

## **University Mission and Priorities**

### **1. How do your programs fit with the university mission to educate students for Christian service and leadership throughout the world?**

Our mission statement is “To educate students for Christian stewardship of sustainable agricultural and environmental systems throughout the world.” That statement is central to the structure of our programs. Our courses stress the sustainable use of resources as a Christian duty.

From student evaluations in Fall 2019, “My experience in this course reflected ACU’s mission to educate students for Christian service and leadership throughout the world.” For the 3 full-time faculty in the department, the average score was 4.38

### **2. What connections do you see between your programs and the university’s current strategic plan, available at [blogs.acu.edu/strategicplan/](https://blogs.acu.edu/strategicplan/)?**

Quotes from the Strategic Plan, under INNOVATION AND RELEVANCE; Academic Programs.

“we will significantly strengthen our most distinctive undergraduate and graduate programs”

“We will ensure academic programs address 21st-century challenges, meet the demands of graduate programs and employers, attract top students and produce confident, Christian leaders”

Of 152 schools in the CCU, 9 other programs offer a degree in Agribusiness, 5 in Agriculture, and only 2 in Animal Science. That alone makes our program distinctive. Changes in faculty, and a complete evaluation and update of our degree plans, have strengthened our programs and brought them more in line with 21<sup>st</sup> century needs.

Quote from Educational Delivery.

“we will stimulate and reward innovation in educational delivery that integrates technology, addresses student learning, incorporates competency-based credit, leverages relationships and provides alternative paths to degree completion”

This year we introduced an online section of AENV 130: Environmental and Technological Science, which is being taught every semester, including in summer. Both Dr. Carpenter and Dr. Jernigan have received Adobe Fellowships for which they introduced innovative projects using Adobe products in the class.

Experiential Learning.

Our programs are already oriented toward experiential learning. Internships are strongly encouraged, as are independent research projects. Several classes have research projects built into their curriculum. In addition, Dr. Carpenter is in the first Experiential Learning Development Program. For this, he is developing a Missional Study Abroad program within the

A&E Department.

## SPIRITUAL FORMATION

We are intentionally including spiritual formation into our classrooms (see the student evaluation comment in the response to Question 1). The study abroad program we are developing is a **missional** study abroad. Service-oriented mission work will be an integral component of the program.

### **Enrollment and Completions (department-level responses)**

3. Based on the provided numbers, describe your efforts to:
- Promote student interest during prospective student visits.
  - Provide programs that compare competitively with other universities.
  - Retain students within your programs once they declare your major.
  - Support progress of current students toward degree completion.

Table 1. 12<sup>th</sup> day Fall enrollment within the AES Dept. 2016-2020

| Major | 2016 | 2017 | 2018 | 2019 | 2020 |
|-------|------|------|------|------|------|
| AGRB  | 11   | 15   | 14   | 17   | 21   |
| AHPC  | 0    | 0    | 0    | 0    | 1    |
| ANSC  | 54   | 52   | 45   | 36   | 39   |
| ENVR  | 25   | 22   | 26   | 21   | 20   |
| TOTAL | 90   | 89   | 85   | 74   | 81   |

Table 2. Completions within the AES Dept. 2016-2020. May of listed year and Dec of previous.

| Major | 2015 | 2016 | 2017 | 2018 | 2019 |
|-------|------|------|------|------|------|
| AGRB  | 1    | 1    | 2    | 3    | 5    |
| ANSC  | 4    | 6    | 11   | 7    | 5    |
| ENVR  | 6    | 6    | 7    | 1    | 4    |
| TOTAL | 11   | 13   | 20   | 11   | 14   |

When I joined the department in 2016, it has just survived an administration attempt to close the department. Word of the proposed closing had reached the general public. Even in 2019, people told me that they thought the department had been closed. This has to have impacted our enrollment, though we have no way of knowing how much. In the last 3 years, we have instituted several changes to attract new students and retain the students we have. These include:

### **More contact with prospective students, and working more closely with Student Recruiting.**

We make sure that at least one faculty member meets with every prospective student on campus. These visits are followed up with a hand-written note thanking them for visiting.

