

## **Agriculture BS: 2018-2019**

### **Definition of Unit**

#### **Providing Department:**

School of Agriculture

#### **Department/Unit Contact:**

School of Agriculture/Dennis W. Duncan

#### **Mission/Vision Statement:**

School of Agriculture's Mission Statement:

Our mission is to prepare students for leadership roles in the food, fiber, and natural resource professions by providing state of the art experiential learning through agriculture. The School of Agriculture (SOA) mission statement flows from the TTU Mission Statement "to provide leadership and outstanding programs in . . . agriculture and human ecology, nursing, music, art and interdisciplinary studies." The SOA mission statement additionally supports the TTU Flight Plan to improve the undergraduate experience.

The SOA offers a Bachelor of Science degree in Agriculture focusing on one of 10 concentrations. Those concentrations span across the broad discipline of Agriculture including: Agribusiness Management, Agricultural Communications, Agricultural Education, Agricultural Engineering Technology, Agronomy and Soils, Environmental Agriscience, Animal Science/Pre-Veterinary Science, Horticulture, Nursery & Landscape Management, and Turfgrass Management.

We prepare our students to, upon graduation, enter a multitude of fields in the agricultural industry or to continue their education through graduate school. Previous graduates can be found across Tennessee and the United States in such roles as park rangers, veterinarians, golf course superintendents, government officials, business owners, county agents, conservationists, university professors, military officers, high school teachers, consultants, agricultural product/equipment sales, bankers, farm managers, landscape developers and the list continues to grow.

The School of Agriculture is blessed with two unique farms. In 1965 the Shipley Farm (300 acres) was acquired and houses the Hyder-Burks Pavilion, horticultural greenhouses, the organic farming operation, sheep, hogs, beef cattle, poultry, varied forage and row crops. Finally, in 2009, the Oakley Farm (1800+ acres) expanded the possibilities for research and teaching with access to 700 plus cows and calves with additional cropland and potential locations for greenhouses and other agricultural enterprises. These facilities are not supported by direct line funding by the state and therefore must pay their own way, however, all facilities are dedicated to the overall educational experience of our students.

Our vision states, "We are the hallmark program of experiential education in agriculture."

## **Program Goal 1.1- Increase undergraduate student enrollment**

### **Define Goal:**

Increase undergraduate student enrollment.

### **Intended Outcomes / Objectives:**

Exceed student enrollment numbers. The School of Agriculture (SOA) will use a combination of the following to meet this goal: 1) Strive to increase the number of freshmen enrolled each fall; 2) Strive to maintain at least an 90% retention rate Fall-to-Spring and 85% Fall-to-Fall; 3) Increase our presence on community college campuses across TN with the goal of admitting a minimum of 25-30 students per year; 4) Secure new funds for building a strong, focused recruitment program; and hire a full-time staff member (recruitment specialist) that will be charged with traveling the state and meeting with prospective students, their parents, alumni, etc.

### DRILL DOWN-----

#### RELATED ITEM LEVEL 1

### **Assessment: Program Goal 1.1 - Enrollment Data**

#### **Frequency of Assessment:**

Annually/Biennially

#### **Rationale:**

Assessment for Goal 1.1:

1. **Enrollment data** by semester
2. **Monitor recruitment work**
3. **Alumni Survey** to rate the effectiveness of the academic, extra-curricular opportunity, and career placement program (will launch fall of 2019).

#### RELATED ITEM LEVEL 2

### **Results: Program Goal 1.1 - Enrollment, Retention, Graduation**

#### **Results:**

FALL ENROLLMENT BY YEAR:

CONCENTRATION	2016	2017	2018	2019
Agribusiness Management	80	84	82	81
Agricultural Communication	7	5	11	8
Agricultural Education	19	18	26	24
Agricultural Engineering Technology	52	45	46	52
Agricultural Science and Management	--	--	--	2
Agronomy and Soils	8	14	8	8
Animal Science	47	42	38	38
Animal Science - Pre-Veterinary Science	74	68	66	57
Environmental Agriscience	13	11	7	7
Horticulture	10	13	16	19
Nursery & Landscape Management	2	2	5	5
Turfgrass Management	4	5	6	5
TOTAL	319	308	311	306

Enrollment in the School of Agriculture continues to be steady, but 4% below the high point in 2016. Plans to increase recruitment efforts through more high schools visits and sending personal hand-written notes to students that apply to the university are underway.

