University of Arkansas at Monticello
Academic Unit Annual Report

Unit: College of Forestry, Agriculture and Natural Resources

Academic Year: 2019-2020

What is the Unit Vision, Mission and Strategic Plan including goals, actions and key performance indicators (KPI)? Please identify new goals from continuing goals. (insert strategic plan, goals and KPIs below)

Vision
The College of Forestry, Agriculture and Natural Resources will develop future leaders and deliver science-based solutions through discovery, learning, and engagement. These efforts will result in healthy and productive forest, agricultural, and natural resources to help ensure social and economic prosperity.

Mission Statement
Our mission is to nurture the intellectual and personal development of our students, enlarge the body of knowledge in forestry, agriculture, and natural resource management, and to disseminate new ideas and technology. Our graduates will be life-long learners who succeed within their chosen discipline, and will promote and use creative, science-based solutions that enhance the quality of life of the people and communities we serve.

Student Learning Outcomes
Graduates of the College of Forestry, Agriculture and Natural Resources will:

- understand basic theory and practice, and be skilled in applying appropriate tools and technology, for their chosen field of study
- recognize how land management relates to the larger environment, economy, and society.
- apply science-based knowledge and information to analyze and creatively solve management problems
- demonstrate essential communication skills (interpersonal communication, nonverbal communication, written communication, and oral communication) that clearly provide relevant information and solutions to problems to diverse communities.

Strategic Plan

1. ***Student Success —fulfilling academic and co-curricular needs***
   a. *Develop, deliver, and maintain quality academic programs.*
      New Goal: Successfully navigate challenges of delivering academic programs during COVID-19 pandemic.

Action: Plan for implementation of safety measures for delivery of courses in a classroom setting, while also preparing for quickly pivoting to remote delivery of courses.

KPI-1: Develop and implement a plan for operation of facilities that is specific, yet flexible, to address changing state and federal COVID-19 safety guidelines.

KPI-2: Develop and implement a plan for safe delivery of courses while also allowing the ability to quickly change modes of delivery in response to institutional requirements.

KPI-3: Obtain supplies and materials necessary to safely implement facility and course delivery plans.

2. ***Enrollment and Retention Gains***

c. Coordinate and promote marketing efforts that will highlight alumni, recognize outstanding faculty and staff, and spotlight student success.

e. Identify and enhance pipeline for recruiting.

Continuing Goal: Improve recruitment of qualified high school and community college students into CFANR degree programs.

Action: Obtain and deliver recruitment materials to potential recruits. Organize friends and alumni to aid in student recruitment efforts.

KPI-1: Work with UAM to obtain previously designed recruitment materials so they can be delivered to potential students.

KPI-2: Actively manage social media accounts to promote College activities and aid in recruitment efforts.

In Table 1, provide assessment of progress toward meeting KPIs during the past academic year and what changes, if any, might be considered to better meet goals.

Table 1: Assessment of Key Performance Indicators

KPI	Assessment of Progress	Implications for Future Planning/Change
KPI-1.1: Collate and summarize information generated during the summer 2019 agriculture faculty retreat to begin the process of revising requirements among different options.	KPI-1.1 was accomplished.	This summary will guide future curriculum discussions and decisions.
KPI-1.2: Compare and analyze curriculum offerings among major CFANR degree	KPI-1.2 was accomplished.	This comparison and analysis will guide future curriculum discussions and decisions.

KPI	Assessment of Progress	Implications for Future Planning/Change
programs to identify courses for potential integration across majors.		
KPI-1.3: Evaluate needs for course content modifications to facilitate use across degree programs.	KPI-1.3 was initiated and ongoing.	Content will be continually reviewed and modified as needed.
KPI-1.4: Prepare and submit documents needed for proposed course and program changes.	Work on KPI-1.4 was initiated and is ongoing.	This initial work will continue in the coming year.
KPI-2.1: College recruitment materials (brochures, t-shirts, etc.) will be developed, printed and distributed.	KPI-2.1 was initiated and developed, but the actual production of materials was delayed.	Forthcoming promotional materials will be utilized in recruitment efforts.
KPI-2.2: New social media accounts will be created and activated to promote College activities and aid in recruitment efforts.	Work on KPI-2.2 was initiated and is ongoing.	These accounts will continue to be active during the coming year.

List, in Table 2, the Academic Unit Student Learning Outcomes (SLO) and the alignment with UAM and Unit Vision, Mission, and Strategic Plans

Table 2: Unit Student Learning Outcomes

University Student Learning Outcome	Unit Student Learning Outcome (may have more than one unit SLOs related to each University SLO; List each one)	Alignment with UAM/University Vision, Mission and Strategic Plan	Alignment with Unit Vision, Mission, and Strategic Plan
Communication: Students will communicate effectively in social, academic, and professional contexts using a variety of means, including written, oral, quantitative, and/or visual modes as appropriate to topic, audience, and discipline.	Students will demonstrate critical communication skills (interpersonal communication, nonverbal communication, written communication, and oral communication) by clearly providing informative information and presenting solutions to problems for diverse audiences.	Underlying all of the tenets of the UAM mission is the ability to communicate effectively to diverse audiences.	In accordance with the CFANR vision, developing student written and verbal communication skills is a critical component of developing future forestry, agriculture and natural resource management leaders.
Critical Thinking: Students will demonstrate critical thinking in evaluating all forms of persuasion and/or ideas, in formulating innovative strategies, and in solving problems.	Students will understand basic theory and practice, and be skilled in applying appropriate tools and technology, for their chosen field of study. Students will apply science-based knowledge and information to analyze and solve management problems.	Understanding theory and practice is critical for achieving the UAM mission of educating diverse learners to succeed in a global environment. Application of the scientific method to the solution of problems is an essential component of meeting UAM's mission to promote innovative leadership,	The primary objective of the CFANR is to foster student success, both academically and professionally. Competency in the theory and practice within their field is essential for their success. The CFANR allocates significant resources to

University Student Learning Outcome	Unit Student Learning Outcome (may have more than one unit SLOs related to each University SLO; List each one)	Alignment with UAM/University Vision, Mission and Strategic Plan	Alignment with Unit Vision, Mission, and Strategic Plan
		scholarship, and research.	provide students with the tools and technology necessary for them to develop and effectively address management problems.
Global Learning: Students will demonstrate sensitivity to and understanding of diversity issues pertaining to race, ethnicity, and gender and will be capable of anticipating how their actions affect campus, local, and global communities.	Students will recognize how land management relates to the larger environment, economy, and society.	Land management decisions are foundational to resource utilization for economic growth, which is integral to the UAM mission of improving quality of life through sustainable economic development.	Beyond the grounding principles of theory and practice, successful students must appreciate how their management efforts influence the global resource base.
Teamwork: Students will work collaboratively to reach a common goal and will demonstrate the characteristics of productive citizens.	Students will apply science-based knowledge and information to analyze and solve management problems.	Solution of problems via a collaborative, team approach is an essential component of meeting UAM's mission to promote innovative leadership, scholarship, and research.	The CFANR allocates significant resources to provide students with the tools and technology necessary for them to collaboratively develop and effectively address management problems.

