

Annual Assessment Report

2014-2015

School of Mathematical and Natural Sciences

This assessment report is available through the School homepage at

<http://uam-web2.uamont.edu/pdfs/mnsciences/2014-15C%20end.pdf>

August 2015

1. What are the Student Learning Outcomes (SLOs) for your unit? How do you inform the public and other stakeholders (students, potential students, the community) about your SLOs? If your unit is accredited by an outside source, please attach the letter verifying your accreditation.

A student who graduates from UAM with a major administered by the School of Mathematical and Natural Sciences should:

1. Be able to clearly express mathematical and/or scientific ideas in oral and written communication;
2. Be able to demonstrate the ability to apply scientific and/or mathematical concepts to real world situations;
3. Have a core knowledge of the major discipline;
4. Be prepared for immediate employment in a scientific, technical, medical, or educational environment;
5. Be prepared to enter graduate or professional school in the appropriate area.

The Student Learning Outcomes (SLOs) are measured through student performance on exams, quizzes, laboratory exercises, field course journals, homework assignments, research projects, reports, and/or presentations.

The Student Learning Outcomes are posted on the School of Mathematics and Natural Science website at: [http://www.uamont.edu/Math and Sciences/learningoutcomes.htm](http://www.uamont.edu/Math_and_Sciences/learningoutcomes.htm). They are also posted in the display case near the front entrance to the Science Center.

External Accreditations: None

2. Describe how your unit's Student Learning Outcomes fit into the mission of the University.

The mission the University of Arkansas at Monticello shares with all universities is the commitment to search for truth, understanding through scholastic endeavor. The University seeks to enhance and share knowledge, to preserve and promote the intellectual content of society, and to educate people for critical thought. The University provides learning experiences that enable students to synthesize knowledge, communicate effectively, use knowledge and technology with intelligence and responsibility, and act creatively within their own and other cultures.

The University strives for excellence in all its endeavors. Educational opportunities encompass the liberal arts, basic and applied sciences, selected professions, and vocational/technical preparation. These opportunities are founded in a strong program of general education and are fulfilled through contemporary disciplinary curricula, certification programs, and vocational/technical education or workforce training. The University assures opportunities in higher education for both traditional and non-traditional students and strives to provide an environment that fosters individual achievement and personal development.

Student Learning Outcomes (SLOs) 1, 2, and 3 address aspects of UAM's mission that are related to the commitment to search for truth and understanding through scholastic endeavor. These SLO's focus on teaching students to have core knowledge in their discipline, be able to apply the basic core knowledge to real world situations, and effectively communicate scientific information orally and in writing. Students in Math and Sciences learn specific information related to their discipline, and also the historical aspects of the advancements made in their field, including advancements made in their specific fields related to improved technology found in today's instrumentation.

SLOs 2 and 3 support the University's goal to enhance and share knowledge, promote the intellectual content and promote critical thinking. Students in Math and Science majors learn many basic concepts early in their college career, and as the courses become more in depth, critical thinking skills are enhanced as understanding of content, applications, and connections to more complicated systems are made through course content, papers, laboratory projects, and research.

SLO's 4 and 5 address the preparedness of Math and Science majors to enter the workplace or enter a graduate program in a related field. The general education component of the degree plans for math and science majors provides a broad background in the liberal arts and basic and applied sciences. Supportive requirements provide additional background in the sciences and mathematics, and the courses in the major provide specific content and serve as the basis for critical thinking and problem solving skills that will enable a graduate to enter the workplace, a professional program, or a graduate program in a related area.

3. Provide an analysis of the learning data from your unit. How is this data used as evidence of learning.

The School of Mathematical and Natural Sciences uses performance in the classroom and laboratory to measure student comprehension. Multiple exams are given in each course, and in many courses a comprehensive final exam is given. Homework, quizzes, lab notebooks, field journals, research papers, and oral presentations are also graded in several courses. In the School of Mathematical and Natural Sciences, grades are given almost entirely based on student performance, not attendance or other elements that are unrelated to the student's ability to successfully complete the learning objectives at the course level. In most

cases, a large percentage of the course grade is based on performance on exams. The level of difficulty of questions on exams is comparable to questions found in supplied test banks, end of chapter problems, and in chemistry the ACS Standardized Final Exams. The textbooks used in most of our courses are the industry standard text for that course. The course objectives for each course are based on common syllabi adopted by the state, comparison with courses at other universities, the specific course content required by professional and graduate programs, and for the case of chemistry, the American Chemical Society. Even though our chemistry program is not ACS approved, their internationally recognized model is followed as closely as possible.

Pre-tests and Post-tests

Within the past year, several courses used pre-test and post-tests. The questions asked on the pre-test were very similar to a question asked on the final exam. The questions were chosen over a wide variety of topics. The table below shows pre/post test results for the specific courses that use this method of assessment.

Course	# Students	# Questions	Avg Correct on Pretest	Avg Correct on Final exam
Intro to Biological Science	67	15	8.5	10.8
Comparative Anatomy	16	15	3.9	8.4
Evolution	25	15	5.7	8.9
Introduction to Chemistry	62	10	3.9	8.5
Anatomy and Physiology I	35	15	7.6	10.8

On the first class day of the Fall 2014 semester and the Spring 2015 semester, a pre-test was administered to the students in the Introduction to Biological Sciences classes taught by John Hunt at the University of Arkansas at Monticello. The pre-test consisted of 15 questions designed to test the students' prior knowledge of some of the most important concepts of Biology. The questions were a mix of "big-concept" and detail ideas, and concerned facts that a student who has completed the course would be expected to know, but that wouldn't necessarily be familiar to a student who hasn't had the class. The questions were multiple choice questions with a correct answer and four distractors. (A copy of the questions is included at the end of this report.) On the last day of class, the students were given the same questions. Students at the beginning of the course were not made aware that they would be assessed in this manner.

Only students who completed both the pre-test and post-test are included in the results given here. There were two separate sections, one each in the Fall and Spring. For the purposes of this report, the two sections were combined. Average score on the pre-test was 8.5 out of 15, or 56.7% (n = 67, range 4-13, standard deviation 2.08). Average score on the post-test was 10.8, or 72.0% (n = 67, range 6-15, standard deviation 2.05). Of those who took both pre-test and post-test, 50 registered an improvement on the post-test (n = 67, average increase 2.3 questions, range -2-9, standard deviation 2.38). Average percentage change in score was 32.3% (n = 67, range -20-180%, standard deviation 36.4%). Seven students actually did worse on the post-test than on the pre-test.

This is the second year that this type of assessment has been used in the Introduction to Biological Science class. Results seem to indicate that many of the objectives of the class are being met. The instructor

will use the assessment again next year. After several years of results have been collected, the instructor will analyze results of individual questions to determine whether changes in the presentation of material need to be made to make sure that all concepts are being covered adequately. It should be noted that this is a freshman class, and many of the students in the class clearly came directly from high schools with good biology programs. As is indicated by the wide variation in pre-test scores, some of the students were not so well-prepared. It should also be noted that 42 students were registered for one of the sections included herein, and failed to take either the pre-test, post-test, or both. It is unclear what effect this had on the obtained results.

