

**New Program Proposal
Bachelor of Science in Soils and Sustainable Crop Systems
Clemson University**

Summary

Clemson University requests approval to offer a program leading to the Bachelor of Science degree in Soils and Sustainable Crop Systems, to be implemented in Fall 2007.

The proposal was approved by the Clemson University Board of Trustees on October 10, 2005, and submitted for Commission review on May 15, 2006. The proposal was reviewed without substantive comment and voted upon favorably by the Advisory Committee on Academic Programs at its meeting on July 31, 2006.

The purpose of the program is to establish a multi-disciplinary degree program in agriculture that will educate students with expertise in soils, crop sciences, or applied agricultural biotechnology. Three concentrations are proposed with emphasis in either (1) Soil and Water Environmental Science, (2) Sustainable Crop Production or (3) Agricultural Biotechnology.

Each concentration offers a unique focus. The Soil and Water Environmental Science and Sustainable Crop Production concentrations will integrate courses with related disciplines such as Horticulture, Environmental Toxicology, Agricultural Mechanization, and Agricultural Economics and the basic sciences. The Agricultural Biotechnology concentration will address cutting-edge agricultural molecular sciences contrasting with well-established molecular science courses currently offered in the Genetics and Biochemistry and Biological Sciences Departments.

The proposal states that both government and businesses are currently seeking graduates with the skills contained in the proposed Soils and Sustainable Crop Systems program. Employment opportunities will include such areas as soil science and conservation, environmental regulation and consulting, natural resource management, agricultural research, pest management, and agricultural biotechnology.

The proposed program is not duplicated at any other institution in South Carolina. The program will compliment other programs at Clemson University by offering educational needs in cutting-edge plant, insect, and soil sciences related to agricultural production allowing students to tailor their curriculum to meet specific career objectives.

Interdisciplinary cooperation between other departments will allow programs to use existing education resources to supplement course offerings.

The proposal states that the program will provide an opportunity for South Carolina students to obtain a Bachelor of Science degree in Soils and Sustainable Crop Systems while remaining in-state and retaining the use of State scholarships. Similar programs are offered at North Carolina State University and the University of Georgia. North Carolina State University offers a program of study in agronomy with options in crop production, soil science and turfgrass management, but does not offer a program in agricultural biotechnology or applied biotechnology. The University of Georgia offers an AgriScience and Environmental Systems degree and an Applied Biotechnology degree that is very similar to the proposed program. While similar, neither state's degrees exactly correspond with the Soils and Sustainable Crop Systems program offerings.

Staff research indicates that the proposed program is similar to one that was terminated at Clemson University in Spring 2001. At the time of termination, the Bachelor of Science in Crop and Soil Environmental Science enrolled 22 undergraduate students. The proposal, however, makes no mention of this program. A comparison of the curricula between the proposed Bachelor of Science in Soils and Sustainable Crop Systems and the terminated Bachelor of Science in Crop and Soil Environmental Science shows two major similarities:

- The curriculum of the Soil and Environment Study concentration under the terminated Bachelor of Science in Crop and Soil Environmental Science is highly similar to the Soil and Water Environmental Science concentration under the proposed Bachelor of Science in Soils and Sustainable Crop Systems.
- The curriculum of the Agronomic Systems concentration under the terminated Bachelor of Science in Crop and Soil Environmental Science considerably overlaps the Sustainable Crop Production concentration under the proposed Bachelor of Science in Soils and Sustainable Crop Systems.

The proposed program has added a wholly new Agricultural Biotechnology concentration. Staff discussions with Clemson administrators indicate that the new program is being proposed now, because of the third concentration (ie: Agricultural Biotechnology), renewed student intent and employment demand in the field, and significant new collaboration across academic departments at the institution.

No special program admissions requirements are needed beyond the University's standard admission criteria. Total enrollment (headcount) in Spring 2007 is estimated at 10 increasing to 125 in 2011-12. New enrollment is estimated at seven in Spring 2007 and a total of 20 by Spring 2011-12.

