



TENNESSEE HIGHER EDUCATION COMMISSION

REGULAR CALENDER ITEM: I. C.

MEETING DATE: January 28, 2022

SUBJECT: New Academic Program
Tennessee State University
Agricultural Sciences, Doctor of Philosophy
CIP Code: 01.0000 (Agricultural/Animal/Plant/Veterinary Science and
Related Fields, Other)

ITEM TYPE: Action

ACTION RECOMMENDATION: Approval

PROGRAM DESCRIPTION

Tennessee State University (TSU) proposes a Doctor of Philosophy (PhD) in Agricultural Sciences, which will be awarded at the completion of a primarily on-ground, 48 credit hour curriculum including 13 credits of core departmental courses, 11 credits of electives, and 24 credits of dissertation research. Potential students will be required to have earned a Master's degree prior to admission to the program. The proposed program leverages the growth and success of TSU's Department of Agricultural and Environmental Science (DAES) to prepare students to meet job market needs across rural and urban communities. The department currently receives \$25 million in annual research funding, operates 38 research laboratories and three research centers. Program graduates will accomplish vital work in animal science, food science, plant science, environmental science, and agricultural education, and will increase the number of minority doctoral degree holders in the Agricultural Sciences.

INSTITUTIONAL GOVERNING BOARD APPROVAL

The proposed Agricultural Sciences, PhD program was approved by the Tennessee State University Board of Trustees on November 18, 2021.

PROPOSED IMPLEMENTATION DATE

August 2022

ALIGNMENT WITH STATE MASTER PLAN AND INSTITUTIONAL MISSION/STRATEGIC PLAN

The proposed program aligns specifically with the State's Master Plan for Higher Education by providing enhanced and expanded graduate research opportunities that increase educational attainment levels; addressing economic development, workforce development, and research needs by preparing graduates with the theoretical and applied training necessary to tackle emerging issues in agriculture, including food safety and security, animal production and management, crop production and soil health, and water and air quality management; structuring the program intentionally to ensure increased degree production, including supporting the majority of students with graduate assistantships; and providing a differentiated graduate program, the only dissertation based PhD program in the state with a holistic approach to agricultural issues, which will help realize statewide efficiencies.

The proposed program aligns with TSU’s 2020-2025 Strategic Plan and extends the university’s “high research” Carnegie classification, and aligns with the university’s focus on improving the quality of academic programs through updating curricular offerings to meet the needs of Tennesseans. Specifically, this program would assist in increasing the number of minority PhD graduates.

CURRICULUM

The proposed program consists of 48 credit hours (13 credits of departmental core classes, 11 elective credits, and 24 credit hours of dissertation research). Students will propose and defend their dissertation research and are required to pass a comprehensive examination on theoretical knowledge of the field. A total of 33 courses have been identified as options for the elective credits, which provides specialization within approved research area and allows curriculum to be tailored to student need.

Applicants for the proposed doctoral program must have a Master’s degree with a major in agricultural science or related field such as plant, soil, animal, or food environmental sciences, or agricultural education and a minimum grade point average of 3.0 on a 4.0 point scale. Five student learning objectives direct the proposed doctoral program. Students will integrate substantive knowledge of food safety and product development, animal and plant sciences, environmental sciences, and biotechnological advancements in agricultural sciences in their professions; demonstrate high level knowledge and skill in their area(s) of specialization to identify and solve salient agricultural problems; produce and defend an original significant contribution to knowledge; demonstrate mastery of subject material through a comprehensive exam, dissertation defense, and the preparation of two or more manuscripts for peer review and publication; and teach and communicate solutions in their area(s) of expertise.

PROGRAM PRODUCTIVITY

The proposed Agricultural Sciences, PhD program anticipates an initial enrollment of 13 students, increasing to 29 students by year four. The proposed program projects its first graduates in year three and a consistent nine graduates per year starting in year four.

	2022	2023	2024	2025	2026	2027	2028
Enrollment	13	18	28	29	29	29	29
Graduates	--	--	8	8	9	9	9

PROGRAM DUPLICATION

Currently, only two similar doctoral programs are offered in Tennessee. The University of Tennessee, Knoxville offers a PhD degree in the specialized areas of food science, plant science and animal science and Tennessee Technological University offers a PhD degree in environmental science with a concentration in Agricultural Sciences. If approved, this academic program will represent the only Agricultural Sciences PhD degree program in middle and west Tennessee.

EXTERNAL JUDGEMENT

An external review of the proposed program was conducted during a two-day institutional site visit on August 11-12, 2021. Dr. Richard Coffee, Chair of the Animal and Food Sciences Department and Extension Professor at the University of Kentucky and Dr. Moses Kairo, Dean of the School of Agricultural and Natural Sciences, Research Director of the 1890s Land Grant Programs, and Administrator of the UMES Extension at the

University of Maryland Eastern Shore served as the external reviewers for the proposed program. The site visit included meetings with campus administrators, faculty, prospective students, and community partners. Dr. Kairo and Dr. Coffee enthusiastically recommend the approval of the program, citing “a significant dearth of graduates to fulfill public and private sector workforce needs at both the state and national levels,” as part of the rationale for their recommendation. In addition, they suggest that “the DAES (Department of Agricultural and Environmental Sciences) has demonstrated a clear need for the program and has documented that there is an adequate and sustainable number of students with interest in the program. There is adequate demand in the marketplace to support the level of anticipated graduates from the program, and the applied nature of the degree program will position students to provide needed expertise in the workforce.”

