



MARTIN

**Center of Excellence for
Experimental Learning in
Agricultural Science**

**FY 2020
Annual Report**

Department of Agriculture, Geosciences, and Natural Resources

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Center of Excellence for Experimental Learning in Agricultural Science Mission Statement

The mission of the Center of Excellence (COE) for Experimental Learning in Agricultural Science is to provide an innovative infrastructure through which existing and new experiential inter-disciplinary studies in production agriculture, the environment, and conservation techniques can take place. The COE in Agricultural Science is designed to create a model for quality teaching across various disciplines, while facilitating and increasing external grant and contract activities, increasing public/private partnerships, and increasing outreach efforts. Other goals of the COE in Agricultural Science involve collaboration with secondary institutions, expanding livestock, crops, equipment, natural resource areas and other facilities to enhance experiential learning and yielding a major impact on the economy of the State of Tennessee.

Executive Summary

In accordance with the Center of Excellence (COE) for Experimental Learning in Agricultural Science mission statement, since January 2001, attention has been devoted to establishing a model field laboratory with facilities and resources to support experiential activities and research for students. This model field laboratory is used to promote and meet all goals of the COE mission statement. A major component of the COE is operation of a teaching and demonstration farm to complement ongoing academic programs in the Department of Agriculture, Geosciences, and Natural Resources (AGN) at the University of Tennessee at Martin (UTM). This endeavor was expanded effective January 1, 2006 when the Department of Agriculture, Geosciences, and Natural Resources assumed operational control of the entire 640 acres and associated buildings formerly operated by the Martin Experiment Station (University of Tennessee Institute of Agriculture). A major objective of this effort is to provide resources dedicated to the establishment of a quality experiential learning and applied research environment for the UTM campus and the citizens of Tennessee. This in turn meets the goals and objectives of the COE for Experimental Learning in Agricultural Science mission statement.

Presently, there are approximately 200 acres of COE property in field crop production with another 250 acres devoted to forage production and pasture for teaching herds/flocks of beef cattle, swine, horses, meat goats, and sheep. In addition, there are six outdoor research ponds (0.1 acre each) and ten indoor research tanks used for fisheries management. The COE also includes an alternative fuels (biofuels) laboratory, a wildlife biology field laboratory, a Tyson poultry facility, a companion animal laboratory, and two Veterinary Health Technology teaching laboratories. As a major thrust of the COE, the UTM Teaching and Demonstration Farm provides resources and facilities for public service activities and research to support public and private stakeholders involved in agricultural and natural resource sciences. Animals and facilities associated with the COE provide resources for training competitive teams for local, regional, and national competitions, as well as involvement in assisting collegiate and high school FFA and 4-H teams preparing for and competing in their respective interscholastic events across the state. This subsequently increases collaboration with secondary institutions and outreach efforts in accordance with the mission statement.

The University of Tennessee at Martin is an ideal location for the COE due to the existence of agricultural entities already in operation. The West Tennessee Agricultural Pavilion (Ned R. McWherter Agricultural Complex) serves as a hub of activity for clients in a variety of ways, ranging from livestock shows to the annual Santa's Village. The Santa's Village event has been in operation for the last 35 years and is a cooperation between the city of Martin and university faculty, staff, and students. The event provides great community outreach and community service through the collection of more than 18,000 canned goods and toy donations for the under-provided in our county. (Figure 1) The COE enables current and future faculty to not only serve the academic needs of current campus-based and online students, but also to expand opportunities for a statewide mixture of students in secondary schools as well as adult stakeholders through continuing-education offerings and events. The COE features applied research and external grant supported projects that complement the undergraduate and graduate teaching missions of the University of Tennessee at Martin.

During Spring 2020, the COVID-19 pandemic prompted the UT System to move all instruction at all campuses to the online environment. Due to CDC guideline, including social distancing parameters, activities such as student travel, travel studies, student club activities, guest speakers, and student club activities were cancelled through August 1, 2020. Additionally, all activities at the Ned McWherter Agricultural Pavilion, including 4-H and FFA events, were cancelled through August 1, 2020. Activities at the Ray and Wilma Smith Livestock Merchandising Facility were cancelled through August 1, 2020 as well.

Activities such as student internships, faculty research, and the Tennessee Governor's School for the Agricultural Sciences were all significantly impacted by the COVID-19 pandemic. Both in-state and out of state Travel was strictly limited for much of Spring and Summer 2020 by the UT System. Student internships, in many instances, were delayed or cancelled. Faculty research was difficult to plan and execute due to travel restriction and social distancing requirements. The Tennessee Governor's School for the Agricultural Sciences was offered virtually for the first time ever due to the COVID-19 pandemic. In summary, many activities that impact and support the Center of Excellence here at UT Martin were significantly altered during this fiscal year due to the COVID-19 pandemic and, furthermore, impacted overall COE productivity.

In April 2020, The University of Tennessee, on behalf of its Martin campus proposes to acquire 232 acres of property located at 2983 Hardin Graveyard Road, Adamsville, TN 38310 known as the Coon Creek Science Center.



Figure 1. Coon Creek Science Center facilities

The property was obtained from the Pink Palace of Museums for institutional use as a field laboratory for teaching, outreach, and research activities in Geosciences, Natural Resources Management, Astronomy, and Agriculture. The Coon Creek Science Center is one of a dozen most significant fossil sites in North America. The site has yielded over 600 different species of marine creatures, preserved as unaltered fossils. The Pink Palace museum’s Coon Creek Science Center collection – includes a skull and skeletal remains of a 25 ft. Mosasaur – dating from the late Cretaceous, 75 million years ago, (a.k.a. -- the end of the Age of Dinosaurs). The University will utilize the property to offer enhanced undergraduate and graduate courses; public summer programming; Eco- and Paleo-tourism; and research. STEM teacher training is also performed and will continued on the site.



Figure 2. Coon Creek Science Center Fossil Dig



Figure 3. Santa's Village Display at the Ned R. McWherter Agricultural Complex

Funding provided by the Tennessee Department of Agriculture and the Tennessee Agriculture Enhancement Program funded the establishment and operation of a West Tennessee Animal Disease Diagnostic Laboratory (Figure 4) that opened on July 1, 2008. This laboratory serves as a satellite of the C.E. Kord Laboratory at the Ellington Agriculture Center in Nashville, Tennessee. Necropsies performed on animals used for food or fiber are performed at no charge to producers and public partners and all other lab services are performed on a fee schedule. The lab increases public and corporate partnerships with outreach efforts, in addition to being a valuable teaching tool. The lab is also used for instruction and demonstration for students and visiting groups that come to campus.



Figure 4. West Tennessee Animal Disease Diagnostic Laboratory.

The Veterinary Health Technology Option in Animal Science provides students an opportunity to earn a 4-year degree with a major in Agriculture, while meeting all of the qualifications established by the American Veterinary Medical Association to sit for the National Licensing Exam for Veterinary Technicians. The Veterinary Health Technology Option received initial accreditation in May 2014 from the American Veterinary Medical Association and the Committee on Veterinary Technician Education and Activities (CVTEA). We had our CVTEA site accreditation visit in February 2019 and received full accreditation through 2024.