On the first class day of the Fall 2014 semester, a pre-test was administered to the students in the Comparative Anatomy class at the University of Arkansas at Monticello. The pre-test consisted of 15 questions designed to test the students' prior knowledge of some of the most important concepts of Comparative Anatomy. The questions were a mix of "big-concept" and detail ideas, and concerned facts that a student who has completed the course would be expected to know, but that wouldn't necessarily be familiar to a student who hasn't had the class. The questions were multiple choice questions with a correct answer and four distractors. (A copy of the questions is included at the end of this report.) On the last day of class, the students were given the same questions. Students at the beginning of the course were not made aware that they would be assessed in this manner.

Only students who completed both the pre-test and post-test are included in the results given here. Average score on the pre-test was 3.9 out of 15, or 26.0% (n = 16, range 1-7, standard deviation 1.61). Average score on the post-test was 8.4, or 56.0% (n = 16, range 5-13, standard deviation 2.00). Every student in the class registered an improvement on the post-test (n = 16, average increase 4.4 questions, range 1-8, standard deviation 2.16). Average percentage change in score was 171.2% (n = 16, range 20.0-700.0%, standard deviation 180.99%).

This is the third year that this type of assessment has been used in the Comparative Anatomy class. Results in 2014 were roughly equivalent to those obtained in the preceding two years. Results seem to indicate that many of the objectives of the class are being met. The instructor will use the assessment again next year. After several years of results have been collected, the instructor will analyze results of individual questions to determine whether changes in the presentation of material need to be made to make sure that all concepts are being covered adequately.

On the first class day of the Spring 2015 semester, a pre-test was administered to the students in the Evolution class at the University of Arkansas at Monticello. The pre-test consisted of 15 questions designed to test the students' prior knowledge of some of the most important concepts of Evolution. The questions were a mix of "big-concept" and detail ideas, and concerned facts that a student who has completed the course would be expected to know, but that wouldn't necessarily be familiar to a student who hasn't had the class. The questions were multiple choice questions with a correct answer and four distractors. (A copy of the questions is included at the end of this report.) On the last day of class, the students were given the same questions. Students at the beginning of the course were not made aware that they would be assessed in this manner.

Only students who completed both the pre-test and post-test are included in the results given here. Average score on the pre-test was 5.68 out of 15, or 37.9% (n = 25, range 3-10, standard deviation 2.02).

Average score on the post-test was 8.92, or 59.5% (n = 25, range 4-13, standard deviation 2.68). Twenty-two of 25 students registered an improvement on the post-test (n = 25, average increase 3.2 questions, range -2-7, standard deviation 2.43). Average percentage change in score was 71.4% (n = 25, range -33.33-200.0%, standard deviation 63.2%).

This is the second year that this type of assessment has been used in the Evolution class. Results seem to indicate that many of the objectives of the class are being met. However, results for 2014 were not as good as those from 2013. This is in part due to the fact that a week of classes was missed due to weather in 2015, so that not all material covered on the assessment tests was covered. The instructor will use the assessment again next year. After several years of results have been collected, the instructor will analyze results of individual questions to determine whether changes in the presentation of material need to be made to make sure that all concepts are being covered adequately.

In Introduction to Chemistry, students were given ten questions related to chemistry and five questions related to basic math skills on the first day of class. For this assessment, the math questions were not included since they did not appear on the final exam in the same format. Since some of the chemistry questions were mathematical in nature, the students were allowed to use their calculator if they happened to bring it or use the calculator function on their smartphone; however, a small number of students did not, which may have lowered the pre-test score slightly. The final exam contained questions over the same topics as the pre-test questions. Some were identical questions, while others were worded differently, but clearly the same topic. The increase in average from 3.9 correct responses on the pre-test to 8.5 correct on the post-test indicates an overall improvement in understanding in course material. No student scored lower on the post-test than the pre-test.

In Biology 2053, Principles of Biology, a self-evaluation was given in which the students assessed their knowledge in four major areas of biology. The format was multiple choice, with possible responses being a) No knowledge, b) We covered the topics in high school or another class, but I can't remember, c) I have enough knowledge to pass a multiple choice or word bank test, d) I have enough knowledge to do well on an essay test, or e) I have enough knowledge so that I feel comfortable tutoring my roommate or sibling. The following table shows the results of the pre/post-test.

The trends on the four questions in which students provided self-assessment were very similar. A large percentage of the students answered b or c on the pre-test; however, many of those felt they improved to the D and E category on the post-test. All the questions showed improvement by at least one category in the 75 to 84% range, with an average of 78%. For the students that selected the highest level of knowledge in the pre-test, it was impossible for them to show improvement in this assessment.

While this is similar to a pre-test and post-test to measure student performance, it is somewhat different because it measures the confidence level of the student to apply the knowledge learned in this particular course. Some of the faculty are even considering using both the survey and a pre/post-test so that results can be compared.

Principles of Biology I							
Self-evaluation questions 51 responders Fall 2014		a) No knowledge	b) We covered in high school or another college class but don't really remember	c) I have enough knowledge to pass a multiple choice or word bank test	d) I have enough knowledge to do well on an essay test	e) I have enough knowledge so that I feel comfortable tutoring a roommate or sibling	Results
How would you assess your overall knowledge on the following topics: basic chemistry; the function and structure of carbon molecules; and the function of carbohydrates, lipids, proteins and nucleic acids	Pre-test	2%	45%	45%	4%	4%	78% of the students felt that their level of mastering the topics indicated had improved.
	Post-test	0	2%	41%	28%	29%	
structure and function of the cell; structure and function of cell membranes; enzymes; structure and function of ATP; glycolysis; Citric Acid Cycle; oxidative phosphorylation; and fermentation	Pre-test	2%	45%	49%	2%	2%	75% of the students felt that their level of mastering the topics indicated had improved.
	Post-test	0	0	60%	20%	20%	
photosynthesis; plant form and function; transport of water in vascular plants; flower plant reproduction; plant biotechnology; and plant hormones	Pre-test	2%	41%	43%	10%	4%	84% of the students felt that their level of mastering the topics indicated had improved.
	Post-test	0	2%	31%	39%	28%	
digestive system; circulatory system; respiratory system; immune system; endocrine system; reproductive system; and nervous system	Pre-test	2%	27%	47%	16%	8%	75% of the students felt that their level of mastering the topics indicated had improved.
	Post-test	0	0	35%	30%	35%	

A similar assessment was used in General Botany, which is offered each semester. Because of scheduling conflicts, the make-up of the students in this course often varies from fall to spring terms. Often, the fall term has more students from Forestry and Natural Resources, while in the spring term there are more biology majors mixed in with those students. The major difference in the two groups is the biology majors have most likely taken Principles of Biology I and Principles of Biology II prior to taking botany, while the Forestry and Natural Resources students have not been required to take a prerequisite course prior to botany. A second factor is that many of the biology majors are sophomores, or possibly even juniors while the Forestry and Natural Resources students are sometimes at the freshman level. The following tables show the questions and the results for the two botany classes taught during the 2014-15 academic year.