The department hosts a lunch meeting during Spring Finals Week with recruiters to give them department updates and answer any questions they may have.

### **Promote student retention and provide competitive programs**

Faculty members try to students who are struggling. Our goals are to listen to their problems, and offer counsel. This requires some effort on the student part. We cannot force them to meet with us. This is also something that has become more difficult with centralized advising.

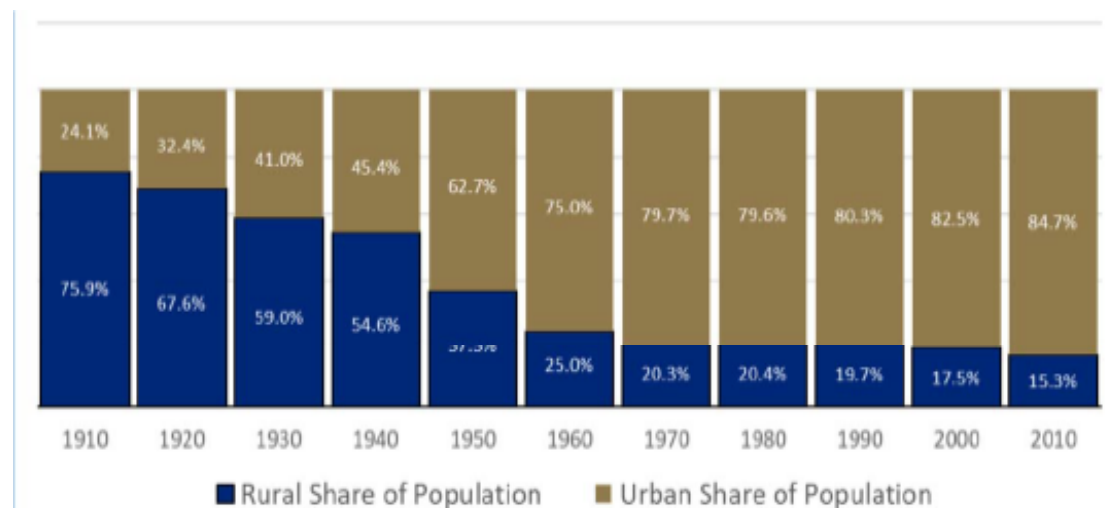
In 2019-2020 reviewed every degree plan and every course within the department. Several obstacles to students were identified in some degree plans. Each degree plan was revised to make it more competitive and relevant to today's job market. Individual courses were revised similarly.

### **4. Name several trends present in your discipline and higher education that may affect enrollment in your programs, and please cite relevant statistics and sources. Based on these trends, what changes do you anticipate in enrollment in the next five years?**

#### **Trends in the Discipline and in Higher Education**

It is no secret that the nationwide pool of traditional college students is starting to decline. In addition, the population is becoming more urban, nationwide and in Texas (Fig. 1).

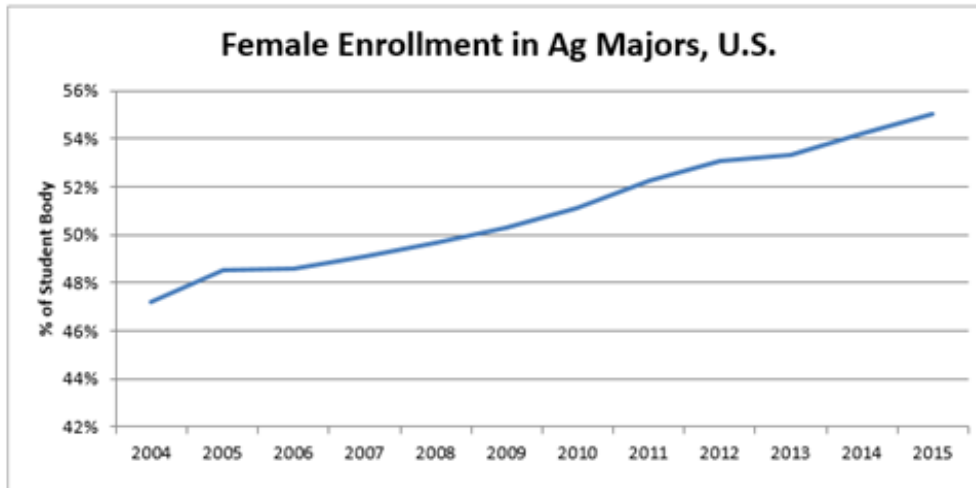
Figure 1: Texas Urban-Rural Population Shares, 1910 through 2010