Describe how Student Learning Outcomes are assessed in the unit and how the results/data are used for course/program/unit improvements?

Assessment of Student Performance and CFANR Programs
The CFANR assessment system utilizes a combination of approaches directed toward assessing student performance, individual courses, and overall programs. This hierarchical system begins with the evaluation of individual student performance.

Assessment of Individual Student Performance
Performances of individual students are evaluated using a variety of different tools. These generally fall into two major groups. First, traditional methods include grading of tests and assignments in individual courses, transcript reviews, competency reviews in labs, and field practices. Second, student performance is assessed through the use of core competencies. These core competencies are essentially student learning objectives for each course. Students are required to demonstrate that they have achieved these core competencies before they are able to receive a passing grade for a course. Therefore, this requirement of core competencies is separate from traditional grading, and works as an additional layer in assessing student performance. This also ensures that students learn certain basic skills from every class and works as a barrier against passing a course through memorization.

Evaluation of CFANR Courses
The second step in the assessment system is evaluation of courses offered within the College. This type of assessment is also done through a variety of tools that fall under two broad categories. The traditional tools for course evaluation include student evaluation of courses, student evaluation of instructors and peer evaluations. In addition, courses also are evaluated through summaries of student performance in achieving core competencies.

Evaluation of CFANR Programs
A variety of tools are used for program-level assessment. These are:
Capstone Course and Senior Seminars
The natural resources management degree requires a capstone Practicum experience that challenges students to integrate materials learned from previous courses in the development of a management plan that is presented to actual forest landowners. In order to be successful in this course, the students must demonstrate critical thinking, problem solving, planning, and development skills along with the skills of oral and written communication. Since the students are required to work in groups, this course also tests the students' abilities in working as part of a team.

As previously mentioned, this course requires team work. Teams are assigned parcels of forested land typically owned by non-industrial private forest landowners in the state. Each team is required to complete a comprehensive forest resource management plan for their parcel within the course of a semester (spring semester of their senior year). These plans require 10-15 hr/week of field work involving survey of the land, inventory of timber, wildlife, and other resources. Students are expected to cooperate in the collection of these data. This provides an important and interesting experience for the students in that they have to work with students pursuing a different degree option who probably have a somewhat different way of looking at

natural resource issues. The teams are also required to communicate with their respective landowner and understand his/her plans for the land. All of this information is then used to prepare the management plans. The quality of the management plan demonstrates each team's ability to integrate previous coursework into a working plan that meets specific management objectives. The teams are then required to present their plans in seminars that are open to the public. These seminars are attended by many faculty members who actively participate in discussions and test the students through rigorous questioning. Ample feedback is provided as to the plan's effectiveness and integration of relevant course material. The teams also present their plans to their respective landowners.

Although Agriculture students do not complete a capstone course as part of their degree requirements, they do complete a Senior Seminar to demonstrate their ability to speak about a variety of issues. Students are evaluated by their fellow students during their presentation and feedback is also provided by their instructor.

Feedback Loop

The feedback loop is an essential step and ensures the dynamic nature of an assessment system. The feedback loop is built into every level of the CFANR assessment system. The students provide feedback to their instructors regarding course management and grading. Evaluation of core competencies allows feedback at all levels. First, it encourages communication among students and instructors which in turn allows the instructors to adjust course materials and fine-tune day to day management of courses. Second, the summary data also feed valuable information back to the College for program-level assessment. Through program-wide linkages of core competencies, important feedback is provided to the faculty allowing them to adjust the curricula when necessary. Lessons from student performance assessment have played important roles in a number of unit decisions. During the 2019-2020 academic year, a change was made to our policy of requiring a "C" in all core requirements, option requirements, and general education courses in order to graduate. The grade of "C" or higher requirement was originally implemented to assure that graduates were proficient in all areas required for success in their professional careers. Unintended negative consequences include delayed progression and graduation due to prerequisite and sequencing issues. Implementation of required student learning outcomes/ core competencies across CFANR courses now will be used as a metric of preparedness and proficiency.

Public/Stakeholder/Student Notification of SLOs

List all locations/methods used to meet the HLC requirement to notify the public, students and other stakeholders of the unit SLO an. (Examples: unit website, course syllabi, unit publications, unit/accreditation reports, etc.)

- All course syllabi clearly state the SLOs for successful completion of the course.
- The CFANR webpages within the UAM website clearly outlines the requirements for all degrees and degree options.
- Promotional materials for the CFANR are in production and will direct interested parties to full details about the CFANR mission and SLOs, as well as degree programs.

Enrollment

Table 3: Number of Undergraduate and Graduate Program Majors (Data Source: Institutional Research)

UNDERGRADUATE PROGRAM MAJOR: B.S. Natural Resources Management

Classification	Fall 2017	Fall 2018	Fall 2019	3-Year Total & Average	10-Year Total & Average
Freshman	42	23	21	86/28.7	435/44
Sophomore	11	17	13	41/13.7	132/13
Junior	15	16	15	46/15.3	116/12
Senior	15	17	17	49/16.3	149/15
Post Bach	0	2	3	5/1.7	11/1
Total	83	75	69	227/75.7	842/84.2

UNDERGRADUATE PROGRAM MAJOR: B.S. Land Surveying

Classification	Fall 2017	Fall 2018	Fall 2019	3-Year Total & Average	10-Year Total & Average
Freshman	11	9	3	23/7.7	48/5
Sophomore	4	3	7	14/4.7	23/2
Junior	2	4	1	7/2.3	20/2
Senior	4	7	4	15/5.0	31/3
Post Bach	0	0	0	0/0.0	1/3
Total	21	23	15	59/19.7	122/12