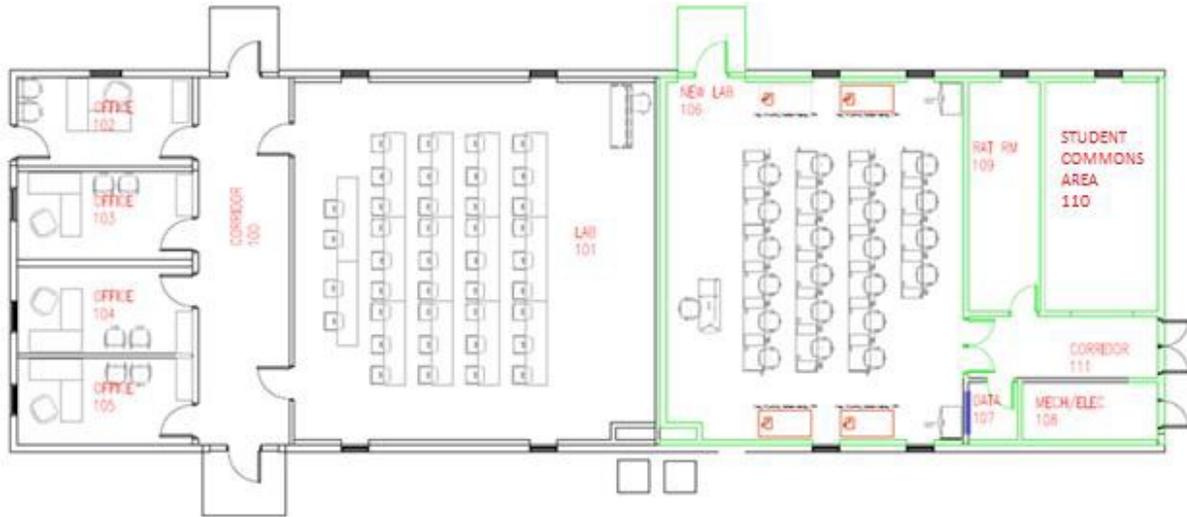


Figure 5. Vet Health Tech Facility Floor Plan

During spring 2015, a free stall barn adjacent to the Veterinary Technology Lab was partially renovated using Title III grant funds, as well as funds secured from a USDA RBEG grant. The Title III grant is providing over \$300,000 over five years and includes a four-phase renovation (Figure 3) to the free stall barn. The barn was eventually renamed the Veterinary Health Technology Facility. Phase I work totaled approximately \$140,000 and the partial renovation created a new state of the art smart classroom equipped with Clear Touch Panel computing technology. Phase II and III renovations began in 2016 and were completed in the summer of 2018 to provide four office spaces (Figure 6) and a state-of-the-art laboratory for Veterinary Technology students.

Most recently, Title III grant funds were used for phase IV renovations on the rear section of the Veterinary Health Technology Facility to create a new teaching laboratory (Figure 7) for laboratory animals and a new student commons area for the growing Veterinary Health Technology Program. This project was started during the 2017-2018 academic year and was completed during the 2018-2019 academic year. During the 2019-2020 academic year, this facility growth of the Veterinary Health Technology option increased available instruction and research capacity for all Animal Science faculty.

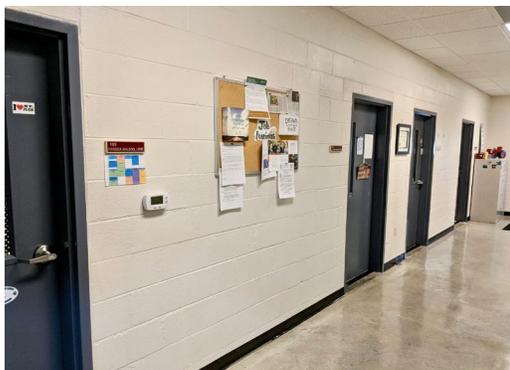


Figure 6. Offices at Vet Health Tech Facility



Figure 7. New Laboratory at Vet Health Tech Facility

Another important experiential learning project that has been funded through the UTM Provost's Office, is the design and construction of a new Beef Evaluation Center. This center will provide experiential learning opportunities for animal science students utilizing and growing the current cow-calf herd. The Beef Evaluation Center will include a 1,245 ft² laboratory and a 250 ft² student commons area, (Figure 8) and a large, covered livestock working facility. This laboratory will also increase available interdisciplinary research capacity for all Animal Science faculty. This project was expected to begin in Fall 2018; however it was delayed due to increased steel prices that carried the project total over budget. Fundraising is underway by Chancellor Craver and construction is TBD. Fencing was added Spring 2020 for farm production, research, and pasture in preparation for construction (9a and 9b).

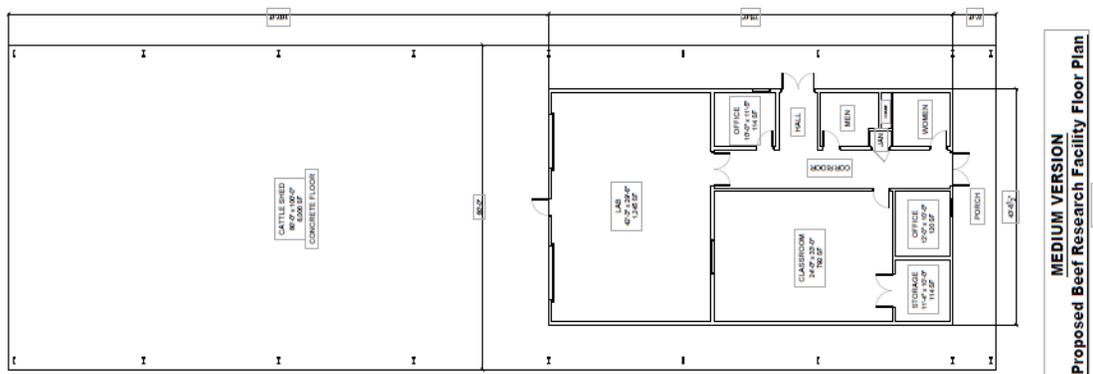


Figure 8. Beef Evaluation Center Floor Plan.



Figure 9a & 9b. New fencing around future Beef Evaluation Center location.

In 2012, alumni faculty member Dr. Bob Hathcock, with the support of current faculty member Dr. Joseph Mehlhorn and the Northwest Tennessee Beekeepers Association, installed a small 11-hive apiary on the north end of the UTM Teaching and Demonstration Farm. The purpose of this apiary was to provide a vehicle for instruction/outreach regarding best management practices in beekeeping for West Tennessee beekeepers. In 2016, Dr. Hathcock and the Association turned the apiary over to the Department of AGN for future use and upkeep. In 2017, the apiary was upgraded to 25 hives and the Department of AGN began to involve Teaching and Demonstration Farm student workers to complete apiary maintenance (see Figure 10). This provides a unique hands-on learning experience for these students. The apiary also allowed for cross-collaboration between the Department of AGN and other departments on campus such as faculty and students from the Department of Chemistry. Beginning September 2017, honey and lip balm from the apiary is being sold in the UTM Bookstore, at UTM football games, and at other public events on the UTM campus. This project continues to be successful and continues to grow.



Figure 10. Student workers completing apiary maintenance.

The Center of Excellence has hosted the Tennessee Governor’s School for the Agricultural Sciences (TGSAS) since 2004. (Figure 11) TGSAS provides exceptional agricultural experiential learning opportunity for Tennessee high school sophomores and juniors. The academic program is a 4-week residential program that covers a variety of agriculture and natural resource topics. Students complete college courses as well as learn research techniques through group study research projects. A copy of the 2020 TGSAS Annual Report can be found on the Center of Excellence web site. <http://www.utm.edu/departments/agnr/coe.php>

With the tremendous success of the Tennessee Governor’s School for the Agricultural Sciences from a student recruitment standpoint, there was an excellent opportunity to develop an “honors” program specifically for AGN students. With this vision and the help of a dedicated group of AGN faculty, the Agriculture, Geosciences, and Natural Resources Fellows Research Program (AGN-FRP) was born. The program includes an additional 12 hours of course work tailored AGN-FRP to enhance students’ investigative skills and promote undergraduate research. The AGN-FRP provides an opportunity for outstanding AGN students to gain organized experiences in research and scholarship through a mentored relationship with an AGN faculty member. The primary goal of the AGN-FRP is to foster and enhance undergraduate research in a manner that is mutually beneficial for the student and the faculty mentor. The additional training from the FRP program has positioned the students to be successful in advanced academic fields.