General Botany-Fall 2014							
Self-evaluation questions 30 responders Spring 2015		a) No knowledge	b) We covered in high school or another college class but don't really remember	c) I have enough knowledge to pass a multiple choice or word bank test	d) I have enough knowledge to do well on an essay test	e) I have enough knowledge so that I feel comfortable tutoring a roommate or sibling	Results
How would you assess your overall knowledge on the following topics:	Pre-test	12%	42%	46%	0	0	88% of the students felt that their level of mastering the topics indicated had improved.
	Post-test	0	0	43%	24%	33%	
plant taxonomy; generic name and specific epithet; cell structure of prokaryotic vs. eukaryotic cells; structure and function of plant cells; and simple vs. complex plant tissue	Pre-test	9%	49%	39%	3%	0	82% of the students felt that their level of mastering the topics indicated had improved.
	Post-test	0	3%	37%	30%	30%	
transport of nutrients, minerals, and water in vascular plants; photosynthesis; light reactions; carbon fixation, RUBISCO; C ₃ plants; C ₄ plants; and CAM plants	Pre-test	6%	49%	39%	3%	3%	82% of the students felt that their level of mastering the topics indicated had improved.
	Post-test	0	0	43%	24%	33%	
meiosis; mitosis; gametic, zygotic and sporic life cycles; characteristics and evolution of photosynthetic protists (algae); and characteristics and evolution of fungi and lichens	Pre-test	52%	45%	3%	0	0	82% of the students felt that their level of mastering the topics indicated had improved.
	Post-test	0	0	40%	27%	33%	
characteristics and evolution of bryophytes (non-vascular plants); lycophytes; ferns; and fern allies	Pre-test	27%	37%	30%	6%	0	82% of the students felt that their level of mastering the topics indicated had improved.
	Post-test	0	0	21%	33%	46%	
characteristics and evolution of gymnosperms and angiosperms; flowering plant production (double fertilization); simple, aggregate and multiple fruits; seed development; plant and animal co-evolution; plant reproductive strategies; ethnobotany; and economic botany	Pre-test	0	0	21%	33%	46%	82% of the students felt that their level of mastering the topics indicated had improved.
	Post-test	0	0	21%	33%	46%	

General Botany-Spring 2015							
Self-evaluation questions 30 responders Spring 2015		a) No knowledge	b) We covered in high school or another college class but don't really remember	c) I have enough knowledge to pass a multiple choice or word bank test	d) I have enough knowledge to do well on an essay test	e) I have enough knowledge so that I feel comfortable tutoring a roommate or sibling	Results
How would you assess your overall knowledge on the following topics:							
	plant taxonomy; generic name and specific epithet; cell structure of prokaryotic vs. eukaryotic cells; structure and function of plant cells; and simple vs. complex plant tissue	Pre-test	3.3%	53.3%	30%	10%	3.3%
	Post-test	0	0	37%	23%	40%	
transport of nutrients, minerals, and water in vascular plants; photosynthesis; light reactions; carbon fixation, RUBISCO; C ₃ plants; C ₄ plants; and CAM plants	Pre-test	3.3%	33.3%	53.3%	10%	2%	90% of the students felt that their level of mastering the topics indicated had improved.
	Post-test	0	0	20%	53.3%	26.7%	
meiosis; mitosis; gametic, zygotic and sporic life cycles; characteristics and evolution of photosynthetic protists (algae); and characteristics and evolution of fungi and lichens	Pre-test	3.3%	50%	40%	3.3%	3.3%	80% of the students felt that their level of mastering the topics indicated had improved.
	Post-test	0	0	40%	37%	23%	
characteristics and evolution of bryophytes (non-vascular plants); lycophytes; ferns; and fern allies	Pre-test	33.3%	56.7%	10%	0	0	93.3% of the students felt that their level of mastering the topics indicated had improved.
	Post-test	0	0	46.6%	26.7%	26.7%	
characteristics and evolution of gymnosperms and angiosperms; flowering plant production (double fertilization); simple, aggregate and multiple fruits; seed development; plant and animal co-evolution; plant reproductive strategies; ethnobotany; and economic botany	Pre-test	23.3%	43.3%	33.3%	0	0	90% of the students felt that their level of mastering the topics indicated had improved.
	Post-test	0	0	23.3%	26.7%	50%	

In comparing the two classes from different terms, it is clear that the initial level of confidence is much higher among the spring term students. This section had a fairly large percentage of biology majors which have taken Principles of Biology I and II, and possibly other biology courses. Both classes confidence levels improved dramatically when comparing the pre/post survey results.

Essentially all entering freshmen students are placed into Introduction to Algebra, Intermediate Algebra, or College Algebra or higher based on their performance on the ACT exam, or equivalent placement exam. A nationally normalized post-test is given at the end of the Intermediate Algebra course. UAM has selected the ASSET exam as the end of course exam. Almost every student enrolled in Intermediate Algebra scored below a 19 on the ACT, or equivalent on a comparable exam. A 19 is needed to enter college level math courses. A few students with higher than a 19 ACT are in Intermediate Algebra by virtue of failing or withdrawing from College Algebra three times.

In the Fall 2014 term, the ASSET test was given to all Intermediate Algebra sections as a required component of remedial math assessment. 69 of 136 (51%) students taking the exam passed at the level equivalent to a 19

ACT score. The trend continues in which several students that essentially walked away from the course came in to take the exam in hopes of scoring the passing score, and therefore qualifying to move to College Algebra or Survey of Math. As the number of students coming back to take the exam in a "hail Mary" effort increases, the pass rate continues to drop. There were 240 students originally enrolled in all sections of Intermediate Algebra. There were 71 students who passed the course with a grade of C or higher. Of these 71 that passed the course, 57 passed the ASSET exam. These students were allowed to move on to College Algebra by virtue of the course grade. Of the students that took the ASSET exam and failed the course, 12 of these students scored a 39 scaled score or higher, which will allow them to move on to College Algebra or Survey of Math. Overall, 83 of 240 (34.5%) were allowed to progress to college-level mathematics courses, which is an improvement over the 29% last year.

ASSET Exam Results (Prior to Fall 2013, may include Crossett and McGehee)

Term	# enrolled	# taking exam	# passed	% taking test that passed	passed test w/o passing course	passed course w/o passing exam
Spr 15	132	76	32	42.1	13	10
Fall 14	240	136	69	50.7	14	12
Spr 14	150	84	45	53.6	12	7
Fall 13	224	98	52	53.1	19	12
Spr 13	216	107	69	64.5	21	13
Fall 12	327	167	95	56.9	42	20
Spr 12	242	122	83	68.0	15	12
Fall 11	266	143	93	65.0	32	8

In the Spring 2014 term, 150 students took Intermediate Algebra for a grade at the main campus. 40 students scored a C or higher in the course. Of the 40 students that passed the course, 33 scored equivalent to a 19 Math ACT or higher on the ASSET exam. There were 12 students who scored a D or F in the course that passed the ASSET exam, which will allow them to move on to College Algebra or Survey of Math. Overall, 53.6% (52 out of 98) of Intermediate Algebra students that took the ASSET as the final exam passed with a score that is equivalent to a 19 ACT. The success rate in this group was slightly better than that of the Fall 2013 classes. Either by passing the course or the ASSET exam, 35% (52/150) were allowed to progress to the general education math course. As in the past, there are a large number of "walk-away F's" which are defined as students that enroll in the course and attend very little, and eventually stop coming altogether, and do not take the final exam. These students put almost no effort into the course. I am somewhat disturbed about the lower percentage of students passing the exam; however, I feel that this can easily be explained by the fact that many students are taking the final exam and hoping for a miracle to occur which will allow them to move on to college algebra or survey of math. Because of financial aid regulations, many students cannot drop a class without forfeiting financial aid in future semesters. In the past, many of these low performing students dropped before the final exam.