UNDERGRADUATE PROGRAM MAJOR: B.S. Agriculture

Classification	Fall 2017	Fall 2018	Fall 2019	3-Year Total & Average	10-Year Total & Average
Freshman	66	36	29	131/43.7	434/43
Sophomore	20	27	18	65/21.7	224/22
Junior	29	25	26	80/26.7	228/23
Senior	22	32	19	73/24.3	238/24
Post Bach	0	0	0	0/0.0	0/0
Total	137	120	92	349/116.3	1124/112

UNDERGRADUATE PROGRAM MAJOR: Pre-Vet

Classification	Fall 2017	Fall 2018	Fall 2019	3-Year Total & Average	10-Year Total & Average
Freshman	2	2	7	11/3.7	64/6
Sophomore	2	2	2	6/2.0	24/2
Junior	2	4	2	8/2.7	16/2
Senior	2	3	5	10/3.3	13/1
Post Bach	0	0	0	0/0.0	0/0
Total	8	11	16	35/11.7	117/12

GRADUATE PROGRAM MAJOR: Forest Resources

	Fall 2017	Fall 2018	Fall 2019	3-Year Total & Average
ENROLLMENT	9	18	18	45/15.0

What do the data indicate in regard to strengths, weaknesses, opportunities for growth and threats to effectiveness?

Strengths

- The CFANR has unique programs in Natural Resources Management, Land Surveying, and Site-Specific Agriculture Management.

Weaknesses

- There is a lack of awareness among potential students regarding the degrees and degree options offered in the CFANR.

Opportunities for Growth

- Marketing and recruiting efforts have the opportunity to raise awareness of CFANR offerings.

Threats to Effectiveness

- COVID-19 and efficiency, or lack of, in onboarding first-time students at UAM.

Progression/Retention Data

Table 4: Retention/Progression and Completion Rates by Major (Data Source: Institutional Research)

Major**: Agriculture B.S**.	**Number**	**Percentage**
Number of majors classified as juniors (60-89 hours) in fall 2017	32	100
Number and percentage graduated in that major during 18-19 academic year	20	63
Number and percentage that graduated in that major during 19-20 academic year	5	15
Number and percentage that left the university	6	19
Number and percentage that remain at the university	1	3
Major: **Natural Resources Management B.S.**	**Number**	**Percentage**
Number of majors classified as juniors (60-89 hours) in fall 2017	16	100
Number and percentage graduated in that major during 18-19 academic year	7	44
Number and percentage that graduated in that major during 19-20 academic year	5	31
Number and percentage that left the university	3	19
Number and percentage that remain at the university	1	6
Major**: Land Surveying B.S.**	**Number**	**Percentage**
Number of majors classified as juniors (60-89 hours) in fall 2017	3	100
Number and percentage graduated in that major during 18-19 academic year	2	67
Number and percentage that graduated in that major during 19-20 academic year	0	0
Number and percentage that left the university	0	0
Number and percentage that remain at the university	1	33

1. What do the data indicate about student progression?
   For our Agriculture and Land Surveying majors, an average of 65% of students graduated on time (within 4 years). Within 5 years, for all majors (Ag, NRM, Surv.) an average of 73% of students had graduated.

2. What do the data indicate about retention?
   For all majors (Ag, NRM, Surv.) from the Junior year, an average of 87% of students either completed their degree or remain enrolled.

What do the data indicate in regard to strengths, weaknesses, opportunities for growth and threats to effectiveness?

Strengths

- Students that reach their junior year have a high probability of completing their degree.

Weaknesses

- An additional year is required for several of our students to complete their degree.

Opportunities for Growth

- Improve upon 4-year graduation rate.

Threats to Effectiveness

- Underprepared freshman students.

Gateway Course Success (Applies only to units teaching Gateway Courses: Arts/Humanities, Math/Sciences, Social Behavioral) (Data Source: Institutional Research)

Table 5: Gateway Course Success*

Not Applicable to CFANR

Completion (Graduation/Program Viability)

Table 6: Number of Degrees/Credentials Awarded by Program/Major (Data Source: Institutional Research)

Number of Degrees Awarded:

Undergraduate Program/Major	2017-2018	2018-2019	2019-2020	Three-Year Total	Three-Year Average
CFANR- B.S. Natural Resources Mgmt.[1]	9	11	11	31	10
CFANR- A.S. Natural Resources Mgmt.	N/A	N/A	11	11	N/A

Undergraduate Program/Major	2017-2018	2018-2019	2019-2020	Three-Year Total	Three-Year Average
CFANR- A.S. Land Surveying Technology	4	0	3	7	2
CFANR-B.S. Land Surveying	0	5	4	9	3
CFANR- A.A.S. Forest Technology	0	0	1	1	.33
GFOR- M.S. Forest Resources	2	6	3	11	3.7
CFANR- B.S.[2] Agriculture	19	27	26	72	24
CFANR- A.S. Agriculture	N/A	23	17	40	N/A

[1]Includes Forest Resources degrees, when applicable
[2]Includes Pre-Vet

Provide an analysis and summary of the data related to Progression/Retention/Program Viability including future plans to promote/maintain program viability.

The number of credentials awarded in the B.S. Natural Resources Management degree, B.S. Land Surveying degree, and B.S. Agriculture degree all remained relatively consistent with the previous year. Credentials awarded in our Associate degree program areas increased.

The recruitment of students and completion of degrees in the Forest Resources M.S. program is dependent upon both grant funding and available faculty. Funding to support graduate research assistantships is cyclical, and student numbers vary with these cycles. Degree completion rates are strong.

The Land Surveying and Land Surveying Technology programs historically have had a low number of degrees awarded. The low graduation numbers are a reflection of the low enrollment numbers in the programs. Modifications to the Land Surveying Technology program to better match the sequencing of the Land Surveying program are being made. Additionally, we are investigating the possibility of converting B.S. program to a B.A.S. program.