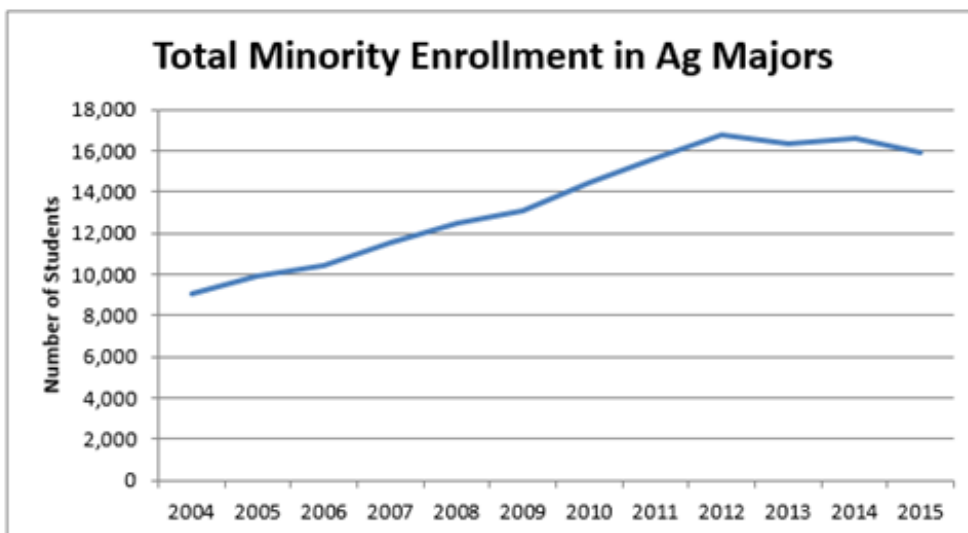
Sources: U.S. Census Bureau 1995 and 2012

This presents a challenge to maintaining enrollment in agricultural programs, but it does not guarantee declining enrollment. An increasing percentage of students in agricultural programs come from suburban areas. In a recent study of factors that influence enrollment in colleges of agriculture at 1862 land grant institutions, a majority of total respondents grew up in suburban areas (Smith-Hollins et al., 2015).

The makeup of students in agricultural programs also is changing. In the Smith-Hollins study, 72% of respondents were female. Chris Laughton (2018) reported on data compiled by The Food and Agricultural Education Information System (FAEIS) concerning U.S. enrollment in agricultural majors between 2004 and 2015. During this time, U.S. enrollment in agricultural majors varied, but grew slightly from around 83,000 students to just over 86,000 students. However, the number of women and minority students grew faster than overall enrollment. The overall percentage of women enrolled in agricultural majors has increased from 47 percent in 2004, to 55 percent in 2015.



Minority enrollment increased from just over 9,000 in 2004, to nearly 16,000 in 2015, an increase of 75 percent over the 11-year period. The changing demographic of agriculture majors offers new opportunities for our department.



In addition, the face of agriculture and agriculture education is changing. Since the University of Maine offered the nation's 1<sup>st</sup> B.S. in sustainable agriculture in the 1980s, the number of

programs devoted to sustainable-farming practices has increased to 256, 97 of those leading to bachelor's, master's, and doctoral degrees (Barth, 2018). The AES department began emphasizing sustainable practices in 2017.

Though only about 25% of our students are environmental science majors, prospects in this field are good. The U.S. Department of Labor Statistics predicts job growth for environmental scientists to grow 8% from 2018 - 2028.

In summary, through changes in our curriculum, and in recruiting and retention strategies, we believe that we can increase the number of students enrolled in our department in both agricultural and environmental sciences.