Using data from the ASSET exams, faculty continue to make changes to the topics covered in Introduction to Algebra, Intermediate Algebra, and College Algebra. All of the courses are using in-house written workbooks which serve as the primary textbook for the course, and all use an online homework and assessment package

that is closely aligned with the workbook. In the past year, Trigonometry and Survey of Math began using an in-house published workbook.

Performance on National Exams

Students completing both General Chemistry and Organic Chemistry are given nationally normed American Chemical Society (ACS) Examinations as final examinations. Scores on these exams indicate that our students are continuing to perform near the national average in General Chemistry, and above that in Organic Chemistry. On this year's General Chemistry standardized final exam, UAM students finished 2 questions below national average. Although it is below national average, we are fairly pleased with our results since we are being compared to ACS certified programs, and several that use the exam are prestigious private institutions with high admissions standards. This year's Organic Chemistry class' mean and median scores remain very similar to the national average. Some in the class scored above the 80th percentile nationally. The item analysis from the final exams are reviewed periodically to identify trends on the most commonly missed questions. The individual faculty member uses this information to improve coverage in certain areas. In recent years, the laboratory exercises have been changed slightly to provide additional coverage for areas that were identified as a problem area on the ACS Final Exam. It is also noted that the faculty thought that this year's exam was much more difficult than exams in the past. This is supported by the fact that the national average reported by the ACS dropped approximately 1 point compared to previous versions of the exam.

When examining item analysis for the exams, there are no clear trends on what topics are missed most on the exam. Slightly more students miss questions on multi-step organic synthesis than the other questions, but this is expected since these questions are more difficult and require far more critical thinking skills than the questions related to nomenclature or physical properties of organic compounds. Although we are proud of UAM's performance on this exam, we need to use this information appropriately since we typically have only 15-20 students completing the Organic Chem II course, even though we may start with 30-36 students at the beginning of Organic Chem I. We are looking at the best students of a very small group that have already successfully completed Gen Chem I and II and are typically good students as a whole, but this should be the case at all universities. When examining the rosters from the past, it is not uncommon to find that the students that perform well on the ACS final exams are typically those accepted into medical school, pharmacy school, or other professional or graduate programs.

In General Chemistry, the ACS final exam scores have declined over the past several years. Since 2008, the scores have been in the 40th to 45th percentile range, nationally. Again this year, the percentile ranking is not known since the exam was a new exam provided by the ACS; however, this year's students had more correct answers than last year. Without standardized data for comparison, it is impossible to compare results. This group had several students that performed above the 80th percentile level based on scoring averages in the past. The decline in the test scores over the past few years is partially attributed to the decline in the number of chemistry majors in these courses. Only two traditional chemistry majors has graduated in the past five years. The bulk of the students taking the General Chem I and II sequence are biology majors and agriculture majors. The chemistry faculty continue to note that students are not putting the effort into the homework. We have reviewed several on-line homework packages and have tried some of the packages on a trial basis. One of these packages was adopted as an optional purchase so that students can do homework on-line and get immediate feedback. In the past year, the Sapling Software package was used for online homework and assessment. In general, most of the students did not like the online homework. Almost every student indicated they preferred the pencil and paper versions. This spring, online homework packages were made optional. A traditional paper homework was given. Even though there was not an obvious improvement in student performance, there

was certainly an improvement in student satisfaction. Some students like the online homework because of the immediate feedback provided; however, the larger percentage of the students disliked the online homework because of problems in getting answers in the correct format and errors on the homework website.

Even though many of the students score at or below national average on the ACS final exam, there are several that score very well on the exam. Many of these students continue to be successful in future chemistry courses and continue onward to professional programs in medicine, pharmacy, dentistry, physical therapy, or graduate school.

Admissions Exams

Since many School of Mathematical and Natural Sciences students are seeking admission into medical, dental, or pharmacy school, we often use those nationally normalized exams as a measure of program quality.

During the past year, six students took the Medical College Admissions Test (MCAT) and four students self-reporting scores back to UAM. The exam has sections in biological sciences, physical sciences, and verbal. Each section is worth a possible 15 points each. In the past, there was a writing component to the examination, but last year this was dropped. The composite scores (sum of three sections) for the students are 16, 22, 26 and 29 out of 45, which is equivalent to the 10th, 32nd, 55th, and 73rd percentile, respectively. One student scored very low on all sections of the exam. This student was not originally a pre-med major, but simply chose to take the exam to see how he would do. Those students usually do not do well. The remaining three students scored near or above the 50th percentile in both life sciences and physical sciences, which is typical for UAM students. One student scored exceptional well in verbal reasoning (95th percentile), which is not a typical verbal score for a UAM student. Another student scored above average in both physical science and life science, but scored 25th percentile on the verbal section. Considering this student's science scores were better than one of the students that was accepted into medical school, it seems that the low verbal score kept this applicant out of medical school.

Five students took the PCAT exam in the past year and self-reported scores back to UAM. The scores range from to 57th to 84th percentile. With all scoring above national average, these are excellent results. Six applied to pharmacy school, and all six were accepted. Three applied to and were accepted at multiple universities. The exam has sub-scores for verbal, biology, reading comprehension, quantitative ability, and chemistry. There is also no calculator allowed on this exam even though calculations are done in both the quantitative and chemistry sections. Typically, UAM students score highest in chemistry or biology sections of the exam. For most UAM students, the verbal and reading comprehension scores typically are lower. Students who are lifelong readers typically perform well. Students who are not lifelong readers score poorly, and very little can be done in the short term to improve this score. Over the past six years, UAM students have averaged 45th percentile on the verbal ability, 53rd percentile in biology, 48th percentile in reading comprehension, 39th percentile in quantitative ability, and 53rd percentile in chemistry. This year's group averaged 66th percentile in verbal, 74th percentile in biology, 49th percentile in reading comprehension, 56th percentile in the quantitative section, and 76th percentile in chemistry. We are pleased with this group's respectable sub-scores in all areas. With the acceptance of 6 students out of 6 applying, 34 of 35 applicants over the last ten years has been accepted into a college of pharmacy. Only 32 of the students actually attended pharmacy school, and all 32 have completed their program, or they are on-track to complete their degree.

