soil morphology and genesis, soil physics, soil and crop management, soil fertility, biotechnology, bioremediation, crop breeding, crop ecology, crop physiology, and turfgrass science. (See the Graduate Catalog for more information.)