### **Curriculum and Assessment (program-level responses)**

#### **5. Provide the date of the last major curriculum revision of each of your majors/programs.**

All degree plans within the department underwent a revision in 2019-2020.

#### **6. Provide the current program outcomes that identify the competencies of your students upon graduation.**

##### **Outcome: Outcome: Research Activities**

Measure: Participation in Research Activities

A&E students are encouraged to participate in research activities either in class projects or individual projects, in which they must collect and analyze data and produce a written document discussing the results and conclusions which can be drawn from their data. They are further encouraged to present their research at an event either on or off-campus.

Level of Proficiency Target (Competency Target):

1. 25% of students will participate in a research experience which produces data and written results.
2. At least 3 research projects will be presented at the ACU Undergraduate Research Festival and/or at professional meetings.

Ideal Target:

1. 50% of students will participate in a research experience which produces data and written results.
2. At least 5 research projects will be presented at the ACU Undergraduate Research Festival and/or at professional meetings.

##### **Program Outcome: Career Employment**

A&E graduates not pursuing graduate or professional education will be employed within six months of graduation.

Measure: Student Survey and Career Center Contact

Program level Indirect - Survey

Details/Description: In coordination with the ACU Career Center, students are surveyed

regarding employment.

Level of Proficiency Target (Competency Target): 80%

Ideal Target: 100%

**Program Outcome: Graduate/Professional School**

A&E graduates pursuing graduate or professional education will be accepted at schools of their choosing. A&E's goal is a minimum 20% of our graduates will pursue graduate or professional education.

Measure: Graduate and Professional School Acceptance

Program level Indirect - Survey

Details/Description: In coordination with the ACU Career Center, students are surveyed regarding acceptance to graduate or professional education.

Level of Proficiency Target (Competency Target): 20%

Ideal Target: 30%

**Program Outcome: Vet school acceptance**

Students will perform at a level in their ACU course work and score high enough on the GRE to 1) qualify for application to a school of veterinary medicine, 2) be invited for an interview after review of applications and 3) be accepted into the DVM program.

Details/Description: A&E will keep a count of the number of students eligible for vet school. Students should have a grade of "C" or better in courses such as Biology, Biochemistry, Chemistry, Genetics, Animal Reproduction, Animal Nutrition and Physics. However, history tells us that a GPA  $\geq 3.5$  and a good to excellent GRE score are required for an interview. The interview then determines ranking for slots available. A&E evaluates and tracks alumni regarding acceptance into Colleges of Veterinary Medicine, as well as acceptance into graduate programs.

Level of Proficiency Target (Competency Target):

70% acceptance rate to Colleges of Veterinary Medicine and/or Graduate School. National acceptance rate is approximately 50%. TAMU acceptance rate is 30%.

Ideal Target: 100% acceptance rate.

**7. Provide the date of the last revision of the assessment plan addressing each of your majors/programs.**

The outcomes assessment plan for all the department was revised in fall 2019.

Refer to your annual outcomes assessment findings and continuous improvement plans for the last five complete assessment cycles (from the 2014-15 academic year forward).

**8. Provide two examples of success in meeting acceptable or ideal targets in measures of student learning outcomes and describe how you are maintaining those results.**

Outcome: Critical Analysis

Measure: Capstone Project

Details/Description: All animal science majors take a writing intensive capstone course in their junior or senior year. In this course students are required to employ scientific procedures in researching topics within the field and to compile their findings in the form of a project (thesis) write-up. These projects will employ all stages of the scientific method from Observation, Questioning, Defining Hypotheses, Experimentation, Analysis and Communication. The students are required to communicate their research results in the form of technical paper or project report that will contain the following sections: Abstract, Introduction, Objectives, Literature Review, Results & Discussion, Conclusions and Bibliography. The course also requires students to make oral presentation of their project proposals and research results at the conclusion of the semester. Student performance is evaluated by the instructor. A project report grade of a "C" or better shows competence.