Figure 11. 2020 TGSAS Counselors

UT Martin partners with Tyson Foods Inc.

The University of Tennessee at Martin has partnered with Tyson Foods Inc. to add chickens to the list of animals UT Martin students work with during agricultural production courses. Tyson will provide the birds, which will be housed in a renovated barn facility on the UT Martin Teaching Farm. The facility officially opened March 1. This facility will be used for teaching, research and career training. (Figure 12)



Figure 12 - New Tyson facility. Below is the ribbon cutting of the new Tyson facility at UTM and a picture of the Tyson facility on campus.



Faculty and Staff of Center of Excellence for Experimental Learning in Agricultural Science

Center of Excellence Faculty

Name	Title	Area of Expertise
Ary, Clint	Associate Professor	Veterinary Science
Bird, Will	Associate Professor	Agricultural Education
Buttrey, Emalee	Associate Professor	Animal Science
Chesnut, Matt	Lab Instructor	Veterinary Science
Cole, John	Assistant Professor	Agricultural Engineering
Darroch, Barbara	Associate Professor	Plant and Soil Science
Gale, Paula	Professor	Soil Science
Garner, Kelly	Lab Instructor	Veterinary Science
Lepcha, Isaac	Lecturer	Plant and Soil Science
Mehlhorn, Joey	Director/Professor	TGSAS
Mehlhorn, Sandy	Associate Professor	Agricultural Engineering
Morphis, Zach	Lab Instructor	Veterinary Science
Pelren, Eric	Professor	Wildlife Biology
Roberts, Jason	Professor	Veterinary Science
Simpson, Mark	Professor	Geosciences-GIS/Meteorology
Smartt, Philip	Professor	Natural Resources Management
Tewari, Rachna	Associate Professor	Agricultural Economics
Totten, Wes*	*Director/Professor	Plant and Soil Science
Waldon, Amanda	Lab Instructor	Veterinary Science
Walker, Danny	Associate Professor	Veterinary Science
Watson, Diana	Assistant Professor	Animal Science
Wolters, Bethany	Assistant Professor	Plant & Soil Science

Center of Excellence Staff

Name	Title	Area of Expertise
Arant, Carrie	Business Manager	Budgets and Accounting/TGSAS
Bradford, Nathan	Teaching Farm Supervisor	Crop Management
Crockett, Jamie	Senior Farm Equipment Operator	Equipment Operation and Management
Cunningham-Corvin, Meghan	Equestrian Coach	Horsemanship
Jackson, Kim	Administrative Specialist	Student Support & Contracts
Jones, BeLynda	Administrative Specialist	Veterinary Health Technology /TGSAS
Leiter, Kim	Assistant Equestrian Coach	Horsemanship
Pierce, Mike	Farm Manager	Crop and Animal Management
Woods, Tara	Research Associate	Animal Care and Support

Student Information

The Center of Excellence for Experimental Learning in Agricultural Science works closely with the Department of Agriculture, Geosciences, and Natural Resources to meet all student needs and the COE mission statement. The department has a current enrollment of approximately 1,270 students with areas of interest in Agricultural Business, Agricultural Science, Animal Science, Plant and Soil Science, Agricultural Engineering Technology, Geosciences, Wildlife Biology, Park Administration, Environmental Management, and Soil and Water Conservation. To see specific student awards and internships see Objective 7 on page 19.

Planned Program Activity in FY2020

Activities of the Center for each general objective will include, but are not limited to:

Objective 1: Submit external grants seeking to support the Center of Excellence and its activities consistent with the mission and objectives of the Center of Excellence.

Target: Efforts will be directed at adding \$100,000 in new grants and contracts during FY 2019-20 and maintaining or continuing existing grants and contracts.

Response:

During the 16th year of operation, faculty members of the Center of Excellence were successful in acquiring a total of \$914,030 in active grants (Appendix A). The continued success in acquiring external funding is due primarily to faculty appointments in the Department of Agriculture, Geosciences, and Natural Resources. The faculty identified potential funding sources and subsequently prepared grants and contracts from six different funding agencies in FY2020. Along with this funding the faculty continued research from grants and contracts established with five different funding agencies in prior fiscal years. A full report of all grants funded can be found on the Center of Excellence web site.
<http://www.utm.edu/departments/agnr/coe.php>

Objective 2: Continue with the planning and design phase of a \$1.5 million Beef Evaluation Center construction project.

Target: Renewed planning and fundraising for a new Beef Evaluation Center to support academics, cow-calf operation, and research and scholarly activity is underway for FY 2019-20. This facility will be comprised of a 40-seat state of the art classroom and student commons area. This laboratory will aid in student instruction but will also provide needed research space for undergraduate, graduate, and faculty research projects in all areas of animal science. This project should begin by end of summer 2021

Response: Due to the COVID-19 pandemic this project has been put on hold during the fiscal year 2020-2021 to continue fundraising activities which includes an additional \$1 million.

Objective 3: Partner with agronomic companies desiring demonstration areas for seed and chemical applications on a cost-sharing basis

Target: Continue field operations for the 200-acres of crops currently in production emphasizing variety trials and demonstration plots for alternative crops. Complete a systematic review of all agricultural production areas of the COE and amend where necessary to ensure optimum productivity (pH, fertilization, organic matter, etc.). Identify new partnerships for field trials and alternative crops to enhance area agricultural enterprises. Continue to offer producer-oriented field day programs in cooperation with area equipment dealers, chemical companies, and/or seed companies.

Response:

Agrigold	Tyson Poultry Barn
Bayer CropScience	Warren Seed
Beck's Hybrids	Syngenta
Helena Chemical	Winfield Solutions
Weakley County Farmers Co-Op	Nutrien Ag

Objective 4: Generate timely, state-of-the-art information on key topics related to food, agriculture, and the environment with special attention to emerging issues that may have long-term implications for production of agricultural commodities while protecting natural resources in Tennessee.

Target: Seek to sponsor at least 30 speakers/programs that will be directed at enhancing knowledge of emerging issues in the agricultural sciences to include natural resources.