Faculty

Table 7: Faculty Profile, Teaching Load, and Other Assignments (Data Source: Institutional Research)

				Teaching Load				
Faculty Name	Status/ Rank	Highest Degree	Area(s) of Responsibility	Summer II	Fall	Spring	Summer I	Other Assignments
Babst, Benjamin A.	Asst. Prof.	Ph.D.	Ecophysiology		3	3		70% AAES[1]
Bataineh, Mohammad M.	Asst. Prof.	Ph.D.	Forest Health		3	8		70% AAES
Dennis, John C.	Assoc. Prof.	Ph.D.	Land Surveying		11	10		10% AAES

Faculty Name	Status/ Rank	Highest Degree	Area(s) of Responsibility	Summer II	Fall	Spring	Summer I	Other Assignments
Ficklin, Robert L.	Prof.	Ph.D.	Soil Science	3	8	9	3	9% AAES, Administration
Francis, Paul	Prof.	Ph.D.	Plant & Soil Science		13	12		
Jacobs, Thomas D.	Instr.	B.S.	Land Surveying		13	7		
Jones, Rusty	Rodeo Coach	M.S.	Rodeo		5	1		
Liechty, Hal O.	Prof.	Ph.D.	Hydrology/ Ecology		3			70% AAES
Lindsey, Rocky	Asst. Prof.	DVM	Animal Science		10	12		
Osborne, Douglas C.	Assoc. Prof.	Ph.D.	Wildlife Management		4	6		66% AAES
Pelkki, Matthew H.	Prof.	Ph.D.	Forest Economics		8	3		47% AAES , Administration
Stark, Robert C. Jr.	Prof.	Ph.D.	Agricultural Economics		12	13		
Tappe, Philip A.	Prof./Dean	Ph.D.	Administration					31% AAES, 31% CES
Tian, Nana	Asst. Prof.	Ph.D.	Natural Resource Policy		3			70% AAES
Watt, Chris	Instr.	M.S.	Program Support/ Wildlife Management		1			91% AAES
Webb, Bobby					2			15% AES
White Jr., Donnell D.	Prof.	Ph.D.	Wildlife Management		3	3		70% AAES

[1]Arkansas Agricultural Experiment Station
[2]Cooperative Extension Service

What significant change, if any, has occurred in faculty during the past academic year?

During 2019-20, we had one faculty member retire (Dr. Hal Liechty) and one accept a position at another institution (Dr. John Dennis). Additionally, faculty positions vacated in 2018-19 (Dr. Matt Olson - silviculture, Dr. Lu Liang - GIS, Dr. Bill Headlee - biometrics, and Dr. Kenny Wallen - human dimensions) remain unfilled. National searches are underway to fill the positions vacated in 2018-19. The more recent vacancies have not yet been approved for refill.

Table 8: Total Unit SSCH Production by Academic Year (ten year) (Data Source: Institutional Research)

Academic Year	Total SSCH Production	Percentage Change	Comment
2008-09	2567	11.6	
2009-10	2639	2.8	
2010-11	2552	-3.3	
2011-12	2518	-1.3	
2012-13	2680	6.4	
2013-14	2909	8.5	
2014-15	2832	-2.6	

Academic Year	Total SSCH Production	Percentage Change	Comment
2015-16	2798	-1.2	
2016-17	3014	7.7	
2017-18	3224	7.0	
2018-19	3122	-3.2	
2019-20	2490	-20.2	

What significant change, if any, has occurred in unit SSCH during the past academic year and what might have impacted any change?

During the past academic year, there was a 20% decrease in SSCH productivity. This was partly due to a decrease in enrollment. However, due to vacancies in several faculty positions, the offerings of some courses were delayed, and courses from other academic units were used as substitutes for a few courses.

Unit Agreements, MOUs, MOAs, Partnerships

Table 9: Unit Agreements-MOUs, MOAs, Partnerships, Etc.

Unit	Partner/Type	Purpose	Date	Length of Agreement	Date Renewed
CFANR- NRM	MOU- UA Cossatot	Course Transfers	7/2016	Open	N/A
CFANR- NRM	MOU- UA Morrilton	Course Transfers	6/2017	Open	N/A
CFANR- NRM	UA System Division of Agriculture	Research and Extension	1989	Open	N/A

List/briefly describe notable faculty recognition, achievements/awards, service activities and/or scholarly activity during the past academic year.

Faculty Scholarly Activity

Hosted Workshops, Field Days, and Open House (4)

UAM Beef Cattle Field Day, October 1, 2019. R. Lindsey and G. Montgomery.
Think Wood Exhibit and CFANR Open House, November 25, 2019.
Beef Quality Assurance Certification Workshop, January 16, 2020. R. Lindsey.
FFA Regional Contest, January 18, 2020.

Faculty Publications in Refereed Journals (10)

Babst BA, Gao F, Acosta-Gamboa LM, Karve A, Schueller MJ, Lorence A (2019) Three *NPF* genes in 5 *Arabidopsis* are necessary for normal nitrogen cycling under low nitrogen stress. Plant Physiology and Biochemistry 143: 1-10

Babst BA, Ferrieri RA, and Schueller MJ (2019) Detecting rapid changes in carbon transport and partitioning with carbon-11 (11C). In J Liesche, ed, *Phloem: Methods and Protocols*, Methods in Molecular Biology Vol. 2014, Springer Science+Business Media, New York, pp. 163-176.

Chen, C., Weiskittel, A., Bataineh, M., and MacLean, D. 2019. Modeling variation and temporal dynamics of individual tree defoliation caused by spruce budworm in Maine, USA and New Brunswick, Canada. Forestry 92: 133-145.

Hossain SMY, Stuhlinger HC, Olson M, and Babst BA (2019) A comparison of indirect watering devices for benefiting newly transplanted urban trees. Arboriculture & Urban Forestry 45: 109-119.

Ismanov, M., P. Francis, C. Henry, and L. Espinoza. 2019. Relations among sap flow, soil moisture, weather, and soybean plant parameters in high water demand and final growth stages. Agric. Sci. 10:371-385. DOI: 10.4236/as.2019.103030

Osborne, D.C., R.E. Wilson, L.G. Carlson, S.A. Sonsthagen, and S.L. Talbot. 2019. DNA sequencing confirms Tundra Bean Goose (Anser serrirostris serrirostris) occurrence in the Mississippi Alluvial Valley in Arkansas, USA. Waterbirds 42: 333-342.

Sample R, Babst BA (2019) Timing of nitrogen resorption-related processes during fall senescence in southern oak species. Forest Science 65: 245-249.

Sherman, G and M Pelkki. 2019. Supply of Woody Residuals in the Northwest Region of Arkansas (2017) for Energy Production. *Forest Products Journal* 69(3):195-204.

Wilson AD, Forse LB, Babst BA, and Bataineh MM (2019) Detection of emerald ash borer infestations in living green ash by noninvasive electronic-nose analysis of wood volatiles. Biosensors 9: 123. DOI:10.3390/bios9040123

Wilson, D., Forse, L., Babst, B., Bataineh, M. 2019. Detection of emerald ash borer infestations in living green ash by noninvasive electronic-nose analysis of wood volatiles. Biosensors 9, 123: 1-26.

Faculty Publications in Other Scholarly Publications (9)

Bataineh, M.M. 2019. Evaluating extent and severity of emerald ash borer infestation. USDA, Forest Service, Forest Health Protection, Evaluation Monitoring Report.