**2017-2018 School of Agriculture (SOA) retention rates (most recent data)**

	Fall-to-Spring Retention	Fall-to-Fall Retention
2017 Cohort	91.94%	77.42

The School of Agriculture continues to maintain a retention rate higher than the average of the University and plans to continue that trend by providing detailed and personal attention to the needs of the student body.

**Overall and Freshmen Enrollments**

	Fall Overall (n)	% Change from prev. year	Fall Freshmen
2019	306	0.0	66
2018	306	-3.5	84

Enrollment of freshmen remains steady from 2018 to 2019, but below recent years. Efforts will continue to recruit both freshmen and transfer students.

**School of Agriculture Graduation Results**

	Total number of Graduates
2018-2019	71
2017-2018	78

The graduation rate in the School of Agriculture averages approximately 23% of our enrollment, in keeping with our retention rate.

**Attachments:**

## **Program Goal 1.2 - Encourage external funding and increase student research projects**

### **Define Goal:**

Increase the amount of external funding (local, state and federal levels) and increase interaction of faculty and students so as to increase undergraduate research.

### **Intended Outcomes / Objectives:**

Tennessee Tech University (TTU) is a non-land grant university, which makes it more difficult for the School of Agriculture (SOA) to procure Federal grant funds. Because of this over the years the SOA has migrated to more of a teaching unit than a research unit. In the past 4 years a renewed emphasis has been put on securing grant funds. The goal is to have at least as many grant applications as there are faculty members. One of the purposes of the grants are to include undergraduates in the research process. The grant/s can be URECA, QEP, or other grants offered through national, state, or local organizations.

More SOA faculty have been awarded grants through the TTU EDGE Creative Inquiry (CI) Curriculum Grant Program which have led to an increase in undergraduate research. Between 2013-2018 SOA faculty have secured over \$161,000 in small grants.

Additionally, the College has adopted a new "core" that includes a research course option.

As a result of undergraduate research, the SOA would like to have at least 15 students present a research poster at the TTU Creative Inquiry Day.

### DRILL DOWN-----

#### RELATED ITEM LEVEL 1

**Assessment: Program Goal 1.2 - Annual Faculty Reports, Grants applied, Interaction through student organizations, Poster presentation at Creative Inquiry Day**

#### **Frequency of Assessment:**

Annually

#### **Rationale:**

Assessment for Goal 1.2:

1. Review of **Annual Faculty Reports** in the research completed and research pending areas.
2. Monitor number of grants applied for.
3. Monitor number of students participating in the SOA student organizations
4. Monitor the number of students presenting at the Creative Inquiry Day

RELATED ITEM LEVEL 2

**Results: Program Goal 1.2 - Grant Proposals Written, Campus Research Day**

**Results:**

SOA students (12) presented posters at the TTU Creative Inquiry Research Day at the Hoop. Three SOA students won awards for their collaborative research. Full abstracts are available at <https://publish.tntech.edu/index.php/PSRCI/>

As previously mentioned, numerous SOA faculty have been successful at securing TTU sponsored grants (CISE, QEP and EDGE). Additionally, SOA faculty have been successful at securing private, local, state and federally funded grants. The following table is a full listing of awards.