Each year, one or more of the pre-pharmacy advisors attends the UAMS Pharmacy Advisors Meeting. The official meeting is very general in nature, but more importantly, faculty at the pharmacy school often interact

with advisors one-on-one to discuss strengths and weaknesses in the students coming from the 4-year institutions. A UAMS faculty member that was one of Dr. Bramlett's former students at another university told him that UAM students continue to do quite well. Typically UAM students scored near the top of the class on the organic chemistry evaluation exam that is given early in the term. They also do very well on the biochemistry topics. They are very pleased with the overall science background of the UAM students. They are especially pleased with the balance of chemistry and biology knowledge they possess. In recent conversations with the UAMS faculty, we were told that two of the students from UAM did exceptionally well in the Anatomy and Physiology related course. They did not indicate which students did well, so it is impossible to infer what courses at the undergraduate level led to their success.

One student took the Dental Aptitude Test (DAT) in the past year and self-reported their scores. The student scored above the national average on the exam; however, was declined admission. The student scored 89th percentile in Biology, 89th percentile in general chemistry, 75th percentile in organic chemistry, 74th percentile in quantitative reasoning. See Appendix A for individual scores. The lack of an in-state dental school makes it very hard to be admitted into dental school since there are only a limited number of positions held for Arkansas students.

Capstone Courses

Biology, chemistry, and mathematics all have a capstone course requirement. Respectively these courses are BIOL 4741, Biology Seminar; CHEM 4611, Chemistry Seminar, or CHEM 4691, Senior Research, or CHEM 4742, Advanced Laboratory Techniques; and MATH 4711, Mathematics Seminar. Students research a topic, utilizing information from both the library and their own class and laboratory experiences. The students must write a research paper and do an oral presentation, either locally or at a professional meeting. The Biology faculty grade all students in Biology Seminar. All chemistry faculty are involved in the grading of the papers and oral presentations in Advanced Lab Techniques.

This year, all of the graduating seniors had already completed Advanced Lab, or had received credit for doing undergraduate research. Advanced Lab was not offered, and therefore no data was received for that course.

Seven students involved in chemistry research did presentations at professional meetings. In each case, the students' preparation of the research poster or oral presentation was very good. Some students did similar presentations at multiple meetings. All demonstrated successful accomplishment of student learning outcomes. Due to Taylor Snider's academic performance and research success as an undergraduate student, she received a Research Associate position at Yale University, beginning in September 2015. Another graduating senior, Kiara Newhouse, has accepted a graduate position at Point Loma Nazarene University in San Diego, Ca. She will be in the Master of Science in General Biology program. Autumn Webb is completing an REU (Research Experience for Undergraduates) at the University of Arkansas. Don White, III, is completing a summer internship at Arkansas Children's Hospital. These positions are extremely competitive. These students general academic performance, and performance in their research areas have made them very successful in getting these highly sought after positions. The table below shows the meetings and titles of the presentations.

Name	Meeting	Title
Taylor Snider (with Don White, III at the Arkansas Space Grant Consortium and Posters at the Capitol)	Mid-South Inorganic Chemists Association Fall Meeting, Monticello, AR, 2014 and 2014 Arkansas INBRE Research Conference, Fayetteville, AR, 2014 and NASA-Arkansas Space Grant Consortium Annual Symposium and Posters at the Capitol, Little Rock, AR, 2015	Determination of Fatty Acid Content in Native Arkansas Algae
Kiara Newhouse	UAM Research and Scholarship Forum, Monticello, AR, April 2015 and The American Chemical Society National Meeting, March 2015	Effect of relative humidity on HCl formation from the reaction of H ₂ SO ₄ , HNO ₃ , and NaCl
Kiara Newhouse	Arkansas Academy of Sciences, Arkadelphia, AR, April 2015	Investigating the effect of stratospheric radiation on seed germination and growth
Danielle Cook and Esgar Jimenez	Posters at the Capitol, Little Rock, AR 2015	Construction of a Large Scale Photovoltaic Hydrogen Gas Generator
Cynthia Robinson & Autumn Webb	NASA-Arkansas Space Grant Consortium Annual Symposium	Cabbage inhibits nitrate reduction in celery during storage

In Mathematics, two students took the capstone course, Mathematics Seminar in the past year. The students in the course must write a research paper and perform an oral presentation, demonstrating knowledge and understanding in a specific area of mathematics. Both students did exceptionally well in all aspects of the course. Both students passed the content areas of the Praxis exam and have been accepted into the UAM Master of Arts in Teaching program. Over the past ten years, 35 of the 40 math graduates have entered a graduate program of some sort.

Biology Seminar is used as the capstone course for the Biology major. Seventeen students enrolled in the course in the 2014-15 academic year. Most of the students did an excellent job finding related references, writing the paper, and presenting the information in the seminar. All students had to do minor re-writes on the paper to get the appropriate references and follow the proper format. Four students withdrew from the course. Nine of the remaining students did very well. Four students were asked to do major re-writes of their paper. All eventually reached the acceptable level and performed adequately well on the presentation.

Fourteen biology majors were involved with research projects that ended with the presentation of their results at professional meetings. Some of the presentations were oral presentations made by an individual while others were poster presentations involving several students. The biology faculty felt that all students displayed very good to excellent knowledge of the topics and performed exceptionally well in preparing the poster or

digital presentation. One poster was named the Outstanding Biology Poster at the Arkansas Academy of Sciences. While many of the students involved with research are underclassmen and will be returning, the three graduating seniors were very successful in their post graduate endeavors. Misty Hill has been accepted into the Harding University College of Pharmacy. Douglas Holland has been accepted into a Dr. of Chiropractics program and two masters programs. He has chosen to attend Texas A&M International at Laredo Texas for the Masters in Biology. Marla Moland has accepted a research internship at the Food and Drug Administration's National Center for Toxicological Research. Melodie Sandlin, and underclassmen, is just completed an internship at the Little Rock Zoo. The presentations are listed below:

Name	Meeting	Title
Roberto Bernal and Frederica Davidson	UAM Research and Scholarship Forum, Monticello, AR, April 2015 Arkansas Academy of Science, Arkadelphia, AR, April 2015	Evaluation of the plastid gene <i>ccsA</i> for use in delimiting species of alga, <i>Nannochloropsis</i>
JaKyra Austin, Alice Cordona-Otero, Miguel Taylor	UAM Research and Scholarship Forum, Monticello, AR, April 2015 Arkansas Academy of Science, Arkadelphia, AR, April 2015	Diversity of freshwater <i>Nannochloropsis</i> (Eustigmatophyceae) evaluated by sequence analysis of the plastid gene <i>ccs1</i>
Nelsha Peterson, Freddie Rivera, Samual Vincent, Misty Hill	UAM Research and Scholarship Forum, Monticello, AR, April 2015 Arkansas Academy of Science, Arkadelphia, AR, April 2015	A comparison of the communities of the alga, <i>Nannochloropsis</i> (Eustigmatophyceae), in different lakes in North Dakota and Minnesota.
Douglas Holland, Melodie Sandlin	UAM Student Research Forum, Monticello, AR, April 2015	DDT and DDE Present in the Fur of Rafinesque's Big-eared Bats (<i>Corynorhinus rafinesquii</i>) and Hispid Cotton Rat (<i>Sigmodon hispidus</i>) in an Agricultural Region of Southeastern Arkansas
Seth St. John, Devon Wray	Arkansas Academy of Science, Arkadelphia, AR April 2015 This poster was named best overall Biology poster at the conference	Analysis of a Ribosomal Protein Gene in Tumor Development
Marla Moland	Posters at the Capitol, Little Rock, AR, Feb 2015	Effect of Cisplatin on Zebrafish (<i>Danio rerio</i>) Embryos and Larvae

Overall, the School of Math and Sciences had numerous research projects involving students. From these projects there have been 20 professional presentations by students, 4 publications in refereed journals, and 9 grants that had contributions from student researchers. These students are recognized for being excellent students and are highly sought after for graduate programs. Three of the biology/natural science students were accepted into graduate programs with all receiving assistantships. The biology/biochemistry double majors continue to be exceptionally successful with two students being accepted into medical school, six students

accepted into pharmacy school. Three Mathematics graduates have been accepted into the post baccalaureate teaching preparation programs, and one was accepted into the graduate program at the University of Arkansas.

