

Agriculture BS: 2019-2020

Definition of Unit

Providing Department:

School of Agriculture

Mission/Vision Statement:

I. 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	2020*
Agribusiness Management	80	84	82	81	73
Agricultural Communication	7	5	11	8	6
Agricultural Education	19	18	26	24	22
Agricultural Engineering Technology	52	45	46	52	46
Agricultural Science and Management	--	--	--	2	4
Agronomy and Soils	8	14	8	8	9
Animal Science	47	42	38	38	36
Animal Science - Pre-Veterinary Science	74	68	66	57	61
Environmental Agriscience	13	11	7	7	5
Horticulture	10	13	16	19	17
Nursery & Landscape Management	2	2	5	5	6
Turfgrass Management	4	5	6	5	3
TOTAL	319	308	311	306	288

* Projected

There appears to be a trend in the decrease in numbers of students enrolled in the Agriculture Engineering Technology and Agribusiness management programs. Work is underway to renovate laboratory facilities in the Agricultural Engineering program and the curriculum has been revised to include more precision agriculture courses in the required curriculum to better prepare the students for jobs in industries related to that concentration. The goal is to enhance the program and to increase enrollment as well as providing the students with better preparation for careers. The School of Agriculture has hired a new instructor in the Agricultural Business Concentration, who will be located at Lawrenceburg, Tennessee and will teach courses on site at that location as well as a hybrid combination of on site and on line courses at the Tennessee Tech campus.

School of Agriculture (SOA) retention rates (most recent data)

	Fall-to-Spring Retention (%)	Fall-to-Fall Retention (%)
2018 Cohort	94.1%	78.6%
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
2020*	288	-5.9	70
2019	306	0.0	66
2018	306	-3.5	84
*Projected for Fall, 2020			

The School of Agriculture has experienced a decreasing trend in enrollment numbers over the past years. The College of Agriculture and Human Ecology under the direction of the Dean, and all faculty in each of the respective schools are working diligently to increase enrollment, in spite of Covid-19 restrictions by initiating electronic meetings with teachers and students in high schools throughout the state, sending personal post cards to potential students that complete the admission form, and sending an additional card to those that are accepted in order to increase the yield of students that enroll at Tennessee Tech relative to those that are accepted.

For 2018-2019, we enrolled 94 freshmen - our largest class in many years. The Schools of Agriculture and Human Ecology collaborated on selecting and hiring a part-time recruiter in January of 2019. The recruiter (Samantha Bain) was a recent School of Agriculture graduate and an effective communicator! Samantha assisted us in expanding our social media presence, increased the number of school visits, and she attended both Tennessee and Georgia State FFA Conventions. Additionally, Samantha and Dr. Duncan increased the number of collaborative activities between TTU and the TN State 4-H office in Knoxville. It is our hope that in the next 6-8 months we will start to see the impact of this recruiter position - by seeing an increase in admission applications.

School of Agriculture Graduation Results

	Total number of Graduates
2019-2020	70
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:

RELATED ITEM LEVEL 3

Modification to Program Goal 1.1 - Increase undergraduate student enrollment

Program Changes and Actions due to Results:

Projected results of enrollment data shows a decrease in enrollment compared to the previous two Fall Semesters. Retention and graduation rates, however, remain high. Updates will be made to the action plan for increasing enrollment:

Action 1) Strive to increase the number of freshmen enrolled each fall, will remain the same but more actions will be taken in this effort. Personal cards and emails will be sent to new students who are admitted to Tennessee Tech in an attempt to increase the number of admitted students that enroll for fall semester (Increase the "yield").

Action; 2) Strive to maintain at least an 90% retention rate Fall-to-Spring and 85% Fall-to-Fall, will continue to be monitored and improved upon.

Action 3) Increase our presence on community college campuses across TN with the goal of admitting a minimum of 25-30 students per year, will be continued.

Action 4) Secure new funds for building a strong, focused recruitment program will be continued, but the attempt to hire a full-time staff member (recruitment specialist) will not be pursued at this time. Instead, the School of Agriculture Faculty and Director will work toward devotion of more time to high school and community college visits, and making personal contacts through emails and post cards.

Link to Assessment:

All present assessment criteria will be used to measure success with the addition of admissions data that tracks rates of enrollment of admitted new and transfer students as registration progresses in the summer.

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:

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

	Number		Amount	
	of Faculty	2019-20	2018-19	2017-18
External Grants:				
SOA Faculty as PI (\$)	3	\$985,000	\$786,424	\$573,966
Cross Discipline Cooperative Grants (\$)	1	\$175,000	.	.
Submitted (Cross Discipline)	1	3,000,000		
Total Awarded (\$)		1,160,000	786,424	573,966
Student Research:				
TTU Research and Creative Inquiry Grants (\$)	4	\$48,850	.	.
Presentations:				
Student Research Day Participation	3	12	3	8
Student-Presented Professional Posters	3	5	.	.

The School of Agriculture is making definite improvements in rate of success in obtaining external funding. It is our goal to continue this trend and to provide support through adjustment of teaching loads and provision of research work and equipment space. The number of Environmental Science in Agriculture (EVSA) PhD students continues to increase and the number of faculty members in the School accepting the responsibility of mentoring these students has increased. One of the goals is to increase the number of faculty that have the research projects and funding necessary to accept responsibility as mentors. The School of Agriculture is in the process of preparing a proposal to develop a MS program in Agriculture during the 2020-2021 academic year and submit this letter of notification for approval by THEC in 2021.

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.