2018	
Liz Mullens-TN Dept of Ag	\$85,000
Dennis Duncan--TN Dept of Ag	\$14,400
Brian Leckie--US Dept of Ag	\$300,000
Brian Leckie--America Rivers / Tallassee Fund	\$17,150
Brian Leckie--TN Dept of Ag	\$20,000
O.P. McCubbins--TN Dept of Ed	\$222,416
Pat Bagley – Y-Tek	\$5,000

Amount

2018-19

2017-18

External Grants:

SOA Faculty as PI (\$)	\$786,424	\$573,966
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Cross Discipline Cooperative Grants (\$)	.	.
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Submitted (Cross Discipline)

Total Awarded (\$)	786,424	573,966
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Student Research:

TTU Research and Creative Inquiry Grants (\$)	.	.
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Presentations:

Student Research Day Participation	3	8
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Student-Presented Professional Posters	.	.
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External funding increased over the past two years, but efforts to increase the amount and number of faculty involved in seeking external will continue. The faculty have discussed the need to increase the involvement of our undergraduates students in scholarly activities. Efforts will be made to involve more students in the University Research Day and seek QEP and Creative Inquiry grants to increase student participation in activities that improve critical thinking skills and scholarly activity.

**Attachments:**

## **Program Goal 1.3 - Promote and enhance faculty and staff development**

### **Define Goal:**

Promote and enhance faculty and staff development to the extent resources permit.

### **Intended Outcomes / Objectives:**

The SOA has earmarked student activity fee (SAF) funds for each faculty member - enable faculty to participate/present at national and/or international conferences. Also, funds from a SOA foundation account and the Rose account have been earmarked for faculty development for fy 20 - these funds will also be used for professional development. Additionally, faculty will be strongly encouraged to seek external funding to support professional development.

### DRILL DOWN-----

#### RELATED ITEM LEVEL 1

### **Assessment: Program Goal 1.3 - Annual Faculty Reports**

#### **Frequency of Assessment:**

Annually

#### **Rationale:**

Assessment for Goal 1.3:

1. **Annual Faculty Reports** in participation in research conferences and trainings.
2. **Monitor budget increases** in available funding to support research related and other professional training opportunities

#### RELATED ITEM LEVEL 2

### **Results: Program Goal 1.3 - Faculty and Staff Development Activity**

#### **Results:**

Faculty and staff development activity for 2018-19.

2018-2019



	Number of Faculty	Number of Events
Research Projects Completed or Ongoing	6	16
Refereed Journal Articles	3	3
Professional Presentations	8	14
Graduate Committees	3	7
Graduate Committees Chaired	1	3
Professional Memberships	9	19
Professional Organization Officers	3	4
Professional Meetings Attended	8	19

Faculty in the School of Agriculture believe that they are making progress toward improving scholarly activity programs, but must continue to strive to increase the level of this activity as new faculty are hired and efforts to continue to improve faculty development and keep abreast of current knowledge in respective fields to prepare our students for careers in these fields.

**Attachments:**

## **Student Learning Outcome 1.1 - Preparation for employment and advancement in agricultural careers**

### **Define Goal:**

Students will be prepared for employment and to advance in Agricultural careers.

### **Intended Outcomes / Objectives:**

Students will perform at or above the national average on the ACAT.

The School uses a national assessment tool (ACAT) to determine how prepared the students are for industry and graduate school. The main objective of all SOA curriculum is to prepare students for the global workforce and provide the tools necessary to grow as an individual. Therefore, faculty and staff desire to see an increase in ACAT scores each year and to always be above the national average. As evidenced in these results, SOA students meet or exceed the average score for each category. However, the SOA faculty and Director wish to see future scores well above the national average!

Students will participate in internships or field experience.

SOA students are highly encouraged and in some concentrations required to complete a 10-12 week internship and/or early field experience. Additionally, students are provided a cadre of opportunities beyond the traditional classroom setting to explore interest areas, practice a craft/skill(s), and reflect on their experiences.