4. Based on your analysis of student learning data in Question 3, include an explanation of what seems to be improving student learning and what should be revised.

Remedial mathematics has been a difficult area on this campus to say the least. Typically, these classes have students with poor attitudes, no motivation, poor study skills, and even poor attendance. With the lack of effort from the students, it is likely that the practices used by the instructor are not going to be successful. The online homework and assessment tools that have been adopted in the last several years, such as ALEKS (Assessment and Learning in Knowledge Spaces), MyMathLab, and WebAssign have done little to help the success rate; however, because these programs document the amount of time actually spent working problems and getting online tutoring, it supports the claims by the faculty that the students aren't putting in the effort.

In Intermediate Algebra, the students are required to take the ASSET Test as the end of course final exam. The course pass rates have not increased significantly with the adoption of the online homework; however, a higher percentage of students are attempting, and some are passing the end of course exam without passing the course. When combining the number of students that pass the course and the number of students passing the end of course exam, the overall success rate in intermediate algebra for students being allowed to proceed to college level math is approximately 40% of those initially enrolled, which is almost identical to the previous year. Prior to the implementation of ALEKS and the workbooks, the success rate in Intermediate Algebra was approximately 25%. Although the current 40% success rate represents a small increase, we are not proud of the fact that 60% of the initial enrollees are not successful. We feel that a large part of this is due to lack of student effort. This is confirmed when reviewing the amount of time spent on the ALEKS program. The ALEKS program logs the amount of time that work is done for each student, and it is clear that the bulk of the students that are unsuccessful have put in very little or no time. On the other hand, students that have put in the recommended number of hours typically do better in the course. Faculty in both Introduction to Algebra and Intermediate Algebra have indicated a strong correlation between hours logged and overall grade in the course. The exceptions to the previous statement are typically non-traditional students that struggle in mathematics. Many of the students that receive an F in the course come to class on occasion, log very little time on ALEKS, and simply quit coming to class at some point in the semester. The University's retention plan will now require that roll be taken every day in every class. There are hopes that this leads to better class attendance, and more participation.

Introduction to Algebra went through similar changes with an in-house written text, and coupling with ALEKS. The package is far cheaper than the previous textbook, and like Intermediate Algebra, the students can do on-line homework and practice for exams. It's built in assessment lets the students know which topics they have mastered. Results similar to those found in Intermediate Algebra have been found, with those putting in more time being far more successful than those that are putting less or no time. In Introduction to Algebra there isn't a nationally normed end of course examination as there is in Intermediate Algebra; however, a team written comprehensive final examination is given. Typically about 40% of the students that complete the course (i.e. take the final) pass with a grade of C or higher. Based on number of students who start the term, the success rate is typically around 20% passing with a C or higher. This year was no different. The success rate for the Fall 2014 term was down slightly to 20.7% for the Monticello sections from 22.6% in the previous spring. The Crossett and McGehee sections faired slightly better at 35.8%. One section of the off campus courses had 11 of 13 pass which greatly increased the average. Without that class, the off campus numbers were similar to the on-campus sections. We hope that the increase in pass rate over the past year is a

result of the efforts of the faculty and improvements made in the workbooks; however, we are continuing to make improvements on the text and the software. This year, the workbooks were greatly simplified in hopes of making them less overwhelming to the remedial student. During the past two semesters, we have had a faculty member assigned to the tutor lab for several hours per week. The students that choose to use this service have been very successful (self-reported); however, only a small percentage of the students take advantage of this situation. The faculty are revisiting the mandatory lab time, or required tutoring for these classes.

The math faculty teaching developmental courses meet regularly, and have ongoing discussions about how things should be covered in their courses. Everyone follows a pacing guide that is agreed upon at the start of the term. This creates a need to alter some topic coverage in order to get all the topics seen by the end of course ASSET exam. This requires changes in workbooks and the ALEKS package to match the coverage.

The Survey of Math courses have been using an online homework system, My Math Lab, which provides immediate feedback. Some students, especially those that were trained on ALEKS, accepted the software rather easily. Others resisted using the online homework; however, most at least attempted their homework. A workbook was developed for the course and used during the year. During the Fall 2014 term 56.7% of the students passed the course with a D or higher, excluding early college high school sections. Continued upgrades to workbook are currently being done. There is also an effort to encourage students into this course as their general education math instead of college algebra. We strongly feel it is more appropriate than College Algebra.

Last year, we considered bringing more topics into Chem I from Chem II in order to minimize the difficulty gap between the two courses. We tried to cover an additional chapter in the Fall 2014 term; however, the faculty felt that they were simply moving too fast for the students to be able to grasp the material. It was decided by the faculty members that teach those courses to leave the material as is, and possibly look at other material that can be taught in Chem I. The pace and difficulty of the material in Chem II is greatly higher than Chem I; however, many of the weaker students were "weeded out" in Chem I, so it really isn't as big of a problem as once perceived. Mathematically, Chem II is a much more difficult course, and there is little that can be done to change that fact.

Last year, Organic Chemistry moved away from online homework. The instructor felt that the students were not nearly as prepared as when doing pencil and paper homework. This year, student performance increased as expected. We will remain using the pencil and paper homework.

Relatively few changes are made to our courses or programs based on performance on the professional exams such as the PCAT or MCAT exam. The scores on those exams are affected by many variables other than course content knowledge. Some of these factors are: reading speed and comprehension, tendency to do well on standardized exams, and the amount of review time spent on each subject before the exam. The faculty and staff at UAMS do tell us that students that complete our programs perform well in their programs. They also indicate that students that take equivalent courses at less rigorous institutions typically do not do as well in their programs. We continue to look at the calculus content on the PCAT exam since our students have not done well on the quantitative portion of the PCAT over the past several years.

In the capstone courses there are changes made periodically. We plan to take some of the emphasis off of the specialty topics covered in the class, and spend more time the written report required by each student. The students are still exposed to specialty lab techniques and instrumentation that they are likely to see in graduate

school or in the workplace; however, we are not covering that material at the same depth as before.