STUDENT DEMAND

Tennessee State University surveyed graduate and undergraduate students within 100 miles of TSU to determine student demand for the proposed program. Their surveys showed that 50 percent of the PhD students with Agricultural Science background currently enrolled in TSU’s Biological Sciences PhD program are interested in transferring to the proposed program. Of the Master’s students enrolled in DAES, 77 percent (49 of 64) of students expressed an interest in enrolling in the proposed program. Additionally, 57 percent of undergraduate students expressed an interest in the proposed program. All surveyed graduate students at other institutions expressed interest in the proposed doctoral program (n=6). Of the 16 graduates from Tennessee universities who are currently in the workforce, 56 percent expressed interest in the proposed PhD.

OPPORTUNITIES FOR PROGRAM GRADUATES

Graduates from the proposed program will be qualified for employment in various agricultural science capacities, including crop production, animal food manufacturing, conservation science, soil and plant science, agricultural science instruction, environmental science, agricultural and food science, animal science, and food science. Each of these fields has a projected growth of at least five percent over the next ten years according to the US Bureau of Labor Statistics. Program graduates will be trained in an important mix of theoretical and applied research and will be uniquely qualified for these many opportunities.

Letters of support were included from the United States Department of Agriculture’s Agricultural Research Service and National Institute of Food and Agriculture, ADM Research, Tennessee Nursery and Landscape Association, Inc., Aquafine, and the Tennessee Department of Education. Additionally, letters of support were received from higher education institutions including Austin Peay State University, Middle Tennessee State University, Tuskegee University, and University of Tennessee, Martin.

INSTITUTIONAL CAPACITY TO DELIVER THE PROGRAM

The proposed program will be housed in the Department of Agricultural and Environmental Sciences (DAES). Currently the department has 42 full-time faculty members, whose expertise covers a broad range of disciplines including food science, animal science, plant science, agricultural education, sustainable agriculture, hydrology, forestry, soil chemistry, climate change, entomology, wildlife ecology, and bioenergy. The proposed program will require two new faculty positions. These faculty positions will be primarily funded through federal grant dollars and will require minimal funding from TSU. Additionally, the department has extensive state-of-the-art facilities, including 31 research laboratories on TSU’s main campus; ten laboratories; 12,000 ft² of greenhouse space at the Otis L. Floyd Nursery Research Center in Warren County; a 124-acre research farm in Ashland City, TN supporting field-based research on plants and small ruminants; and a 100-

acre research and education farm just off the main campus. Furthermore, the department receives \$25 million in annual research funding.

ASSESSMENT AND POST-APPROVAL MONITORING

An annual performance review of the proposed program will be conducted for the first seven years following program approval. The review will be based on benchmarks established in the approved proposal. At the end of this period, the campus, institutional governing board, and THEC staff will perform a summative evaluation. The benchmarks include, but are not limited to, enrollment and graduation, program cost, progress toward accreditation, and other metrics set by the institution and staff. If benchmarks are not met during the monitoring period, the Commission may recommend that the institutional governing board terminate the program. If additional time is needed and requested by the institutional governing board, the Commission may choose to extend the monitoring period.

FINANCIAL PROJECTIONS

Tennessee Higher Education Commission
Appendix A: THEC Financial Projections
Tennessee State University
Ph.D. Agricultural Sciences

Seven-year projections are required for doctoral programs.
 Five-year projections are required for baccalaureate and Master's degree programs
 Three-year projections are required for associate degrees and undergraduate certificates.
 Projections should include cost of living increases per year.
 Planning year projections are not required but should be included when appropriate.