Bataineh, M.M. 2019. Fire reintroduction within Lake Ricks Reservoir Watershed: total organic carbon reduction. Hot Springs Drinking Water Utility. Final Technical Report.

Bataineh, M.M. 2019. Above-ground carbon stock and distribution in managed and unmanaged mature, natural-origin, pine-hardwood forest stands. The 20th biennial southern silvicultural research conference, Shreveport, Louisiana, March 12-14, 2019.

Bataineh, M., Clarke, S. 2019. Emerald ash borer voltinism and adult emergence phenology in AR and LA. East Texas Forest Entomology Seminar, Nacogdoches, Texas, May 9-10, 2019.

Meeker, R., J. Brown, B. Carner, K. Stephens, G. Dugger, B. Groves, M. Mourot, M. Barbee, E. Horrell, J. Mitchell, J. Lawson, J. Abernathy, K. Key, J. Smith, and D. White, Jr. 2019. 2019 White-tailed Deer Strategic Management Plan, Arkansas Game and Fish Commission, Little Rock, Arkansas, USA.

Mohler, C., Olson, M., Bataineh, M., Bragg, D. 2019. Effect of harvest gap size and neighborhood composition on oak competitive status in a pine-hardwood forest. The 20th biennial southern silvicultural research conference, Shreveport, Louisiana, March 12-14, 2019.

Olson, M., Bataineh, M., Cunningham, K., Fristoe, C., Headlee, W. and Hossain, S. 2019. Status of planted oak monocultures on a coastal plain minor bottom in the fifth decade after establishment. The 20th biennial southern silvicultural research conference, Shreveport, Louisiana, March 12-14, 2019.

Walters, B., Weatherly, D., Bataineh, M., and Clarke, S. 2019. Comparing trap type and placement effectiveness for detection and monitoring of emerald ash borer. East Texas Forest Entomology Seminar, Nacogdoches, Texas, May 9-10, 2019.

White, D, Jr., M.C. Gray, J.R. Ballard, and C.R. Middaugh. August 7, 2019. Hunter proximity to CWD and perceived risk in Arkansas, USA. International Deer Biology Congress, Estes Park, Colorado, USA.

Faculty Presentations at Conferences, Symposia, and Workshops (54)

Benjamin A. Babst (presenter), Abhijit Karve, R. Frank Baker, Thu Tran, Doug Kenny, Julia Rohlhill, David Braun, Jan Knoblauch, Michael Knoblauch, Gertrud Lohaus, Kaare Jensen. “Sugar Loading Is Not Required For Phloem Sap Flow In Maize Plants.” Plant Vascular Biology 2019 Meeting, Asilomar, CA. June 2019

Benjamin A. Babst (presenter). “A Vision for Developing the Future (Nano)Cellulosic Economy in Arkansas: Thinking Beyond CASE.” Center for Advanced Surface Engineering (CASE) Webinar Series, Webinar, Arkansas. June 2019

Benjamin A. Babst (presenter), Fei Gao, Lucia M. Acosta-Gamboa, Abhijit Karve, Michael J. Schueller, Argelia Lorence. “Three NPF genes in *Arabidopsis* are necessary for normal nitrogen cycling under low nitrogen stress.” Plant Vascular Biology 2019 Meeting, Asilomar, CA. June 2019

Bataineh, M.M. 2019. Fire behavior and BehavePlus training. Workshop to ArkansasForestry Commission personnel, Little Rock, Arkansas, August 22, 2019. (*Oral*)

Bataineh, M.M. 2019. Fire behavior Basics. Arkansas Annual Prescribed Fire as a Management Tool Workshop, Little Rock, Arkansas, September 23-27, 2019. (*Oral*)

Bataineh, M.M. 2019. Fire behavior predictions: BehavePlus Modeling. Arkansas Annual Prescribed Fire as a Management Tool Workshop, Little Rock, Arkansas,September 23-27, 2019. (*Oral*)

Bataineh, M.M. 2019. Emerald ash borer. Arkansas Forest Health Workshop, Monticello, Arkansas, May 21, 2019. (*Oral*)

Bataineh, M.M. 2019. Emerald ash borer. Arkansas Forest Health Workshop, Searcy, Arkansas, May 22, 2019. (*Oral*)

Bataineh, M.M. 2019. Above-ground carbon stock and distribution in managed and unmanaged mature, natural-origin, pine-hardwood forest stands. The 20th biennial southern silvicultural research conference, Shreveport, Louisiana, March 12-14, 2019. (*Oral*)

Bataineh, M., Clarke, S. 2019. Emerald ash borer voltinism and adult emergence phenology in AR and LA. East Texas Forest Entomology Seminar, Nacogdoches, Texas, May 9-10, 2019. (*Oral*)

Beckemeyer, KJ and M Pelkki. Modeling Management Effects on Desired Forest Conditions in Wetland Reserve Easements in Eastern Arkansas. A poster presentation at the Think Wood Exhibit. 25 November 2019, Monticello, AR.

Clowers, S.A., R.L. Ficklin and S. Wilson. 2019. Pleurotus Species as Pretreatment for Nanocellulose Extraction from Woody Substrates. Society of American Foresters National Meeting. October 30-November 3, 2019. Louisville, KY.

Collins, J.T. (presenter), Matthew Olson, Doug Osborne, Benjamin A. Babst. "Influence of a single partial cutting on desired habitat attributes in a mature bottomland hardwood stand." Biennial Southern Silvicultural Research Conference, Shreveport, LA. March 2019

Cook J. and Benjamin A. Babst (presenter). "An investigation of renewable sources for cellulosic nanocrystals." Arkansas Annual EPSCoR Conference, Little Rock, AR. May 2019

Cook, J. (presenter) and Benjamin A. Babst. "Enhanced diameter growth in Poplar under flooded conditions." Southern Forest Research Group Meeting, Stoneville, MS. April 2019

Dennis, J. Datums, Datasheets and OPUS Reports; Arkansas Society of Professional Surveyors Spring Conference, March 29, 2019.

Dennis, J. Unnatural Lines in the Natural State; 13th Annual Red River Heritage Symposium; Washington, AR, July 27, 2019.

Dennis, J. The Future of Surveying in Education Arkansas Society of Professional Surveyors Fall Conference. September 25, 2019.

Dennis, J. Unnatural Lines in the Natural State; Fall Arkansas GIS Users Symposium, October 30, 2019.