Students are very much encouraged to present their research findings at regional and national meetings. Students who take part in scholarly activities other than normal course work have a much deeper understanding of the topics covered in the classroom. We have made more funding available for student travel so that more students can participate in professional meetings. Five years ago, we rarely had students presenting at meetings. The previous three years we have had approximately 15 students involved with one or more presentations. This year, 20 students did presentations at meetings. The Research Program for Minority Students (RPMS) was grant funded originally; however, it is now funded totally by UAM and external grants. The program has been hugely successful at getting students into summer research programs and graduate programs.

5. Other than course level/grades, describe/analyze other data and other sources of data whose results assist your unit to improve student learning.

The School of Mathematical and Natural Sciences uses a variety of other measures to assess the quality of our programs. These measures include job/graduate school initial placement, senior exit surveys, alumni surveys, and student evaluations. We rarely get information back from employers; however, we attend annual meetings with schools that host professional programs. Their faculty and administrators verbally provide very general information about trends they see among the students coming from our institution. This information is intentionally very general in order to not violate FERPA laws.

When reviewing the Math and Science graduates over the last several years, many of the students have been very successful in their initial placement. Several students have attended graduate school or a professional school, others have found positions in industry, while others, especially in mathematics, have chosen to enter the field of education. With 2 out of 4 accepted into medical school this year, UAM ends its string of 100% acceptance for 11 years. One of the two that was not accepted into medical school due to a low MCAT exam has accepted a two-year Research Associate position at Yale University. The other that did not get accepted will continue working as a licensed physical therapist. In 2014-15, 6 out of 6 students were accepted into pharmacy programs. The pharmacy acceptance rate over the past 10 years is 97% (34 out of 35). We feel that every applicant that has truly deserved to be admitted has been, and even a couple that were marginal have been admitted. Applicants to dental school programs have been slightly less successful, mainly due to the fact that our students must apply to out of state programs. This year, our one applicant (a 2013 graduate) to dental school scored well above national average on the DAT exam, and was still only an alternate at the one school that he applied. He is applying to several schools this year, and will very likely be accepted next year. See Appendix B for initial placement information of Math and Science graduates and early acceptances from the current year.

The School requests all graduating Math/Sci. students to visit the dean to have a brief exit interview on their experiences at UAM. While only a small number of students take advantage of this opportunity to provide input, there are many common comments among the interviewees. This year, 8 students completed the survey. Several students were critical of the condition of the Science Center. Two students complained that the height of the stalls in the restrooms were too low and that people could easily see over the wall. Two students also complained about the lack of time between the term ending and finals beginning in the Spring term. The general responses toward quality of teaching are outstanding. Essentially every person responding felt that their level of preparation for their upcoming graduate program, professional school, or job was outstanding. Most were very pleased with their post-graduate positions they had received. To see the exit

interview/graduate surveys completed within the last twelve months, go to Appendix C for student responses.

Alumni surveys were once sent out with newsletters mailings, but the newsletter has not been sent out in several years due to time required to put it all together and mailing costs. Often, when students reconnect with the School of Math and Sciences, an Alumni Survey is sent out via email. This year, no graduate surveys were returned, even though a few were sent to students that sent us updated information. Several former students were more than willing to provide verbal comments during telephone or face to face conversations. This year, a doctor in Warren, AR that attended UAM in the early 2000's praised UAM's biology program. She indicated that Dr. Wiley's anatomy course and Dr. Sims' vertebrate physiology courses really prepared her for medical school. In a recent conversation with two former students that are now pharmacists, Dr. Taylor was praised for his outstanding depth of coverage in both Organic and Biochemistry.

Even though it is more informal, we do listen to current student comments. We do a lot of individualized advising in Math and Sciences because so many of our students are applying to specific programs out-of-state and therefore have slightly different prerequisites. Often students come to us with problems caused by poor advising from another unit where a student was wrongly assigned, or started as a general studies student. While most of these problems were created based on information that the students provided on an application, we could still do a better job by catching those mistakes early. The most common mistakes that we see are students that are planning on attending medical school, pharmacy school, or an allied health program being put into the wrong biology, wrong chemistry, or not put into these classes at all. This essentially puts the student a year behind. Since students can apply to these programs from any major, it is important that they be listed in WeevilNet as pre-med and as their major. This year, some improvements were made in this area. Because of financial aid restrictions, pre-med students are automatically registered as biology majors. This can be changed, but it does make students aware that they need a specific major. Pre-pharmacy students are also registered as chemistry majors, pre-engineering are co-registered as math majors, and allied health students are co-registered as natural science (life science option) students. While some change their major, many work toward those degrees. We strongly advise all of these students toward the Biology/Biochemistry double major.

We try to monitor the progress of our graduates by staying in contact directly with the students, and also by contact with faculty in their professional programs. The Pre-Med Advisors Meeting held at UAMS every spring gives us general information about the performance of our students, but information about individual students is kept confidential. This year, they mentioned that the UAM students were performing quite well, with a second year student being the number one student in the class. The UAMS and Harding University Colleges of Pharmacy each provide similar information about our students. Harding reported that all of our students had a good year and are extremely pleased with the UAM student's performance. UAMS representatives said that all the UAM students were doing very well in their coursework.

At professional meetings, our faculty members often meet faculty from graduate programs that have accepted our students. Again, we cannot get specific information about a student, but we do get generalized information about what we can do to improve our programs. A specific recommendation that was recently expressed by a faculty member from the chemistry program at University of Arkansas was that we implement more assignments in which our chemistry majors use chemical literature. In response to that recommendation we have put more emphasis on the research paper portion of Advanced Lab Techniques. We are also encouraging all majors to take part in undergraduate research projects, which will involve more contact with the chemical literature and also scientific writing. In the Master of Arts in Teaching (MAT) program, they want the students more exposed to educational settings, and possibly introduce some pedagogy into their curriculum. In response to that request, the School of Math and Sciences recommended the development of the minor in

Teaching and Learning. We are encouraging this minor for all majors that are considering a career in education. Although we have had no Math and Science majors choose this as a minor, we have had several students take courses from this minor as electives. Several of the students have indicated that they feel this better prepares them for the MAT program.

Advanced Calculus or Real Analysis (similar course, different name) was recommended by recent program reviewers. Last fall, an Advanced Calculus course was offered as a special topics course. The course was approved by Curriculum and Standards for approval as a permanent course, and is a required course for the mathematics degree. Another recommendation was to do something that would give the students more programming experience. Last fall, a proposal to make Programming Logic and Design, and another course in a computer programming language supportive requirements for the math degree was sent forth to Curriculum and Standards and approved.

6. As a result of the review of your student learning data in previous questions, explain what efforts your unit will make to improve student learning over the next assessment period. Be specific indicating when, how often, and by whom these improvements will take place.

The General Chemistry I and II classes are going to do homework on a daily basis instead of fewer larger homework sets. Instead of online, paper homework will be taken up and graded. The more consistent approach and regular feedback should improve student learning and improve performance on exams. Answer keys will be provided on Blackboard after due dates so that students can check their work immediately and seek additional help if needed.

All faculty in Math and Sciences will implement selected portions of the First Four Weeks initiative that has been proposed by the Provost. Many of the best practices listed are already used by most of the faculty in Math and Sciences; however, there are hopes that the adoption of additional best practices will improve first year retention.