Response:

1. Nate Rottero - Beck's
2. Ben White - Greenpoint AG
3. Dr. Heather Kelly, Extension/Research Plant Pathologist and IPM Coordinator, UT Extension/ UTIA Dr.
4. Larry Steckel, Professor, Row Crop Weed Management, UT Extension/UTIA
5. Dr. Alan Windham, Professor of Plant Pathology, UT Extension/UTIA
6. Dr. Tyson Raper, Assistant Professor, Cotton & Small Grains Specialist/ UT Extension/UTIA
7. Dr. Avat Shekoofa, Assistant Professor, Crop Physiologist, UTIA
8. Austin Scott, Agronomist, Beck's
9. Darrin Holder, Agronomy Manager, Winfield Solutions, Land O'Lakes
10. Jay Yeargin, Farmer, Yeargin Farms
11. Dee Wolters, Palouse Farms, Culleoka, TN
12. Lauren Berner, Zoetis
13. Sarah Fox, Nutrena
14. Chris Clark, Farrier - because of Covid-19 he recorded and uploaded his talk on Canvas
15. Jay Atwill, Equine Dentist - because of Covid-19 he recorded and uploaded his talk on Canvas
16. Dr. Colin Anderson, Veterinarian, Masterson Farms, Somerville, TN
17. Dr. Sherry O'Brien, Veterinarian/Representative, Boehringer Ingelheim, Memphis
18. Kelsey Harnett, LVMT, Veterinary Technician Supervisor, Nashville Veterinary Specialists
19. Leslie Weresczak, Veterinary Technician/UTCVM SACS ICU Supervisor, Knoxville
20. Denver Melton, Live Production Manager, Tyson, Union City
21. Kimberly Wallace, Unit 3 Director, Office of Health-Related Boards, Nashville
22. Jason Maxedon, TWRA
23. Barron Crawford, USFWS
24. Jereme Dennison, TWRA
25. James Whittaker, TWRA
26. Lindsay Gardner, TN Wildlife Federation
27. Hannah Goff, District Conservationist USDA-NRCS
28. Craig Harris, Soil Scientist USDA-NRCS
29. Dwayne Stubblefield, Bayer Representative
30. Jessica Brown, Herd Manager, Auburn University, Alabama
31. Erin Robbins, LVT, Equine, Auburn University, Alabama
32. Dr. Rebecca Bushard, Hill's Representative
33. Dr. Sherri O'Brien, BI Representative
34. Dr. Chris Teutsch - Professor, University of Kentucky
35. Dr. Allen Stateler - Nutritionist
36. Matt Carroll - H&R
37. Jodi Watson - ACI
38. Clay Brewer - Stay Tough Fence
39. Wendy Sneed - Tennessee Department of Agriculture
40. Gary West - Mid-Continent Livestock Supply

Objective 5: Communicate the objectives of the COE and related action programs to raise public awareness of the importance of the agricultural sciences and natural resources to the economic wellbeing of Tennessee and the surrounding areas.

Target: Continue to utilize technology to enhance education for on-campus and off-campus students. Endeavor to offer at least one new program promoting agriculture and natural resources in Tennessee. Maintain and enhance course offerings for dual enrollment programs with high school students in Tennessee. Offer at least ten department courses for online delivery.

Response: The following courses were taught for high school dual enrollment credit in the 2019-20 academic year and below is the current flier that was distributed to the high schools.

AGEC 110	Introduction to Agricultural Business
AGEC 250	Introduction Agricultural Sales
ANSC 110	Introduction Animal Science
ANSC 210	Introduction Horse Science
ANSC 230	Exotic & Companion Animal Management
ANSC 260	Behavior Farm & Companion Animal
ANSC 270	Animal Welfare and Ethics
GEOL 110	Introduction Physical Geology
GEOL 120	Environmental Geology
PLSC 110	Introduction Plant & Soil Science

In addition to the dual credit courses, many courses were offered for online delivery as well. All Agriculture Business courses are now offered online, in addition to numerous courses in all programs in agriculture and natural resources within the AGN department. New courses are being developed and added online yearly by COE faculty.

AGRICULTURE PATHWAY FOR DUAL ENROLLMENT STUDENTS

Dual enrollment students are encouraged to satisfy general education requirements prior to taking agriculture-specific concentration courses.

Students can earn up to 30 hours which could allow them to graduate college in three years.

GENERAL EDUCATION

English (9 hrs): ENGL 111, 112*, COMM 230*

Mathematics (6 hrs): MATH 140*, MATH 210*

Social Science (6 hrs): POSC 210, 220, PSYC 101, SOC 201, 202

Fine Arts (3 hrs): ART 110, ARTH 211, MUS 111, 112, THEA 110, 111

Physical Systems (8 hrs): GEOS 110/110L, GEOS 130/130L*

Humanities (9 hrs): HIST 121, 122, HIST 201, 202, PHIL 110, 120

CONCENTRATION-SPECIFIC

Agribusiness or Farm & Ranch Mgt. (6 hrs): FARM 110, ANSC 110, AGECE 110, AGECE 250, AGECE 271

Animal & Vet Science (6 hrs): AGECE 110, ANSC 210, ANSC 230, ANSC 260

MATH 140*: NRM 101, ANSC 170, PSYC 101, SOC 201, 202

Plant Science (6 hrs): PLSC 110, NRM 101, MATH 140*, PSYC 101, SOC 201, 202

Courses in ITALICS can also be used for multiple concentrations. (Example: AGECE 110 can be used in the Animal & Vet Science, Agribusiness, and Farm & Ranch Management concentration)

FOR MORE INFORMATION, CONTACT:

Dr. Wes Totten (731)881-7262 | wtotten@utm.edu

Erica Bell (731)881-7089 | ebell@utm.edu

COURSE TITLES

Courses from the front page are listed below with their full class title.

GENERAL EDUCATION

ART 110- Understanding Visual Art
 ARTH 211- The History of Art
 COMM 230*- Public Speaking
 ENGL 111- English Composition
 ENGL 112*- English Composition
 GEOS 110/110L- Geoscience in Everyday Life
 GEOS 130/130L*- Global Change and Earth History
 HIST 121- Development of World Civilization I
 HIST 122- Development of World Civilization II
 HIST 201- History of the United States I
 HIST 202- History of the United States II
 MATH 140*- College Algebra and Elementary Functions

MATH 210*- Elementary Statistics and Probability
 MUS 112- Masterpieces of Music
 MUS 112*- Music in Our Time
 PHIL 110- Adventure of Ideas: Historical
 PHIL 120- Adventure of Ideas: Contemporary
 POSC 210- American Government and Politics
 POSC 220- American Political Institutions and Policy
 PSYC 101- Introduction to Psychology
 SOC 201- General Sociology
 SOC 202- Social Problems
 SOC 202*- General Sociology
 THEA 110- Understanding Theatre
 THEA 111- Understanding Theatre

CONCENTRATION

AGEC 110- Introduction to Agricultural Business
 AGECE 110- Introduction to Agricultural Sales
 AGECE 250- Farm Management
 ANSC 110- Introduction to Animal Science
 ANSC 210- Introduction to Horse Science
 ANSC 230- Exotic and Companion Animal Management
 ANSC 260- Behavior of Farm and Companion Animals

ANSC 270- Animal Welfare and Ethics
 MATH 140*- College Algebra and Elementary Functions
 NRM 101- Wildlife, Conservation and Environmental Issues
 PLSC 110- Introductory Plant and Soil Science
 PSYC 101- Introduction to Psychology
 SOC 201- General Sociology
 SOC 202- Social Problems

***Prerequisites:**
 ENGL 112- C or higher in ENGL 111.
 COMM 230- C or higher in ENGL 111.
 GEOS 130/130L-GEOS 110/110L or any 2 semesters of university-level lab science.
 MATH 140-Two units of high school algebra and a 20 ACT Math score.
 MATH 210-MATH 100-110, or 140, or 170, or 185, or 231 or a 24 ACT Math score.

UT MARTIN

Objective 6: Provide a forum for dialogue, debate, information sharing, and consensus building among policymakers, researchers, and leaders in non-governmental organizations, the private sector, and media through seminars, workshops, conferences, service learning, and publications.

Target: Plan and present at least 8 seminars/workshops on current topics of interest to animal and crop producers as well as programs in natural resource management.