Douglas, M.R., T.K. Chafin, C. Gray, C. Middaugh, J. Ballard, D. White, Jr., and M.E. Douglas. March 7, 2019. Population Connectivity and Chronic Wasting Disease Susceptibility of White-tailed Deer in Arkansas, with Implications for Management. Annual Meeting of the Arkansas Chapter of The Wildlife Society, C.A. Vines 4-H Center, Little Rock, Arkansas, USA.

Douglas, M.R., T.K. Chafin, B.T. Martin, Z.D. Zbinden, C. Gray, C. Middaugh, J. Ballard, D. White, Jr., and M.E. Douglas. October 3, 2019. Population Connectivity and Chronic Wasting Disease Susceptibility of White-Tailed Deer in Arkansas: A Landscape Genomics Approach. Joint meeting of the American Fisheries Society and The Wildlife Society, Reno, Nevada, USA.

Ficklin, R.L. Status of Forestry program and the CFANR update at the annual Ouachita Society of American Foresters meeting. Mt. Magazine, AR. November 21-22, 2019. Audience of 50-60.

Jacobs, T. Tree Identification Seminar. Monticello Tree Board, 2019.

Lindsey, R. Veterinarian's roles in undeveloped countries. Arkansas Veterinary Medical Association Winter Meeting. 2019.

Lindsey, R. Breeding Soundness Exam. Back to Basics Cattle Meeting. 2019.

Mohler, C., Olson, M., Bataineh, M., Bragg, D. 2019. Effect of harvest gap size and neighborhood composition on oak competitive status in a pine-hardwood forest. The 20th biennial southern silvicultural research conference, Shreveport, Louisiana, March 12-14, 2019. (*Oral*)

Nix, J.H., and D.C. Osborne. Survival and Harvest Rates of Male Eastern Wild Turkeys in the Ozark and Ouachita Mountain Regions of Arkansas. Southeast Association of Fish and Wildlife Agencies, Mobile, Alabama, 21-24 Oct 2018. (poster)

Olson, M., Bataineh, M., Cunningham, K., Fristoe, C., Headlee, W. and Hossain, S. 2019. Status of planted oak monocultures on a coastal plain minor bottom in the fifth decade after

establishment. The 20th biennial southern silvicultural research conference, Shreveport, Louisiana, March 12-14, 2019. (*Oral*)

Osborne, D.C. Survival and Harvest Rates of Male Eastern Wild Turkeys in the Ozark and Ouachita Mountain Regions of Arkansas. Southeast Association of Fish and Wildlife Agencies, Mobile, Alabama, 21-24 Oct 2018.

D.C. Osborne, and L.G. Carlson. Spatiotemporal dynamics in harvest distribution of winter banded mallards in the mid-continent. Waterfowl, Waterbirds, and Wetlands Special Session. South East Association of Fish and Wildlife Agencies, Hilton Head Islands, South Carolina, 26-31 Oct 2019

Osborne, D.C., and L.G. Carlson. Spatiotemporal dynamics in harvest distribution of winter banded mallards in the mid-continent. North American Duck Symposium, Winnipeg, Manitoba, Canada, 25-31 Aug 2019.

Osborne, D.C., and J.H. Nix. Gobbler activity and harvest rates of wild turkey on freeland public walk-in hunting areas in Arkansas' Ozark-Ouachita Highlands. Southeast Association of Fish and Wildlife Agencies, Hilton Head Islands, South Carolina, 26-31 Oct 2019.

Pelkki, M. Hardwood Markets in Uncertain Times. Ozark Woodland Owners Association Annual Meeting. 24 October 2019, Batesville, AR.

Pelkki, M. A tale of two counties: the economic and social contributions of tie production in Arkansas. Railroad Tie Association National Meeting, 15-18 October 2019, Tucson, AZ.

Pelkki, M. Forestry Ethics: Having the difficult conversation. Arkansas Forestry Association Annual Meeting, 8 October 2019, Little Rock, AR.

Pelkki, M. Forestry's Economic Contribution: A comparison across the USA. AFA Logs to Lumber Workshop. 13 June 2019, Potlatch-Deltic Learning Center, Warren, AR.

Pelkki, M. Arkansas Timber Outlook 2019. Forester Training Day, 4 June 2019. Hope, AR

Pelkki, M. Forestry's Economic Contribution: A Comparison across the USA. Arkansas OSAF and ABORF Spring Foresters' Workshop, 7 May 2019, CA Vines 4H Center, Ferndale, AR.

Pelkki, M. Comparing State Forest Industry Economic Contributions. Society of American Foresters National Convention. 2 November 2019, Louisville, KY.

Pelkki, M. Contribution, Correlation, Causality? Factors related to economic contributions of the forestry and forest products industry. International Society of Forest Resource Economists 2019 Annual Meeting. 14-15 May, 2019, Columbus OH.

Rowland J, Foust A, and M Pelkki. Evaluating Moisture Content of Loblolly Pine Logs Used for Pellet Production at Highland Pellets. A poster presentation at the Think Wood Exhibit. 25 November 2019, Monticello, AR.

Sample R. and Benjamin A. Babst (presenter). "Fall flooding disrupts seasonal nitrogen storage, but not phloem transport in *Quercus texana* seedlings." Plant Vascular Biology 2019 Meeting, Asilomar, CA. June 2019

Sample, R. (presenter) and Benjamin A. Babst. *Science Flash Talk*: "Autumn flooding disrupts seasonal nitrogen storage and impacts spring growth in *Quercus texana* seedlings." Society of American Foresters Annual Convention, Louisville, KY. October/November 2019

Schwantz, J., Weatherly, D., Bataineh, M. 2019. Validating ash distribution maps using field measurements. The Ouachita Chapter of the Society of American Foresters Annual Meeting, Mount Magazine, Arkansas, November 21-22, 2019. (*Poster*)

Tietz, W., Weatherly, D., Bataineh, M. 2019. Comparing basal area increment among planted red oaks in Wetland Reserve Easements. The Ouachita Chapter of the Society of American Foresters Annual Meeting, Mount Magazine, Arkansas, November 21-22, 2019. (*Poster*)

Wallen, K.E., T.J. Linder, D.C. Osborne, and S. Manley. Behavioral insights for private lands conservation persistence in agricultural landscapes. Special Session The Wildlife Society & American Fisheries Society Joint Conference, Reno, Nevada, 29 Sept. – 3 Oct. 2019.

Wallen, K.E., T.J. Linder, and D.C. Osborne. Motivations for rice stewardship conservation practice persistence. Pathways: Human dimensions of wildlife conservation, Estes Park, CO, 22-26 Sept 2019.