Level of Proficiency Target (Competency Target): 80% acceptable on oral presentation(s) and 80% and "C" or better on written artifact

Ideal Target: Ideal Target: 100%

#### Findings for Capstone Project

Summary of Findings: 100% of students in the class received a C or better on their final report and presentation.

Results : Acceptable Target Achievement: Exceeded; Ideal Target Achievement : Exceeded

We have restructured the AES curriculum to include more writing and reinforcement of scientific methodology throughout the curriculum. Dr. McGee is working with students so that they can begin their capstone projects early in the semester.

#### DEPARTMENTAL CURRICULAR OUTCOMES

Outcome: Research Activities

Measure: Participation in Research Activities

Details/Description: A&E students are encouraged to participate in research activities either in class projects or individual projects, in which they must collect and analyze data and produce a written document discussing the results and conclusions which can be drawn from their data. They are further encouraged to present their research at an event either on or off-campus.

Level of Proficiency Target (Competency Target): 1. 25% of students will participate in a research experience which produces data and written results.

2. At least 3 research projects will be presented at the ACU Undergraduate Research Festival and/or at professional meetings.

Ideal Target: 1. 50% of students will participate in a research experience which produces data and written results.

2. At least 5 research projects will be presented at the ACU Undergraduate Research Festival and/or at professional meetings.

#### Findings for Participation in Research Activities

Summary of Findings: Five students presented 3 posters and one oral presentation at the undergraduate research festival. An additional 9 students did research projects in ANSC 497. We have begun tracking research activity of individual students this year, so that we can more accurately know the total number of students in the department involved in research in every cohort.

Results : Acceptable Target Achievement: Met; Ideal Target Achievement : Approaching

All faculty in the department continue to encourage students to be involved in research, both in and outside of class. We are each conducting research projects in which we involve students.

**9. Provide two examples of times you did not reach your acceptable target for a measure of a student learning outcome, describe what you did to address the shortfall, and provide an update on progress toward reaching that target.**

General Education Science menu will address General Education competencies.

Outcome: 1. Outcome: Knowledge (Required)

Demonstrate an understanding of the basic knowledge, terminology or elements appropriate to the discipline.

Measure: Pre and Post test of Knowledge

Details/Description: Students in AENV 130 take a Pre-test on or before the first day of class. They then take the same test in the last week of class. This test covers major aspects of the course. Students should show improved scores in the post-test.

Level of Proficiency Target (Competency Target): Acceptable: 80% of the students will have a post-test score  $\geq 25\%$  higher than their pre-test score.

Ideal Target: Ideal: 100% of the students will have a post-test score  $\geq 25\%$  higher than their pre-test score.

Findings for Pre and Post test of Knowledge

Summary of Findings: Combining data from all the sections taught in 2018-2019, 79.4% of the students did 25% or more better on the post-test than they did on the pre-test. This is very close to our acceptable target.

Results : Acceptable Target Achievement: Not Met; Ideal Target Achievement : Approaching

The first step was to evaluate the test after teaching the course for a year, to make sure it corresponded well with the course. Next, both instructors for this course made some changes to our teaching, although this was driven more by general attempts to improve the course and by student feedback, rather than directly to improve performance on the post-test. We will evaluate the test results again at the end of the spring 2020 semester.

Program Outcome 5: Reasoned Writing

Outcome: SLO 5.1: Writing-Intensive Capstone

Every student in A&E takes a capstone course in their respective discipline of Agribusiness, Animal Science or Environmental Science. Each capstone course is defined as writing-intensive. Students are expected to critically evaluate an issue and apply their knowledge and experience base in addressing the topic.

Measure: Critical Evaluation and Written Communication

Details/Description: Though students write a number of different pieces in each writing-

intensive course, a specific writing assignment is identified and administered. The documents are collected by the course instructor and submitted to the University Writing across the Curriculum committee for external review. The course instructor provides no editing or grading before submitting the documents. A score of  $\geq 14$  is considered passing. The writing selection is evaluated by the instructor of record for a grade in the course.