Response:

1.) Seminars/Workshops

Amanda Waldon and Zach Morphis Hosted Tennessee Veterinary Technician Association (West) November 9-10, 2019 UT Martin, Martin, TN

Jason Roberts August 26, 2019, WestTeach West Tennessee Diagnostic Lab, UT Martin, Martin, TN

Jason Roberts and Wes Totten October 1, 2019 WestStar Future Star Leadership Summit UT Martin, Martin TN

Jason Roberts January 9, 2020 WestStar Leadership Summit, UT Martin, Martin, TN

Mike Pierce, Lacey Taylor, Kentucky Forages Field Day

Mike Pierce, Ty Weaver, Will Brewer Hay Field Day Tennessee Extension, Hopkinsville, KY

Nathan Bedford Syngenta conducted a field day for retailers, UT Martin, Martin, TN

Rachna Tewari July 2019 Western Agricultural Economics Association Annual Meeting, Ottawa, Canada

Rachna Tewari November, 2019 Tennessee Academy of Sciences Annual Meeting, Columbia TN

Rachna Tewari February 2020 Southern Agricultural Economics Association Annual Meeting

Rachna Tewari June 2020 (virtual) North American Colleges and Teachers of Agriculture Annual Meeting

Barbara Darroch May 2020 Cotton Scout School, West Tennessee Research and Education Center. Online.

Barbara Darroch January 2020 Tennessee Soybean Promotion Board Annual Meeting, Nashville, TN (attended online).

Barbara Darroch January 2020 UT Martin Assessment Workshop. UT Martin, Martin, TN

Barbara Darroch Nov. 2019 International Annual Meetings of the American Society of Agronomy, Crop Science Society of America, and Soil Science Society of America. San Antonio, TX. Several students also attended and participated in SASES (Students of Agriculture, Soils, and Environmental Sciences) activities.

Barbara Darroch September 2019 Cotton Tour, West Tennessee Research and Education Center, Jackson, TN. Students from PLSC 433 attended with me.

Barbara Darroch September 2019 Soybean Disease Field Day, Milan Research and Education Center, Milan, TN. Students from PLSC 322 attended with me.

Barbara Darroch August 2019 UT Martin Fall Faculty Workshop

Barbara Darroch August 2019 Attended Bayer Field Day in Union City, TN

Paula M. Gale, Michael Singer and Adrian Rodriguez. 2020. Nutrient Transformations at a Wetland Restoration Site. West Tennessee Water Resources Symposium. Jackson, TN.

Paula M. Gale. 2019. Research Projects in the UT Martin Soils Laboratory. Pinecrest Research Symposium. Moscow, TN.

Wes Totten. 2019. Botany. NWTN Master Gardener Workshop. UT Martin, Martin, TN

Wes Totten. 2020. Turfgrasses. NWTN Master Gardener Workshop. UT Martin, Martin, TN

Wes Totten. 2019. Botany. Henry Co. Master Gardener Workshop. UT Ext., Paris, TN

2). Conferences attended by faculty and students

Danny Walker: August 2019 AVMA Convention - Washington, DC

Jason Roberts, Danny Walker, BeLynda Jones, Amanda Waldon, Zach Morphis, Matt Chesnut, Kelly Garner, Mike Pierce, Diana Watson and several students

February 2020 TVMA Convention - Murfreesboro, TN

Southeastern Regional Soil Judging Contest in Blacksburg, VA - Eight students competed
Brett Capps- GSA 2019 Phoenix, Geoconclave

Jackson Baxter and **Mike Pierce:** The League Agriculture and Equestrian Centers Conference

Mike Pierce: MidSouth Stocker Conference, Tennessee Cattlemen's Association

Barbara Darroch and John Cole June 2020 NACTA (North American Colleges and Teachers of Agriculture) Annual Conference – Virtual conference online this year.

Clint Ary, Jason Roberts, Joey Mehlhorn, Emalee Buttrey, **Matthew Chesnut, Zach Morphis** along with several students 129 Meeting Tennessee Academy of Science, Columbia State Community College in Columbia, TN

John Cole Annual International Meeting of American Society of Agricultural and Biological Engineers, July 2019 in Boston, MA.

3.) Presentations

1. Courtney, Kaitlyn, **Clint Ary,** and Emalee Buttrey. “Analysis of Necropsy Data on Pneumonia in West Tennessee Cattle.” Selected Poster Presentation, 2019 Tennessee Academy of Science, Columbia, TN, November 22, 2019. (P)
2. Whitt, Elizabeth, **Clint Ary, Jason Roberts, and Joey Mehlhorn.** “Perceptions and Ideas to Achieve Success from UTM Freshmen Pre-Vet Majors as Compared to Veterinary School Students and Alumni.” Selected Poster Presentation, 2019 Tennessee Academy of Science, Columbia, TN, November 22, 2019. (P)
3. Parks, Marissa, **Matthew Chesnut, Zachary Morphis,** Emalee Buttrey, and **Clint Ary.** “Analyzing the Physiologic Impacts of Diet in Cats.” Selected Poster Presentation, 2019 Tennessee Academy of Science, Columbia, TN, November 22, 2019. (P)
4. **John Cole, Sandy Mehlhorn, Isaac Lepcha** 2020. Analysis of Canvas Screen Time and Student Grade Outcome. Poster presentation NACTA virtual conference.
5. **John Cole** and J. Street. 2019. Investigation of the Use of Micronized Rubber Powder in Wood-Based Composite Particleboard. Annual International Meeting of American Society of Agricultural and Biological Engineers. Boston, MA.

4.) Scholarly Activity - Publications

John Cole and J. Street. 2019. Investigation of the Use of Micronized Rubber Powder in Wood-Based Composite Particleboard. ASABE Paper No. 1900451, St. Joseph, MI: ASABE.

Objective 7: Provide enhanced laboratory facilities and resources to support experiential learning.

Target: Expand experiential learning experience for students with at least one international travel course and offer at least 40 opportunities for internship participation. Identify opportunities for international study or internships.

Response: Student Internships/Experiential Learning Experiences and their respective Hosts:

1. Gwendalynn Bracy - UT Knoxville Vet School
2. Callie Drewery - Tennessee Equine
3. Meagan Kennedy - Collierville Animal Clinic
4. Anna Kiser - Collierville Animal Clinic
5. Kathy Lopez - North Madison Animal Hospital
6. Erin Mahoney - Quakertown Veterinary Clinic
7. Johnie Parker - Auburn Vet School
8. Sarah Poole - Memphis Veterinary Specialists
9. Desiree Ransom - Memphis Veterinary Specialists
10. Allie Reda - Auburn Vet School
11. Katelyn Rickman - Jackson Animal Clinic
12. Rebecca Roberts - Memphis Veterinary Specialists
13. Maddison Shaw - Reelfoot Veterinary Clinic
14. Amanda Stewart - Animal Health Clinic (Dr. Chris Blevins)
15. Hunter Wanser - Blue Pearl Veterinary Specialists
16. Emily Warren - Blue Pearl Veterinary Specialists
17. Jessica Cooley- Auburn
18. Elizabeth Compton- MVS
19. Samantha Curd- Reelfoot Animal Clinic
20. Bethany Dalton- MVS
21. Rachel Friedrich- NVS
22. Caleb Little- NVS
23. Elizabeth Matzner- Mountain Empire- Johnson City
24. Deja B. Patterson- Auburn
25. Alexis Reynolds- Auburn
26. Sierra Robinson- Chattanooga
27. Dominique Scandrett- Hook's Pet Clinic
28. Kayleigh Shanks- Blue Pearl
29. Ashley Stockdale- Mineral Wells, Paris
30. Jessi Stunson- Masterson Farms
31. Ashley Todd- Blue Pearl
32. Hana Viktorinova- UTK Vet School
33. Mary Yarbrough- MVS
34. Caleb Akers - TN Farmers Coop
35. Wes Barnhill - Helena Agri-Enterprises
36. Mason Chandler - Precision Ag Partners
37. Thomas Dobbins - Ford Construction
38. Jacob Doss - Holland Land Surveying
39. Seth Grimmitt - Lynch Equipment Sales