Wallen, K.E., J.G. Spears, and D.C. Osborne. Waterfowl hunter attitudes towards greentree reservoir management practices. Pathways: Human dimensions of wildlife conservation, Estes Park, CO, 22-26 Sept 2019.

Walters, B., Weatherly, D., Bataineh, M., and Clarke, S. 2019. Comparing trap type and placement effectiveness for detection and monitoring of emerald ash borer. East Texas Forest Entomology Seminar, Nacogdoches, Texas, May 9-10, 2019. (*Oral*)

Walters, B., Weatherly, D., Bataineh, M., and Clarke, S. 2019. Reconstructing emerald ash borer induced-mortality patterns in Arkansas. The Ouachita Chapter of the Society of American Foresters Annual Meeting, Mount Magazine, Arkansas, November 21-22, 2019. (*Poster*)

Weatherly, D., Walters, B., Bataineh, M., and Clarke, S. 2019. Effectiveness of lure and trap placement in emerald ash borer detection and monitoring. The Ouachita Chapter of the Society of American Foresters Annual Meeting, Mount Magazine, Arkansas, November 21-22, 2019. (*Poster*)

Weatherly, D., Walters, B., Bataineh, M., and Clarke, S. 2019. Evaluating current extent and severity of emerald ash borer infestations in AR and LA. East Texas Forest Entomology Seminar, Nacogdoches, Texas, May 9-10, 2019. (*Poster*)

White, D., Jr. April 28, 2019. Chronic wasting disease: Current knowledge and future perspectives. US Forest Service National Advanced Silviculture Program, Crossett, Arkansas. *This was a 4-part (half-day) series of presentations.*

White, D, Jr., M.C. Gray, J.R. Ballard, and C.R. Middaugh. August 7, 2019. Hunter proximity to CWD and perceived risk in Arkansas, USA. International Deer Biology Congress, Estes Park, Colorado, USA.

Faculty Grant Awards in 2019 ($848,579 in total awards)

B. Babst (PI) Timing and cues for tree root dormancy: Implications for Greentree Reservoir Management AGFC 2019-2023 $630,203

Bataineh, M. Bark beetle monitoring using solar powered light panels and semiochemicals – A pilot study. IPM Products Manufacturing Inc./Governor's Initiative. 2019. $46,970

Bataineh, M.and Liechty, H. Fire reintroduction within Lake Ricks Reservoir Watershed: total organic carbon reduction. Hot Springs Drinking Water Utility. 2019. $2,000

Francis, P. Pink Tomato Project. Arkansas Agriculture Department, USDA Specialty Crops. $13,000.

Francis. P. Improving Yield and Sustainability for Irrigated Soybeans. Arkansas Soybean Promotion Board. $8477.

Osborne, D. Mississippi Alluvial Valley Winter Mallard Banding Program. Ducks Unlimited. $30,000

Osborne, D. Food selection and body condition of wintering waterfowl on National Wildlife Refuge moist-soil wetlands in the Lower Mississippi Alluvial Valley. US Fish and Wildlife Service R4 Inventory and Monitoring Branch grant. $60,000

Osborne, D. Assessment of rapid seed yield and waterfowl monitoring protocols in response to foraging habitat quality in moist-soil wetlands in the Mississippi Alluvial Valley of Arkansas and Mississippi. US Fish and Wildlife Service R4 Inventory and Monitoring Branch grant. $37,929

Osborne, D. Migration chronology, distribution, and foraging behavior of mallards in the face of changing migration patterns. Sitka Foundation, Ecosystems Grants Program. $20,000

Describe any significant changes in the unit, in programs/degrees, during the past academic year.

No significant changes were made in degree or program offerings this year. Time was devoted to implementing previous changes and revisions.

List program/curricular changes made in the past academic year and briefly describe the reasons for the change.

One major change was made during the past academic year. Previously, to graduate from the undergraduate programs in Forestry and Natural Resources, students had to have an accumulative grade point average of at least 2.0 with no grade lower than "C" in all core requirements, option requirements, and general education courses. In the fall semester, the "C" requirement was removed. Now, the requirement reads: To graduate from the undergraduate programs in the College of Forestry, Agriculture and Natural Resources, students must have a cumulative grade point average of at least 2.0 in all curriculum core requirements, option requirements, and general education courses. Additionally, students must satisfy student learning outcomes defined in all required courses.

Describe unit initiatives/action steps taken in the past academic year to enhance teaching/learning and student engagement.

The unit invested in student experiential learning opportunities through the support of travel to and participation in professional meetings. Faculty advisors helped students prepare both for presentations at these meetings and for participation in quiz bowl competitions. Students attended the Society of American Foresters Annual Convention in Louisville, Kentucky, a U.S. Fish & Wildlife Service Certification workshop at Felsenthal National Wildlife Refuge, the Arkansas Cattleman's Association Annual Conference in Hot Springs, the Young Farmers and Ranchers Farm Bureau Conference in Hot Springs, and the Agriculture Economics Quiz Bowl in Louisville, Kentucky. Additionally, the Pre-Vet Club visited the MSU Veterinary School in Starkville.

Other Unit Student Success Data

Include any additional information pertinent to this report. Please avoid using student information that is prohibited by FERPA.

Revised February 8, 2018

Addendums

Addendum 1: UAM Vision, Mission, and Strategic Plan

VISION

The University of Arkansas at Monticello will be recognized as a model, open access regional institution with retention and graduation rates that meet or exceed its peer institutions. Through these efforts, UAM will develop key relationships and partnerships that contribute to the economic and quality of life indicators in the community, region, state, and beyond.

MISSION

The University of Arkansas at Monticello is a society of learners committed to individual achievement by:

- Fostering a quality, comprehensive, and seamless education for diverse learners to succeed in a global environment;
- Serving the communities of Arkansas and beyond to improve the quality of life as well as generate, enrich, and sustain economic development;
- Promoting innovative leadership, scholarship, and research which will provide for entrepreneurial endeavors and service learning opportunities;
- Creating a synergistic culture of safety, collegiality, and productivity which engages a diverse community of learners.

CORE VALUES:

- *Ethic of Care*: We care for those in our UAM community from a holistic perspective by supporting them in times of need and engaging them in ways that inspire and mentor.
- *Professionalism*: We promote personal integrity, a culture of servant leadership responsive to individuals' needs as well as responsible stewardship of resources.
- *Collaboration*: We foster a collegial culture that encourages open communication, cooperation, leadership, and teamwork, as well as shared responsibility.
- *Evidence-based Decision Making*: We improve practices and foster innovation through assessment, research, and evaluation for continuous improvement.
- *Diversity*: We embrace difference by cultivating inclusiveness and respect of both people and points of view and by promoting not only tolerance and acceptance, but also support and advocacy.