Level of Proficiency Target (Competency Target): 90% of students scoring  $\geq 14$  in University assessment and "C" or better by course instructor assessment

Ideal Target: 100%

#### Findings for Critical Evaluation and Written Communication

Summary of Findings: Assessments for Spring 2019 not yet available. Assessments for Spring 2018 were

Course % of Students > 14 Average Score

ANSC497 85.71% 14.9

ENVR420 70.39% 14.3

All students received a grade of C or better by the instructor.

Results : Acceptable Target Achievement: Not Met; Ideal Target Achievement : Approaching

We are incorporating more writing into our curriculum, starting with AENV 110, the first class AES students take. We also changed the ENVR degree plans to require a technical writing class.

#### **Faculty (department-level response)**

**10. Use the template below to compile a table that includes a row for each faculty member who has taught in your department from Fall 2015 through Spring 2020. The table should show:**

**Current rank and full-time/part-time status**

- a. Teaching (number of courses, sum of credit hours taught, and total students enrolled in courses during this period)**
- b. Scholarship (citation for each publication, presentation, and creative work completed during this period)**
- c. University service (contributions at the department, college, and university level during this period)**

| <b>Name</b>     | <b>Rank/Status</b>     | <b>Teaching</b>                        | <b>Scholarship</b>                                                                                                                                                                                                                                                                              | <b>University Service</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-----------------|------------------------|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ed Brokaw       | Professor/FT           | 29 courses<br>79 hours<br>387 students |                                                                                                                                                                                                                                                                                                 | * Faculty Advisor, ACU Block and Bridle Club. 1975-2017.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Jim Cooke       | Professor/FT           | 20 courses<br>60 hours<br>462 students | "Research Grant," Sponsored by Central and South West, \$25,000.00. (1997 - 2015).                                                                                                                                                                                                              | * Committee Member, Editorial Committee, Journal Award Committee, NACTA Journal. 2003-2015.<br>* Committee Member, NACTA-Journal Award Committee. 2005-2015.<br>* Committee Member, Re-imagining the A& E Programs. 2014-2015. * Committee Member, ACU Green. 2014-2015.<br>* Committee Member, CAS Research Council. 2012-2015. * Committee Member, Faculty Renewal Leave committee. 2008 - 2015.                                                                                                                                                 |
| Jim Carpenter   | Associate Professor/FT | 26 courses<br>78 hours<br>432 students | * Adobe Fellow grant, 2019.<br>* Experiential Learning Development grant 2020<br>* CAS Professional Development Grant 2017-2018, 2019-2020                                                                                                                                                      | * Reviewed 1 manuscript 2017.<br>* Judged posters at TCTWS 2017, TSSRM 2017, 2019).<br>* Judged oral presentation URF 2018, 2019.<br>* Dept. Chair, 2017-2020.<br>* Sponsor of ACUTWS, 2017-2020.<br>* Sponsor of AES Club, 2019-2020.<br>* Mission trips to Honduras, May 2017, May 2018.<br>* Mentored 2 student research projects. 2018-2020.<br>* Served on ACU Research Council 2018-2020.<br>* Certified Master Teacher in April 2019.<br>* Honors thesis advisor, 2019.<br>* Master Gardeners Sustainability Landscape Workshop, 2017, 2018 |
| Kendra Jernigan | Assistant Professor/FT | 16 courses<br>48 hours<br>438 students | * K. Hayhoe, K. Jernigan, and L. Morgan. The wisdom of sustainability in climate change: Panel Discussion. Christian Scholars' Conference. Lubbock, TX. June 6, 2019.<br>* ACU Adobe Fellows Grant 2020<br>* ACU College of Arts & Sciences Professional Development Grant 2018-2019, 2019-2020 | * Pre-vet club faculty advisor 2018-2019<br>* DTA club faculty advisor 2019-2020<br>* ACU STEM event for girls 2019, 2020<br>* ACU Undergraduate Research Festival Judge, 2019<br>* ACU Undergraduate Research Festival (Off-campus visitors subcommittee), 2019-2020<br>* ACU Bee Campus Committee 2018-2020<br>* Master Gardeners Sustainability Landscape Workshop, 2019                                                                                                                                                                        |