40. Daniel Grissom - B.A.M.2 Inc.
41. Tyler Hopper - Nutrien Ag Solutions
42. Laine McGee - Beck's Hybrids
43. Justin Pierce - Cox Backhoe
44. Tristan Turner - Giles County Coop
45. Devin Water - Grayson Carber & Son Contracting
46. Adrian Rodriguez - TDEC Jackson, TN
47. Morgan Spring - City of Martin
48. Caleb LaMontagne – TWRA
49. Colten Snyder - U.S. Fish and Wildlife Service
50. Ethan Mullins - Tennessee Wildlife Resources Agency
51. Ethan W. Brown - Tennessee Wildlife Resources Agency
52. Cody MacLennan - US Fish and Wildlife Service
53. Michael Samko - USFWS
54. Blake Rummage - South Dakota Game Fish and Parks
55. Carson Morrow - Reelfoot Lake State Park
56. Austin Hill - Tennessee Department of Transportation
57. David Hale - Tennessee Wildlife Resources Agency
58. Abigail Sartain - Farm Credit
59. Justin Armer – Bell Ag. Consulting
60. Shelby Autry – Gibson Farmers Co-op
61. Cesili Caraway – Helena Agri-Enterprises
62. Colby Cox – Dr. Paula Gale, UTM
63. Tucker Curlin – Volunteer Ag Services
64. Rebecka Jackson – Dr. Paula Gale, UTM
65. Caden Johnson – West Tennessee Research and Education Center
66. Hope Richardson – Disney World, Orlando, FL
67. Lindsay Sparks - University of Kentucky Research and Extension Center

Objective 8: Support local, regional, and national competitions.

Target: Continue to host or participate in a minimum of 10 local, regional and/or national competitions by UT Martin students and faculty.

Competitions:

1. Abigail Sartain: Tennessee Academy of Sciences Annual Meeting undergraduate paper contest, undergraduate poster competition, Southern Agricultural Economics Association Annual Meeting
2. UTM Weeds team – Took one team of three students (Kate Armstrong, Maggie Brazier, and Nathan Oliver) to the North American Weed Science Contest in Seymour, IL, July 2019. Maggie Brazier was 2nd overall for undergraduate students in the Southern Weed Science Society.
3. Three students (Kate Armstrong, Nathan Oliver and Michael Singer) participated in the SASES Crops Judging Showcase competition at the 2019 International Annual Meetings of ASA, CSSA, and SSSA. San Antonio, TX, Nov. 2019.
4. Four students (Kate Armstrong, Nathan Oliver, Vivica Miller and Michael Singer) participated in the SASES Research Poster competition at the 2019 International Annual Meetings of ASA, CSSA, and SSSA. San Antonio, TX, Nov. 2019. Kate Armstrong won 1st place in the Agronomy Division and Nathan Oliver won 3rd place in the Agronomy Division.

Student Awards

1. UT Martin Student Chapter of The Wildlife Society earned Southeastern Section of The Wildlife Society's Student Chapter of the Year award Fall 2019.
2. Abigail Sartain, First Place, Undergraduate paper presentation contest, Tennessee Academy of Sciences Annual Meeting, Columbia, TN November 2019
3. Emily Warren - Memphis Veterinary Specialist GPA Spring 2020
4. Madison Shaw - Memphis Veterinary Specialist Leadership Award Spring 2020
5. Katherine Lopez - Jackson Wyatt Memorial Scholarship Spring 2020
6. Allison Reda - Boehringer Ingelheim Scholarship Spring 2020
7. Desiree Ransom - Boehringer Ingelheim Scholarship Spring 2020
8. Bethany Dalton - Eskew Family Scholarship Fall 2019
9. Jessi Stunson - Gresham Family Memorial Scholarship Fall 2019
10. Ashleigh Todd - Gresham Family Memorial Scholarship Fall 2019
11. Jessica Cooley - Jackson Wyatt Gallimore Memorial Fall 2019
12. Rachel Friedrich - Memphis Veterinary Specialist GPA Fall 2019
13. Mary Yarbrough - Memphis Veterinary Specialist Leadership Award Fall 2019
14. Samuel Stewart - Outstanding Freshman in Natural Resources Management Spring 2020
15. James Fritts - John E. McMahan Horticulture Award Spring 2020
16. Michael Singer - Outstanding Agronomy Student Spring 2020
17. Amos Wilson - Outstanding Agricultural Business Student Spring 2020
18. Preasley Yates - Outstanding Agricultural Education Student(s) Spring 2020
19. Jade Bleskey - Outstanding Agricultural Communications Student Spring 2020
20. Wesley Ball - Outstanding Agricultural Science Production Student Spring 2020
21. Desmaray Brown - Leslie Duke Outstanding Junior in Park Administration Spring 2020
22. Maddison Shaw - Outstanding Veterinary Health Technology Student Spring 2020

23. Savannah Metheny - Outstanding Veterinary Science Student Spring 2020
24. Jessica Gean - Outstanding Animal Science Student Spring 2020
25. Dustin Smith - Production, Business and Management Spring 2020
26. Maggie Brazier - Outstanding Crop and Soil Management Student(s) Spring 2020
27. Ashton "Kate" Armstrong - Outstanding Crop and Soil Management Student(s) Spring 2020
28. Joshua Flint Davis - Outstanding Soil and Water Conservation Student Spring 2020
29. Morgan Spring - Outstanding Environmental Management Student Spring 2020
30. Lauren Jarboe - Outstanding Wildlife & Fisheries Student(s) Spring 2020
31. Michael Samko - Outstanding Wildlife & Fisheries Student(s) Spring 2020
32. Sharon "Shay" Briggs - W.A. Tarr Award Spring 2020
33. Sharon "Shay" Briggs - Geology Student Leadership Award Spring 2020
34. Greyson Lambert - Geology Student Research Award Spring 2020
35. Logan Morris - Geology Student Service Award Spring 2020
36. Sonora Brandon - Award for Academic Promise in Geology Spring 2020
37. Joseph Pelren - Award for Academic Promise in Geology Spring 2020
38. Savannah Cornelius - Award for Academic Promise in Geology Spring 2020
39. Amanda Mayo - Best Student Teaching Award (Introductory Geology) Spring 2020

Objective 9: Provide enhanced resources to assist in the operation of the Tennessee Governor's School for the Agricultural Sciences.

Target: Continue to seek new experiential learning opportunities for the Tennessee Governor's School for the Agricultural Sciences.

Response:

The Department of Agriculture, Geosciences, and Natural Resources hosted the 2020 Tennessee Governor's School for the Agricultural Sciences (TGSAS) on campus from May 30 – June 26, 2020. The program consisted of 34 scholars from across the state of Tennessee. Scholars completed six hours of college coursework. Courses taught included AGEC 110: Introduction to Agricultural Business, ANSC 230: Exotic and Companion Animal Management or NRM 100: Introduction to Natural Resource Management. Scholars also participated in research activities through Group Study Projects (GSP). The GSP's covered precision agriculture and veterinary medicine. All GSP's covered the scientific method and focused on experimental research activities.

COVID 19 Transition: We are grateful that the State Department of Education has allowed us to offer TGSAS in a virtual format this year. Many of the TGSAS scholars commented throughout the experience how appreciative they were that the program was able to move forward this year. Many were concerned that it might be cancelled all together due to the COVID 19 pandemic. The TGSAS leadership team starting meeting early in the spring 2020 semester to start planning for an online environment and the planning paid off. We were able to successfully transition the program into a virtual format. While traditional pieces and experiences were missed this year (such as in person field trips, living in the dorms and meeting new people, and growing as an individual by being away from home for a month) the virtual format did allow us to expand the credit course offerings to this year's scholars. The TGSAS counselors were instrumental in helping faculty develop quality digital learning objects such as videos and student testimonials.