UAM STUDENT LEARNING OUTCOMES:

- *Communication:* Students will communicate effectively in social, academic, and professional contexts using a variety of means, including written, oral, quantitative, and/or visual modes as appropriate to topic, audience, and discipline.
- *Critical Thinking:* Students will demonstrate critical thinking in evaluating all forms of persuasion and/or ideas, in formulating innovative strategies, and in solving problems.
- *Global Learning:* Students will demonstrate sensitivity to and understanding of diversity issues pertaining to race, ethnicity, and gender and will be capable of anticipating how their actions affect campus, local, and global communities.

- *Teamwork:* Students will work collaboratively to reach a common goal and will demonstrate the characteristics of productive citizens.

STRATEGIC PLAN

1. STUDENT SUCCESS—fulfilling academic and co-curricular needs

 Develop, deliver, and maintain quality academic programs.
o Enhance and increase scholarly activity for undergraduate and graduate faculty/student research opportunities as well as creative endeavors.
o Revitalize general education curriculum.
o Expand academic and degree offerings (technical, associate, bachelor, graduate) to meet regional, state, and national demands.

 Encourage and support engagement in academics, student life, and athletics for well-rounded experience.
o Develop an emerging student leadership program under direction of Chancellor's Office.
o Enhance and increase real world engagement opportunities in coordination with ACT Work Ready Community initiatives.
o Prepare a Student Affairs Master Plan that will create an active and vibrant student culture and include the Colleges of Technology at both Crossett and McGehee.

 Retain and recruit high achieving faculty and staff.
o Invest in quality technology and library resources and services.
o Provide opportunities for faculty and staff professional development.
o Invest in quality classroom and research space.
o Develop a model Leadership Program (using such programs as American Council on Education, ACE and/or Association of American Schools, Colleges, and Universities, AASCU) under the direction of the Chancellor's Office to grow our own higher education leaders for successive leadership planning.
o Create an Institute for Teaching and Learning Effectiveness.

 Expand accessibility to academic programs.
o Engage in institutional partnerships, satellite programs, alternative course delivery, and online partnerships with eVersity.
o Create a summer academic enrichment plan to ensure growth and sustainability.
o Develop a model program for college readiness.
o Revitalize general education.
o Coordinate with community leaders in southeast Arkansas to provide student internships, service learning, and multi-cultural opportunities.

2. ENROLLMENT and RETENTION GAINS

 Engage in concurrent enrollment partnerships with public schools, especially in the areas of math transition courses.
 Provide assistance and appropriate outreach initiatives with students (working adults, international, transfers, and diversity) for successful transition.
 Coordinate and promote marketing efforts that will highlight alumni, recognize outstanding faculty and staff, and spotlight student success.
 Develop systematic structures for first year and at-risk students.
 Identify and enhance pipeline for recruiting

3. INFRASTRUCTURE REVITALIZATION and COLLABORATIONS

 Improve Institutional Effectiveness and Resources through participation in a strategic budget process aligned with unit plans and goals for resource allocations.

 Conduct and prepare Economic Impact Studies to support UAM efforts and align program and partnerships accordingly.

 Prepare and update University Master Plan.

 Partner with system and state legislators to maximize funding.

 Increase external funding opportunities that will create a philanthropic culture among incoming students, graduates, and community.
o Increased efforts to earn research and grant funds.
o Creation of philanthropic culture among incoming students, graduates and community.
 Collaborating with Athletics Fundraising to maximize synergies.
 Create a Growing our Alumni Base Campaign.
o Encourage entrepreneurial opportunities where appropriate.
o Participation in articulation agreements to capitalize on academic and economic resources.
o Partner with communities to address the socio economic, educational, and health and wellness (safety needs) of all citizens.

Addendum 2: Higher Learning Commission Sample Assessment Questions

1. How are your stated student learning outcomes appropriate to your mission, programs, degrees, students, and other stakeholders? How explicitly do major institutional statements (mission, vision, goals) address student learning?

- How well do the student learning outcomes of programs and majors align with the institutional mission?
- How well do the student learning outcomes of general education and co-curricular activities align with the institutional mission?
- How well do course-based student learning outcomes align with institutional mission and program outcomes?
- How well integrated are assessment practices in courses, services, and co-curricular activities?
- How are the measures of the achievement of student learning outcomes established? How well are they understood?

2. What evidence do you have that students achieve your stated learning outcomes?

- Who actually measures the achievement of student learning outcomes?
- At what points in the curriculum or co-curricular activities are essential institutional (including general education), major, or program outcomes assessed?
- How is evidence of student learning collected?
- How extensive is the collection of evidence?

3. In what ways do you analyze and use evidence of student learning?

- Who analyzes the evidence?
- What is your evidence telling you about student learning?

- What systems are in place to ensure that conclusions are drawn and actions taken on the basis of the analysis of evidence?
- How is evidence of the achievement of student learning outcomes incorporated into institutional planning and budgeting?

4. How do you ensure shared responsibility for student learning and assessment of student learning?

- How well integrated are assessment practices in courses, services, and co-curricular activities?
- Who is responsible for the collection of evidence?
- How cross-functional (i.e., involving instructional faculty, Student Affairs, Institutional
- Research, and/or relevant administrators) are the processes for gathering, analyzing, and using evidence of student learning?
- How are the results of the assessment process communicated to stakeholders inside and outside the institution?

5. How do you evaluate and improve the effectiveness of your efforts to assess and improve student learning?

- What is the quality of the information you have collected telling you about your assessment processes as well as the quality of the evidence?
- How do you know how well your assessment plan is working?

6. In what ways do you inform the public about what students learn—and how well they learn it?

- To what internal stakeholders do you provide information about student learning?
- What is the nature of that information?
- To what external stakeholders do you provide information about student learning?
- What is the nature of that information?

Addendum 3: Arkansas Productivity Funding Metrics

- The productivity funding formula consists of four categories: Effectiveness (80% of formula), Affordability (20% of formula), Adjustments, and Efficiency (+/-2% of formula).

Effectiveness	Affordability	Adjustment	Efficiency
• Credentials • Progression • Transfer Success • Gateway Course Success	• Time to Degree • Credits at Completion	• Research (4-year only)	• Core Expense Ratio • Faculty to Administor Salary