|                |                          |                                        |                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------------|--------------------------|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Adam McGee     | Assistant Professor/FT   | 16 courses<br>46 hours<br>256 students | * CAS Professional Development Grant 2018-2019, 2019-2020<br>* Math and Science grant "Comparison of Body Temperature Differences Between Black and Red Hided Bos taurus Cattle." 2020 | * Co-developed 1 <sup>st</sup> annual Livestock Producers Conference: Management Decisions for West Texas Beef Producers, held at ACU, 2019.<br>* Represented ACU A&E Dept at Texas 4-H Roundup, Texas State FFA Convention, Career Day at James Madison High School, San Antonio 2019-2020<br>* Mentored Honors contracts, 2018 (1), 2019 (2), 2020 (1)<br>* Member, Athletics Committee, 2018-2020 |
| Alex Wann      | Instructor/FT            | 7 courses<br>21 hours<br>206 students  |                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                      |
| Alex Wann      | Instructor/PT            | 2 courses<br>6 hours<br>61 students    | N/A                                                                                                                                                                                    | N/A                                                                                                                                                                                                                                                                                                                                                                                                  |
| Bobby Burke    | Adjunct<br>Instructor/PT | 2 courses<br>6 hours<br>14 students    | N/A                                                                                                                                                                                    | N/A                                                                                                                                                                                                                                                                                                                                                                                                  |
| James Coalson  | Adjunct<br>Instructor/PT | 1 course<br>3 hours<br>18 students     | N/A                                                                                                                                                                                    | N/A                                                                                                                                                                                                                                                                                                                                                                                                  |
| Chace Craig    | Adjunct<br>Instructor/PT | 1 course<br>3 hours<br>12 students     | N/A                                                                                                                                                                                    | N/A                                                                                                                                                                                                                                                                                                                                                                                                  |
| Richard Dolman | Adjunct<br>Instructor/PT | 1 course<br>3 hours<br>6 students      | N/A                                                                                                                                                                                    | N/A                                                                                                                                                                                                                                                                                                                                                                                                  |
| Jimmy Judah    | Adjunct<br>Instructor/PT | 14 courses<br>42 hours<br>277 students | N/A                                                                                                                                                                                    | N/A                                                                                                                                                                                                                                                                                                                                                                                                  |
| Billy Kniffen  | Adjunct<br>Instructor/PT | 3 courses<br>9 hours<br>69 students    | N/A                                                                                                                                                                                    | N/A                                                                                                                                                                                                                                                                                                                                                                                                  |
| Ashley Simon   | Adjunct<br>Instructor/PT | 2 courses<br>6 hours<br>18 students    | N/A                                                                                                                                                                                    | N/A                                                                                                                                                                                                                                                                                                                                                                                                  |
| Ronnie Vinson  | Adjunct<br>Instructor/PT | 5 courses<br>9 hours<br>52 students    | N/A                                                                                                                                                                                    | N/A                                                                                                                                                                                                                                                                                                                                                                                                  |

### **Optional Response-Growth**

As mentioned earlier in the report, we believe there is potential for growth in our department. Our new faculty have brought new vitality to the department. Dr. McGee, in particular, is actively recruiting at high school agriculture events. Riley Morrow, our Farm Manager, is willing to get a MS in Animal Science, if ACU covers the costs. This would enable him to teach part-time and give us more flexibility in our animal science offerings. We also believe we could do much more with the Rhoden Field Lab if we employed a full-time Assistant Farm Manager. It has the potential to be a demonstration farm for sustainable practices. But right now, staff are stretched to simply maintain the property.

The number of agribusiness students has doubled between 2016 and 2020. Yet we do not have any full-time agribusiness faculty. With the addition of an agribusiness faculty member, we could strengthen this major and grow enrollment even more.

Finally, the reduction of our Administrative Coordinator position from full-time to half-time has had noticeable negative effects. Our faculty, already overworked, have had to take on new administrative responsibilities. We have had to hire student workers as receptionists, so someone is there to answer the phone or greet visitors. But these students are limited in the types of work they can do.

### **Literature Cited**

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