Several virtual educational study tours were incorporated throughout the 4-week program. These included field trips to the following:

1. Yeargin Farms Tour, Greenfield, TN
2. Agri Center International, Memphis, TN
3. UT Research and Experiment Station, Milan, TN
4. Hatcher Family Dairy, College Grove, TN
5. Tyson Foods, Union City, TN
6. RFD TV Studios, Nashville, TN
7. Farm Bureau Headquarters, Columbia, TN
8. Reelfoot Lake, Lake County, TN
9. Tennessee Department of Agriculture, Nashville, TN

Planned Program Activity in FY2021

Activities of the Center of Excellence for each general objective will include, but are not limited to:

Objective 1: Submit external grants seeking to support the Center of Excellence and its activities consistent with the mission and objectives of the Center of Excellence.

Target: Efforts will be directed at adding \$100,000 in new grants and contracts during FY 2020-21 and maintaining or continuing existing grants and contracts.

Objective 2: Continue with the planning and design phase of a \$2.5 million Beef Evaluation Center construction project.

Target: Renewed planning and fundraising for a new Beef Evaluation Center to support academics, cow-calf operation, and research and scholarly activity is underway for FY 2020-21. This facility will be comprised of a 40-seat state of the art classroom and student commons area. This laboratory will aid in student instruction but will also provide needed research space for undergraduate, graduate, and faculty research projects in all areas of animal science. The beginning of this project is now TBD.

Objective 3: Partner with agronomic companies desiring demonstration areas for seed and chemical applications on a cost-sharing basis.

Target: Continue field operations for the 200-acres of crops currently in production emphasizing variety trials and demonstration plots for alternative crops. Complete a systematic review of all agricultural production areas of the COE and amend where necessary to ensure optimum productivity (pH, fertilization, organic matter, etc.). Identify new partnerships for field trials and alternative crops to enhance area agricultural enterprises. Continue to offer producer-oriented field day programs in cooperation with area equipment dealers, chemical companies, and/or seed companies.

Objective 4: Generate timely, state-of-the-art information on key topics related to food, agriculture, and the environment with special attention to emerging issues that may have long-term implications for production of agricultural commodities while protecting natural resources in Tennessee.

Target: Seek to sponsor at least 30 speakers/programs that will be directed at enhancing knowledge of emerging issues in the agricultural sciences to include natural resources.

Objective 5: Communicate the objectives of the COE and related action programs to raise public awareness of the importance of the agricultural sciences and natural resources to the economic wellbeing of Tennessee and the surrounding areas.

Target: Continue to utilize technology to enhance education for on-campus and off-campus students. Endeavor to offer at least one new program promoting agriculture and natural resources in Tennessee. Maintain and enhance course offerings for dual enrollment programs with high school students in Tennessee. Offer at least ten department courses for online delivery.

Objective 6: Provide a forum for dialogue, debate, information sharing, and consensus building among policymakers, researchers, and leaders in non-governmental organizations, the private sector, and media through seminars, workshops, conferences, service learning, and publications.

Target: Plan and present at least 8 seminars/workshops on current topics of interest to animal and crop producers, as well as programs in natural resource management.

Objective 7: Provide enhanced laboratory facilities and resources to support experiential learning.

Target: Expand experiential learning experience for students with at least one international travel course and offer at least 40 opportunities for internship participation. Identify opportunities for international study or internships.

Objective 8: Support local, regional, and national competitions.

Target: Continue to host or participate in a minimum of 10 local, regional, and/or national competitions by UT Martin students and faculty.

Objective 9: Provide enhanced resources to assist in the operation of the Tennessee Governor's School for the Agricultural Sciences.

Target: Continue to seek new experiential learning opportunities for the Tennessee Governor's School for the Agricultural Sciences.

Objective 10: Provide local and regional experiential learning opportunities at the Coon Creek Science Center.

Target: Seek to sponsor at least 30 speakers/programs that will be directed at enhancing knowledge of emerging issues in the agricultural sciences to include natural resources..

Schedule 7

CENTERS OF EXCELLENCE ACTUAL, PROPOSED, AND REQUESTED BUDGET

Institution:

University of Tennessee at Martin

Center:

Experimental Learning in Agricultural Science

	FY 2019-20 Actual			FY 2020-21 Proposed			FY 2021-22 Requested		
	Matching	Appopr.	Total	Matching	Appopr.	Total	Matching	Appopr.	Total
Expenditures									
Salaries									
Faculty	\$43,598	\$46,000	\$89,598		\$48,000	\$48,000		\$50,400	\$50,400
Other Professional	70,561	60,000	130,561	15,000	63,000	78,000	15,750	66,150	81,900
Clerical/ Supporting	15,023	20,000	35,023	4,000	21,000	25,000	4,200	22,050	26,250
Assistantships	133,063	10,000	143,063	64,500	10,500	75,000	67,725	11,025	78,750
Total Salaries	\$262,245	\$136,000	\$398,245	\$83,500	\$142,500	\$226,000	\$87,675	\$149,625	\$237,300
Longevity	\$3,829		\$3,829			\$0			\$0
Fringe Benefits	40,965	80,000	120,965	10,000	80,000	90,000	10,500	84,000	94,500
Total Personnel	\$307,039	\$216,000	\$523,039	\$93,500	\$222,500	\$316,000	\$98,175	\$233,625	\$331,800
Non-Personnel									
Travel	\$11,107	\$15,000	\$26,107	\$3,500	\$15,000	\$18,500	\$3,675	\$15,750	\$19,425
Other Supplies	156,634	68,933	225,567	163,844	66,498	230,342	172,036	69,823	241,859
Equipment	8,415		8,415	15,000		15,000	15,750		15,750
Maintenance	11,047		11,047	10,000		10,000	10,500		10,500
Scholarships	6,400		6,400			-			-
Consultants	37,445		37,445	35,000		35,000	36,750		36,750
Other (Specify):									
Utilities and Fuel	8,820	5,000	13,820	9,750	5,250	15,000	10,238	5,513	15,751
Rental and Insurance	11,808		11,808	10,000		10,000	10,500		10,500
Total Non-Personnel	\$251,676	\$88,933	\$340,609	\$247,094	\$86,748	\$333,842	\$259,449	\$91,086	\$350,535
GRAND TOTAL	\$558,714	\$304,933	\$863,647	\$340,594	\$309,248	\$649,842	\$357,624	\$324,711	\$682,335
Revenue									
New State Appropriation		\$304,933	\$304,933		\$309,248	\$309,248		\$324,711	\$324,711
Carryover State Appropriation	\$0		\$0			\$0			\$0
New Matching Funds	\$552,017		\$552,017	\$340,594		\$340,594	\$357,624		\$357,624
Carryover from Previous Matching Funds	\$6,697		\$6,697			\$0			\$0
Total Revenue	\$558,714	\$304,933	\$863,647	\$340,594	\$309,248	\$649,842	\$357,624	\$324,711	\$682,335

Staffing of the Center of Excellence for Experimental Learning in Agricultural Science

The staffing strategy for the COE focuses on bringing a diversity of talent to the Center of Excellence to better meet the goals and objectives of the Center of Excellence. This is accomplished by offering staffing appointments ranging from 25 percent to 50 percent to faculty and staff of the Department of Agriculture, Geosciences, and Natural Resources. Staffing includes a Director (25 percent appointment) and Business Manager (25 percent appointment) and faculty who are selected through a proposal process (25 percent appointments and one cooperating faculty member with no formal assigned appointment) and the Director of the Tennessee Governor's School for the Agricultural Sciences. Three support staff members are also assigned to the COE. Staffing assignments (with COE appointment percent) include:

Administration:

Dr. Wes Totten	Director (25%)
Mrs. Carrie Arant	Business Manager (25%)

2019-20 RFP Faculty:

Dr. Clint Ary	Animal Diagnostic Lab (25%)
Dr. Philip Smartt	Park and Recreation and Forestry (25%)

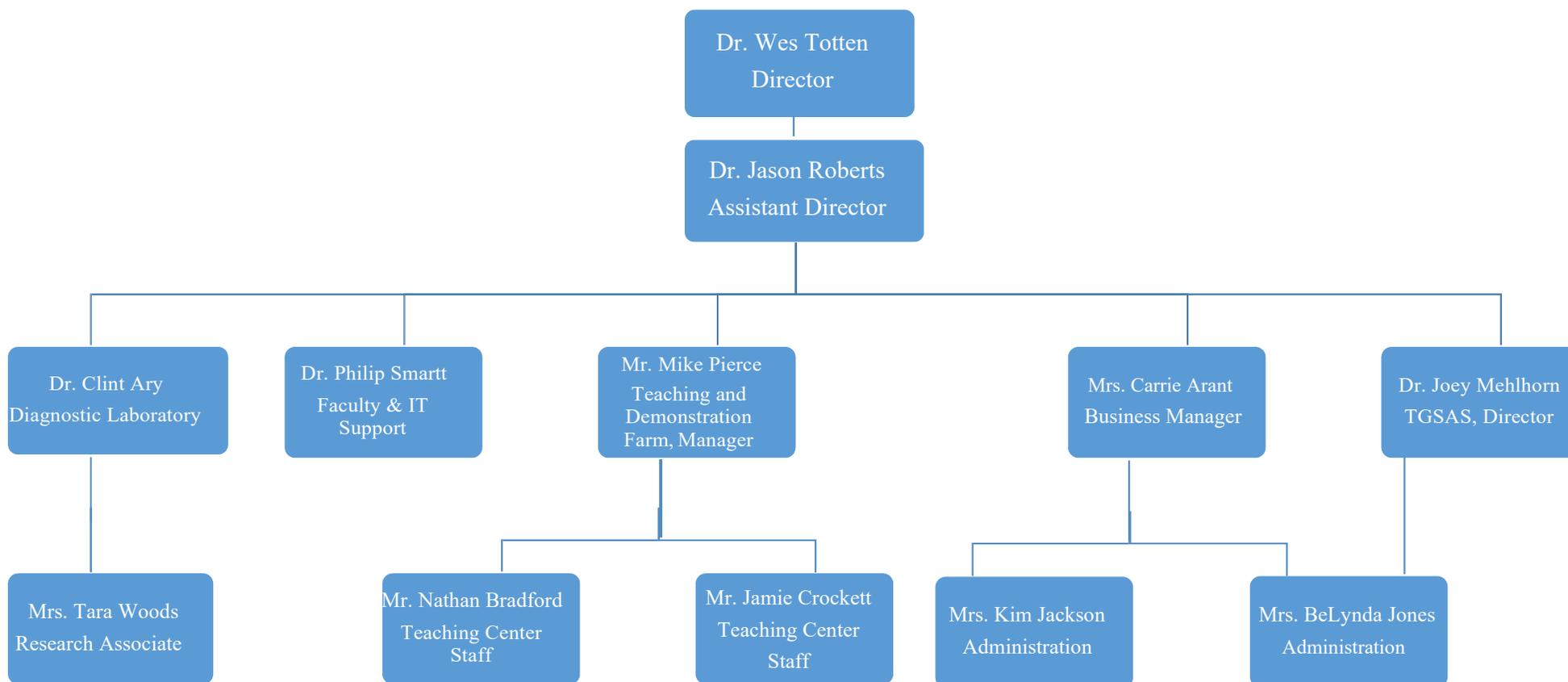
Staff:

Mr. Michael Pierce	Teaching and Demonstration Farm/Ag Pavilion (100%)
Mr. Nathan Bradford	Teaching and Demonstration Farm/Ag Pavilion (100%)
Mr. Jamie Crockett	Teaching and Demonstration Farm/Ag Pavilion (100%)
Mrs. Tara Woods	Research Associate/Diagnostic Laboratory (100%)

A complete Faculty/Staff listing is on page 10.
An organizational staffing chart is included.

Center of Excellence for Experimental Learning in Agricultural Science

Organizational Staffing



Contact Information



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Mrs. BeLynda Jones
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Appendix A

Summary of Contract, Grant and Unrestricted Gift Activity

- Ary, Clint. Funding for operation of West Tennessee Animal Disease Diagnostic Laboratory. State of Tennessee, Department of Agriculture \$105,000 (Funded)
- Cole, John. "Hydraulic Conductivity Trailer." United States Department of Agriculture, Natural Resources Conservation Service \$24,000 (Funded)
- Darroch, Barbara. "The Effect of Seed Applied Inoculants." Tennessee Soybean Promotion Board \$9,900 (Funded)
- Darroch, Barbara. "Cultivar and Plant Growth on Insect Populations." Tennessee Soybean Promotion Board \$3,600 (Funded)
- Darroch, Barbara. "Effect of seed-applied inoculants on soybean yield." Tennessee Soybean Promotion Board \$11,000 (Funded)
- Darroch, Barbara. "Capacity Building for Enhanced Research and Experiential Education: Resilient Cropping Systems for the Upper Mid-South." United States Department of Agriculture, National Institute of Food and Agriculture \$148,589 (Funded)
- Darroch, Craig. "Utilization of soy hulls for reduction of ammonia and pathogens in broiler houses." Tennessee Soybean Promotion Board \$12,200 (Funded)
- Gale, Paula. "Increasing the Resilience of Agricultural Production in the Tennessee and Cumberland River Basins through More Efficient Water Resource Use." National Institute of Food and Agriculture \$22,951 (Funded)
- Gale, Paula. "Investigating Benchmark Soil Landscape in the South: Linking soils, landscapes, vegetation and hydrology." United States Department of Agriculture, Natural Resources Conservation Service \$100,000 (Funded)
- Gale, Paula. "Nutrient Dynamics in Soils Along the Forked Deer River, North Jackson Restoration Site." State of Tennessee, West Tennessee River Basin Authority \$32,000 (Funded)
- Gale, Paula. "Quantitative Tools for Developing Ecological Sites in the Southeastern U.S." United States Department of Agriculture, Natural Resources Conservation Service \$37,736 (Funded)
- Grubaugh, Jack and Barb Darroch. "TN FY20 PD Survey UT Martin." United States Department of Agriculture, Animal and plant Health Inspection Service, Plant Protection and Quarantine \$22,000 (Funded)
- Grubaugh, Jack and Barb Darroch. "Pest Detection Survey 2019." United States Department of Agriculture, Animal and plant Health Inspection Service, Plant Protection and Quarantine \$22,000 (Funded)

Mehlhorn, Joseph. "Tennessee Governor's School for Agricultural Sciences" State of Tennessee, Department of Education \$156,000 (Funded)

Mehlhorn, Sandy. "Assessing Soybean Plant Stand using UASs." Tennessee Soybean Promotion Board \$2,724 (Funded)

Pruitt, J. Ross. "Finding Specialty Niche Markets for Farmers Using Social Aspects of Food." United States Department of Agriculture, National Institute of Food and Agriculture \$204,330 (Funded)