Program Goal 1.3 - Promote and enhance faculty and staff development

	2018-2019		2019-2020	
	Number of Faculty	Number of Events	Number of Faculty	Number of Events
Research Projects Completed or Ongoing	6	16	8	14
Refereed Journal Articles	3	3	4	7
Professional Presentations	8	14	4	10
Graduate Committees	3	7	3	8
Graduate Committees Chaired	1	3	3	4
Professional Memberships	9	19	5	14
Professional Organization Officers	3	4	3	4
Professional Meetings Attended	8	19	6	26

The number of faculty involved in faculty development activities and the number of activities have increased in some of the assessment criteria, and remained the same or declined in others. Though faculty involvement has essentially stayed the same, attendance at professional meetings and numbers of refereed publications has increases. Part of the lack of improvement in this area can be attributed to the effect of Covid 19 travel restrictions.

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:

AVERAGE ACAT SCORES FOR SCHOOL OF AGRICULTURE

ACADEMIC YEAR	CONCENTRATION AVERAGE SCORES						
	ANS	PSS	SSC	AGMECH	AGBE	Overall	Percentile
19-20	550	528	543	563	497	529	58
18-19	524	511	530	505	512	494	47
Difference	25	17	14	58	-15	35	10

The average ACAT scores in the School of Agriculture improved during the two most recent academic years, but the faculty continue to be dissatisfied with the overall results relative to national averages. Faculty discussions are under way to examine possible changes in teaching methodologies, development of maturity and critical thinking skills in our students, and offering of more current and pertinent information to improve the average scores in the school relative to the national averages.

Alumni Survey Results:

CORE CURRICULA IN THE SCHOOL OF AGRICULTURE

BENEFIT	AG Business	AG Education	AG Engineering Technology	Animal Science	Horticulture	Agronomy	Soil Science
Extremely Beneficial	20	9	23	31	18	29	27
Beneficial	38	22	28	13	26	22	24
Fairly Beneficial	11	12	22	19	11	15	20
Hardly Beneficial	18	10	12	17	12	9	13
Not Beneficial	11	3	6	17	13	13	14
Respondents	80	49	75	81	67	76	83

Results of this alumni data appear to indicate that many of our graduates are not working in animal science, horticulture, or agronomy fields. These data do, however, represent some graduates that have been in the workforce for more than 15 years, and so may reflect the fact that some of them have moved or been promoted to jobs more in line with administration. However, the fairly high percent of graduates who found the Agricultural Business courses to be not beneficial may suggest some other problem in the curriculum. Questions to further determine the descriptions of careers of our graduates will be collected in subsequent surveys and correlated with the alumni perception of benefit of respective concentration curricula.

Students involved in Internships and Work Experience

Internships in the School of Agriculture

Year	Internships		Work Experience	
	Courses (n)	Students (n)	Courses (n)	Students (n)
2019-20	12	27	5	5

A concerted effort has been initiated to increase the number of internship and work experience opportunities for our students. The Agricultural Business concentration has now made an internship a required course in the curriculum. Other concentrations are attempting to promote and encourage internships through continuing to make contacts with potential employers to provide more internship opportunities and to advise students to take advantage of these opportunities. Assessment of results of these efforts will be monitored and evaluated in subsequent academic years.

Attachments:

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 aboard 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:

of faculty involved in student orgs, competitions, and service projects

of students involved in student orgs, competitions, and service projects

EXTRA-CURRICULAR ACTIVITIES

BENEFIT	Internships	Agricultural Labs	Club Leadership Opportunities
Extremely Beneficial	48	35	45
Beneficial	20	23	25
Fairly Beneficial	13	25	21
Hardly Beneficial	10	10	7
Not Beneficial	10	8	3
Respondents	40	84	76

Results of this data strongly indicate the value of internships and efforts to provide leadership opportunities to our students. Also the experiential learning aspect of the course objectives in all concentrations are perceived to be at least somewhat beneficial to the students as they prepare for careers in the work place. The School of Agriculture will continue to monitor the results of these efforts and to increase the numbers of internships available to students and the experiential learning opportunities in our courses. The faculty believe that the number of clubs and organizations supported within the School of Agriculture are adequate for the enrollment at this time.

One study abroad trips offered - Mexico

Fall high school youth events - 2 - 300 high school students

The occurrence of Covid 19 during 1920 curtailed the opportunities to provide our students with travel abroad experiences. Many of our faculty have participated in these events in past years and plans are to continue this participation when travel restrictions are lifted.

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.

This assessment tool was not employed in 18-19 and 19-20, but faculty will discuss the issue of using this assessment tool again.

RELATED ITEM LEVEL 2

Results: SLO 1.3 - Critical thinking and problem solving abilities

Results:

CCTST Results:

GROUP	ACADEMIC YEAR				
	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020
School of Agriculture	17.2	18.7	15.7	13.9	14.5
TTU Total	16.9	17	17.6	16.8	16.1
CCTST Standards	≈17.1	≈16.2	≈16.2	≈15.4	≈15.4

School of Agriculture scores of graduates taking the California Critical Thinking Skills test have continued to be below the University average for the past two years. Faculty within the School of Agriculture are discussing possible problems with our curricula, teaching methodologies, and other factors that may have caused or scores to be lower. The Dean of the College of Agriculture and Human Ecology has also conducted discussions among the faculty in both schools to help us pinpoint the source of the problem. The faculty will continue to discuss these results and, once the likely source of the problem is identified, make changes to try to alleviate the problem. Assessment of scores and comparison of scores with university averages will continue.

Attachments:

2015_2020_CCTST_Results_by_Major.pdf