	Planning Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
I. Expenditures								
A. One-time Expenditures								
New/Renovated Space ¹	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Equipment	-	-	-	-	-	-	-	-
Library	-	-	-	-	-	-	-	-
Consultants-Program Review	5,000	-	-	-	-	-	-	-
Travel	-	-	-	-	-	-	-	-
Other	-	-	-	-	-	-	-	-
Sub-Total One-time	\$ 5,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
B. Recurring Expenditures								
Personnel								
Administration								
Salary	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Benefits	-	-	-	-	-	-	-	-
Sub-Total Administration	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Faculty (New)								
Salary	\$ -	\$ 59,500	\$ 60,690	\$ 61,904	\$ 63,142	\$ 64,405	\$ 65,693	\$ 67,007
Benefits	-	\$ 20,825	\$ 21,242	\$ 21,666	\$ 22,100	\$ 22,542	\$ 22,992	\$ 23,452
Sub-Total Faculty	\$ -	\$ 80,325	\$ 81,932	\$ 83,570	\$ 85,242	\$ 86,946	\$ 88,685	\$ 90,459
Support Staff								
Salary	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Benefits	-	-	-	-	-	-	-	-
Sub-Total Support Staff	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Graduate Assistants								
Salary***	\$ -	\$ 288,000	\$ 408,000	\$ 600,000	\$ 600,000	\$ 600,000	\$ 600,000	\$ 600,000
Benefits	-	-	-	-	-	-	-	-
Tuition and Fees (see below)	-	-	-	-	-	-	-	-
Sub-Total Graduate Assistants	\$ -	\$ 288,000	\$ 408,000	\$ 600,000	\$ 600,000	\$ 600,000	\$ 600,000	\$ 600,000
Operating								
Travel	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Printing	-	-	-	-	-	-	-	-
Equipment	-	-	-	-	-	-	-	-
Other	-	-	-	-	-	-	-	-
Sub-Total Operating	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Total Recurring	\$ -	\$ 368,325	\$ 489,932	\$ 683,570	\$ 685,242	\$ 686,946	\$ 688,685	\$ 690,459
TOTAL EXPENDITURES (A + B)	\$ 5,000	\$ 368,325	\$ 489,932	\$ 683,570	\$ 685,242	\$ 686,946	\$ 688,685	\$ 690,459

	Planning Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
*If tuition and fees for Graduate Assistants are included, please provide the following information.								
Base Tuition and Fees Rate								
Number of Graduate Assistants								
II. Revenue								
Tuition and Fees ^{2****}	-	\$ 124,813	\$ 178,058	\$ 291,419	\$ 319,221	\$ 325,286	\$ 331,468	\$ 337,766
Institutional Reallocations ³	5,000	\$ (44,488)	\$ (96,127)	\$ (207,849)	\$ (233,979)	\$ (238,340)	\$ (242,783)	\$ (247,307)
Federal Grants ⁴	-	\$ 288,000	\$ 408,000	\$ 600,000	\$ 600,000	\$ 600,000	\$ 600,000	\$ 600,000
Private Grants or Gifts ⁵	-	-	-	-	-	-	-	-
Other ⁶	-	-	-	-	-	-	-	-
BALANCED BUDGET LINE	\$ 5,000	\$ 368,325	\$ 489,932	\$ 683,570	\$ 685,242	\$ 686,946	\$ 688,685	\$ 690,459
Notes:								
(1) Provide the funding source(s) for the new or renovated space.								
N/A								
(2) In what year is tuition and fee revenue expected to be generated? Tuition and fees include maintenance fees, out-of-state tuition, and any applicable earmarked fees for the program. Explain any differential fees.								
Year (Enrollment)	Instate fees	Out of state	In-State ^a	In-State ^b	Out of State ^c	Total Fee		
1 (13)	\$9,985	\$21,043	12(119,820)	1(4,993)*		\$ 124,813		
2 (18)	\$10,175	\$21,443	17(172,970)	1(5,088)*		\$ 178,058		
3 (28)	\$10,368	\$21,850	25(259,201)	2(10,368)**	1(21,850)	\$ 291,419		
4 (29)	\$10,565	\$22,265	25(264,126)	2(10,565)**	2(44,530)	\$ 319,221		
5 (29)	\$10,766	\$22,688	25(269,144)	2(10,766)**	2(45,376)	\$ 325,286		
6 (29)	\$10,970	\$23,120	25(274,258)	2(10,970)**	2(46,240)	\$ 331,468		
7 (29)	\$11,179	\$23,559	25(279,469)	2(11,179)**	2(47,118)	\$ 337,766		
^a Graduate Research Assistants on Instate Tuition rate.								
^b Self-funded or State-funded part-time students who are teachers with the Government or Tennessee Schools.								
*Tuition for one part-time In-State student registered for 6 credit hours (half-load) per semester.								
**Tuition for two part-time In-State students registered for 6 credit hours (half-load) per semester.								
***Graduate Research Assistants receive this consolidated stipend out of which they pay tuition and living expenses.								
****Tuition presented is for all students projected to join the PhD program.								
^c International or Out-of-State students sponsored or funded by International organizations.								
(4) Provide the source(s) of the Federal Grant including the granting department and CFDA(Catalog of Federal Domestic Assistance) number.								
The United States Department of Agriculture (USDA) Capacity Funds-Evans Allen and Cooperative Extension								
will support 18 Graduate Research Assistanships (GRAs) annually beginning with 13 GRAs in year 1. Additional 4-7 GRAs will be								
supported by faculty grants annually. Beginning year one, 1-2 part-time graduate student will be self or state supported at In-state tuition rate.								
The program will yield 8-9 graduates annually beginning at the end of year 3.								
(5) Provide the name of the organization(s) or individual(s) providing grant(s) or gift(s).								
USDA-National Institute of Food and Agriculture								
(6) Provide information regarding other sources of the funding.								
N/A								