### DRILL DOWN-----

#### RELATED ITEM LEVEL 1

### **Assessment: SLO 1.1 - Preparation for employment and advancement in agricultural careers**

#### **Frequency of Assessment:**

Annually, Biennial

#### **Rationale:**

1. Area Concentration Achievement Test (**ACAT**)

The Area Concentration Achievement Test (ACAT) assessment is administered to all final semester seniors in the SOA. This national assessment is an indication of how well prepared the students are for his or her chosen profession. Annually the SOA faculty

strive to prepare our students to succeed on this assessment. The biggest challenge with such an assessment tool is that students may not see the relevance and/or need to perform at their highest level. Therefore, the faculty have decided for fall 2019 & spring 2020 to make the assessment a requirement in an upper division course(s). According to ACAT, scores range from 200-800 with a national average of 500 and a standard deviation of 100. Nationally in any given year, 68% of scores should fall between 400-600. The following categories and scores represent spring 2019 SOA graduates: Animal Science (524), Plant Science (511), Soil Science (529), Ag Mechanization (505) and Agricultural Business/Economics (512).

2. Number of students involved in internships or experiential learning.
3. Conversations and focus groups with stakeholders (Tennessee Farm Bureau, TN Farmers Coop, TriGreen Implement, Perdue Foods, National Resources Conservation Services, and United States Department of Agriculture).
4. Alumni Survey (**Fall 2019**)

#### RELATED ITEM LEVEL 2

### **Results: SLO 1.1 Preparation for employment and advancement in agricultural careers -**

#### **Results:**

The attached document highlights spring of 2019 ACAT scores for all SOA seniors.

#### AVERAGE ACAT SCORES FOR SCHOOL OF AGRICULTURE:

ACADEMIC YEAR	CONCENTRATION AVERAGE SCORES					OVERALL	PERCENT
	ANS	PSS	SSC	AGMECH	AGBE		
18-19	524	511	530	505	512	494	47

This summary of average scores for all disciplines covered in the test will be updated annually to determine rates of progress and identify areas of needed improvements.

#### **Attachments:**

2019 ACAT-scores (1).pdf

#### RELATED ITEM LEVEL 3

## **Modifications: Student Learning Outcome 1.1 - Preparation for employment and advancement in agricultural careers**

### **Program Changes and Actions due to Results:**

A new service-learning study abroad program in Scotland was launched spring of 2019 and 10 students participated in two projects that addressed food insecurity - locally and globally.

### **Link to Assessment:**

## **Student Learning Outcome 1.2 - Activities designed to enhance leadership and service roles in food, agricultural, and natural resource systems**

### **Define Goal:**

Beyond the classroom, students will engage in high quality scholarly and service learning activities designed to enhance leadership and service roles in food, agriculture, and natural resource systems.

### **Intended Outcomes / Objectives:**

SOA students will actively participant and serve in leadership roles in one or more clubs/organizations (e.g. National FFA, 4-H, Omicron Delta Kappa, Delta Gamma Sigma, MANRRS, and many others) - both locally and nationally.

Lastly, the College has developed a series of "core" courses for all incoming students (fall 2018). These courses provide a cadre of experiential and service learning activities so as to better prepare them for industry and beyond.

### **DRILL DOWN-----**

#### **RELATED ITEM LEVEL 1**

### **Assessment: SLO 1.2 - Activities designed to enhance leadership and service roles in food, agricultural, and natural resource systems**

**Frequency of Assessment:**

Annually

**Rationale:**

1. Review of student involvement with student organizations, service projects and competitions.
  1. Number of students taking advantage of study abroad opportunities
  2. Participation in annual Ag-in-the-Classroom Days co-sponsored by Tennessee Farm Bureau and other similar activities.
  3. Number of students involved in student organizations, attending state or national meetings for the organizations or their field of study.
  4. Number of students participating in recruitment events
  5. Number of students attending other outside events such as factory tours, field days, judging clinics, and competitive events.
  6. Alumni Survey (Biennial)
  7. Senior Exit Interviews
2. Review of faculty involvement with student organizations, service projects and competitions.

**RELATED ITEM LEVEL 2****Results: SLO 1.2 Activities designed to enhance leadership and service roles in food, agricultural, and natural resource systems****Results:**

There were three study abroad trips offered - Scotland, Netherlands and Mexico - which included 4 School of Agriculture faculty member and 47 students total.