A minimum of 124-126 credit hours of academic coursework will be required for the concentration in Soil and Water Environmental Science; 126-129 credit hours for the concentration in Sustainable Crop Production; and 124-126 credit hours for the concentration in Agricultural Biotechnology. A total of twelve new courses will be added to the University's catalogue as part of the program. Eight of the new courses are designated under the Crop and Soil Environmental Science area, two under Environmental Toxicology, and two under Entomology.

No specialized accreditation is available for this program. No state licensure is required for the operation of this program.

The program in Soils and Sustainable Crop Systems will be supported primarily by 18 faculty members who are currently in place and by faculty who will fill currently advertised positions. Funds to hire the faculty are being allocated from existing funds derived from TERI faculty who will be leaving Clemson University over the next several years. In 2007-08, total teaching faculty used in the program will be 20 (9.76 FTE). This number will increase to 23 (10.51 FTE) by 2011-12. Administrative and staff support will remain unchanged in the first five years with three (0.75 FTE) in staff support and one (0.33 FTE) for program administration.

According to the proposal, the Clemson University libraries already have sufficient support for the program. Staff research found that significant library resources appear available for this program since Clemson University offers graduate degrees in Entomology, Genetics, and Plant and Environmental Sciences. Therefore, no additional library resources will be needed.

The proposal states that Clemson University's physical plant, in particular soil laboratory space, will need to be upgraded. Teaching laboratories for Crop Science and Agricultural Biotechnology similarly equipped will also be necessary. Projected costs for laboratories are \$150,000.

The proposal states that significant new equipment will be required to implement the new program. Equipment to teach the Soils and Water Environmental Science concentration is inadequate. The current soils teaching program had been dependent on the Agricultural Chemical Services Laboratory (ACSL) for analysis of routine soil and solution samples generated in the teaching program and in return, what was the Agronomy and Soils Department donated supplies and equipment to the ACSL. The ACSL was disbanded and the equipment was dispersed to research laboratories within CAFLS. The equipment is no longer available to the teaching program. Total equipment costs for the Soils and Sustainable Crop Systems program are estimated at \$350,000. Partial funding for equipment will be sought through grants from NRI and NSF.

The proposal estimates that total costs of the program in 2006-07 will equal \$553,280. These costs are estimated to increase to \$547,080 by 2010-11. During the first five years of the program, a total of \$2,902,000 in new funding will be required. The proposal states that a total of \$3,234,037 in revenues are anticipated during the first five years of the program including \$677,525 from State FTE revenue, \$722,912 from tuition, \$1,433,600 from reallocated (salary) funds and \$400,000 from grants. No new unique cost will be required or requested from the State.

Shown below are the estimated Mission Resource Requirement (MRR) costs to the State, and new costs not funded by the MRR associated with implementation of the proposed program for its first five years. Also shown are the estimated revenues projected under the MRR, the Resource Allocation Plan, student tuition and estimated extramural (grant) funding.

Year	Estimated MRR Cost for Proposed Program	Extraordinary (Non-MRR) Costs for Proposed Program	Total Costs	State Appropriation	Tuition	Grants	Total Revenue
2006-07	\$56,728	\$0	\$56,728	N/A	\$41,239	\$0	\$41,239
2007-08	\$226,912	\$0	\$226,912	\$21,775	\$165,999	\$100,000	\$287,774
2008-09	\$226,912	\$0	\$226,912	\$86,698	\$165,999	\$100,000	\$352,697
2009-10	\$291,744	\$0	\$291,744	\$86,698	\$212,981	\$100,000	\$499,679
2010-11	\$291,744	\$0	\$291,744	\$111,641	\$212,981	\$100,000	\$524,622

These data demonstrate that if Clemson University meets the projected student enrollments and is awarded the extramural grants as expected, the program will begin to cover costs during the second year.

In summary, Clemson University proposes to offer a new program leading to the B.S. degree in Soils and Sustainable Crop Systems, to be implemented in Fall 2007. The program will be a multi-disciplinary degree program in agriculture that will educate students in the concentrations of soil and water environmental sciences, sustainable crop production and agricultural biotechnology.

Recommendation

The Committee on Academic Affairs and Licensing recommends that the Commission approve Clemson University's proposed program leading to the B.S. degree in Soils and Sustainable Crop Systems to be implemented in Fall 2007, provided that no "unique cost" or other special state funding be required or requested.