The annual Farm Days/Agriculture in the Classroom in collaboration with TN Farm Bureau involved over 25 TTU students, 9 faculty and included over 1,800 elementary students and their teachers from across Putnam County.

SOA hosted a number of FFA events throughout the year - this involved over 20 TTU students and faculty (see attachment for total numbers).

SOA participated in both the state and national FFA conventions with the aid of TTU students (12-14). The TN FFA convention draws over 300 FFA members from across TN and the National FFA convention draws over 50,000 FFA members from across the US.

CAHE Recruiter and Dr. Dennis Fennewald participated in the Georgia FFA state convention. This convention draws over 5,000 FFA members from across GA. The Eagle Reach program was presented at the convention.

**Attachments:**

SOA Fall and Spring Clinics.docx

**Student Learning Outcome 1.3 - Critical thinking and problem solving abilities**

**Define Goal:**

Students will identify their critical thinking skill levels and problem solving abilities through a variety of assessments structured to meet the demands of the individual concentrations and develop new strategies to increase their ability to think critically and problem solve.

**Intended Outcomes / Objectives:**

SOA students will score at or above TTU's student body average on the **California Critical Thinking Skills Test (CCTST)**. Additionally, incoming freshmen (fall of 2018) completed the UF-EMI critical thinking assessment and will be required to complete the same assessment annually. This longitudinal study will be used to better determine if and how SOA curriculum and experiential learning activities directly impact their critical thinking abilities and problem solving skills. 2019 CCTST scores are presented in a later section of this report.

DRILL DOWN-----

RELATED ITEM LEVEL 1

**Assessment: SLO 1.3 - Critical thinking and problem solving abilities**

**Frequency of Assessment:**

Annually

**Rationale:**

Assessment of this Outcome utilized:

**CCTST (California Critical Thinking Skills Test) results**

**CCTST results** (California Critical Thinking Skills Test—General Exit Exam). As mentioned SOA seniors complete this national assessment in their final semester. It is the goal of SOA administration to first identify critical thinking levels of incoming freshmen, collect additional data throughout the students' tenure in the School and compare longitudinal data with CCTST scores, and determine what tool(s) can be implemented across the curriculum to increase CCTST scores. This is important for two reasons: 1) Helping our students be better critical thinkers and problem solvers will enable them to be better citizens; and 2) industry seeks new hires that demonstrate strong critical thinking and problem solving skills. The following is spring of 2019 data collected from University Assessment.

SOA students will score at or above TTU's student body average on the **California Critical Thinking Skills Test (CCTST)**.

**UF-EMI results**

Additionally, incoming freshmen (fall of 2018) completed the UF-EMI critical thinking assessment and will be required to complete the same assessment annually. This longitudinal study will be used to better determine if and how SOA curriculum and experiential learning activities directly impact their critical thinking abilities and problem solving skills.

**Senior Exit Interviews**

RELATED ITEM LEVEL 2

**Results: SLO 1.3 - Critical thinking and problem solving abilities**

**Results:**

CCTST Results:

**ACADEMIC YEAR**

<b>GROUP</b>	<b>2015-2016</b>	<b>2016-2017</b>	<b>2017-2018</b>	<b>2018-2019</b>
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<b>School of Agriculture</b>	17.2	18.7	15.7	13.9
<b>TTU Total</b>	16.9	17	17.6	16.8
<b>CCTST Standards</b>	≈17.1	≈16.2	≈16.2	≈15.4

Scores of graduating seniors in the School of Agriculture have fallen below both Tennessee Tech averages and standard scores for the past two years. Faculty discussions, informal interviews with students regarding attitudes toward the required exam, and other discussions with relevant entities have been conducted. The School of Agriculture faculty are sensitive to the need to improve the level of critical assessment and problem solving skills in our students. Continued discussions and searches for other ways to determine the cause of the problem and develop plans to alleviate the problem will be continued.

**Attachments:**