Successful students are created by successful advising. We will continue to do group advising sessions. This works especially well for the pre-professional students. Currently, they are planned for the Tuesday or Thursday activity hour (12:30-1:30). The idea is to provide better information on what is needed to be accepted into the professional programs. Hopefully, it will help students make an earlier decision on their career choice, and provide an avenue for early intervention for students that are struggling. Admissions representatives from the UAM Master of Arts in Teaching program, UAMS College of Medicine, William Carey College of Osteopathic Medicine, UAMS College of Pharmacy, and Harding University College of Pharmacy will provide a program for our students. The Sigma Zeta Math and Science Honor Society students are also planning a student advising session to help students plan their path to professional school or a graduate program.

Some of the remedial mathematics faculty are planning to try to use some class time to take students to the computer lab and actually work with them on ALEKS. Since there is specific amount of material to be covered and limited time, the amount time spent in the lab will be small; however, there are hopes that it will give the students the background to be able to log in on their own time and complete the needed work.

7. What new tactics to improve student learning has your unit considered, experimented with, researched, reviewed or put into practice over the past year.

In chemistry, work continues on developing electronic lectures that the students can watch on their own time, which would allow class time to be used more for problem solving and critical thinking activities. Some voice-over Powerpoint (VOP) were developed and used for tutoring Advanced Placement (AP) students around the state. They didn't receive a huge amount of use, but the response from those that did were fairly good to very positive. Lynn Fox used VOPs extensively to provide additional study opportunities for her students in mathematics. She used a "pen" that could be used to write digital information to the computer screen and record her voice as she explained the material being covered. This was very useful in making lecture content available outside of class. She has since taken this material and continued to upgrade it for her online courses in Survey of Math which have been taught for two terms. She has indicated that she feels that a motivated student could learn the material very well from her instructional materials; however, she feels that the lack of availability of proctored testing is a problem that must be overcome if UAM is going to remain in the online arena. This summer, she required that all tests be taken face-to-face.

Pharmacology course lectures were recorded for an entire semester and made available to students to watch on their own time. Comments from students were very positive and Dr. Taylor was praised for this effort; however, a small number of complaints were received about the clarity what was written on the board during class. A few students that needed Pharmacology this spring, but couldn't attend class regularly due to a conflict were allowed to view the taped lectures from last year. They performed fairly well in the course despite the lack of face-to-face contact; however, all students said that they would not recommend this compared to the normal face-to-face class.

Last year, the building was equipped with wireless technology. We hope to equip the labs with wireless projectors at some point; however, that is being put on hold at this time due to inconsistency in the wireless signals. There has also been some consideration of putting monitors in the labs instead of projectors and screens. Many feel the increased resolution would well worth any extra expense in the initial costs. This would also allow the images from the new microscopes to be shown as demonstrations.

Several faculty in Math and Sciences are using the first day of class each semester as a chance to talk with students about careers and what courses they need to be in. So far, this has been a positive event in which several students have changed courses in order to be in the proper course for their major. Much time is spent on the level of effort required to be successful in our courses. A lot of effort is being spent on topics that pertain to retention of students. Many of these practices are being implemented into the "First Four Weeks" initiative that is being implemented by the Provost.

8. How do you ensure shared responsibility for student learning and assessment among students, faculty, and other stakeholders?

Students are continually given feedback on their progress throughout each course by posting of grades on exams, quizzes, homework, lab assignments and other assignments. Some faculty post detailed answer keys with suggestions on Blackboard. Students meet with advisors at least once per term, and more realistically, several times per term. The students provide feedback to the unit in the form of student evaluations. The online student evaluations provide data comparison and student comments to the dean and faculty member. Many students meet with Dean Bramlett to discuss classes, progress toward a degree, committee references for

those applying to professional school, and often just informally chat. All graduating seniors are given an invitation to meet with Dr. Bramlett for an exit interview to discuss their experience within the School of Math and Sciences. See Appendix C.

Faculty are encouraged to maintain good communication with their students and properly post up-to-date grades. At the encouragement of the dean, several faculty now pass out mid-term grade sheets to students in the lower level classes. This has been a huge success within the School. The faculty are also involved with collection of data and reporting to the appropriate representative on the Math and Science Assessment Committee. This information consists of grades and other feedback related to student performance in the classroom, scores from standardized national exams in general and organic chemistry, scores from ASSET end of course examinations in Intermediate Algebra, and data collected relative to capstone courses in each major.

9. Describe and provide evidence of efforts your unit is making to recruit/retain/graduate students in your unit at the University.

We have certainly become more active in recruiting students over the past few years. Dr. Bramlett continues to be active with the Arkansas Advanced Placement programs. He provided instruction at several Advanced Placement test preparation workshops. He provided instruction for over 70 Advanced Placement Chemistry students and their teachers at prep sessions for El Dorado and Star City schools. The Star City session was hosted on the UAM campus with approximately 60 Biology, Chemistry, and Physics students attending.

At each site, 5 hours of instruction were provided over 2-4 different topics. At the December workshop, the topics covered were stoichiometry, electrolytic cells, galvanic cells, and net ionic equations. The topics at the January session were kinetics and thermodynamics. For Star City buffer solutions, nuclear chemistry, and atomic structure were covered. At each event, a few minutes were taken to recruit students into programs at UAM.

In the past, guest teaching appearances have seemed to work well in attracting students into the Math and Science majors. Several students from Hamburg attended UAM from the AP Chemistry class that Dr. Bramlett worked with in 2009-10. In the following years, it was effective in recruiting students from Star City, Crossett, and Rison. This year, El Dorado, Star City, Monticello, Dumas, and Hamburg were visited by Dr. Bramlett.

We hosted the Regional Mathematics Contest and the Regional Science Fair. Science Fair information can be found at <http://www.uamont.edu/pages/school-of-mathematical-and-natural-sciences/southeast-arkansas-regional-science-fair/>. At these events, faculty and representatives from Admissions were given the opportunity to meet with students and discuss the potential to attend college at UAM.

Dr. Bramlett, along with Dr. Andrew Williams, and Tracie Jones of the Education Renewal Zone, is forming a southeast Arkansas chemistry teachers group that will meet monthly. The goal is to provide resources for teachers so that the students will be better prepared when they college. Recruitment of students to UAM will also be an underlying effort. Instructional materials from various UAM courses will be provided to teachers as a resource for those teaching advanced placement courses.

To retain students, the faculty in Math and Sciences continue to give freshmen special attention during academic advising and also in the first day of freshmen level classes. This practice will be greatly expanded as

the First Four Weeks initiative is implemented. They are given very specific information on expectations in each course, and also for each major or pre-professional curriculum, such as curriculum guides. These are available on the UAM website at: <http://www.uamont.edu/pages/school-of-mathematical-and-natural-sciences/degree-programs/>. Curriculum guides for the specific majors can be found in the UAM Catalog.

The School of Math and Sciences puts a great emphasis on getting students involved with research programs. As early as the freshmen year, faculty in Math and Sciences identify students that would benefit from being involved in research programs. The students can earn extra money, but it also provides an opportunity to forge excellent relationship with a faculty mentor. Last year, about 25 students were involved with research projects. Twenty of those students presented their research findings at state, regional, or national meetings.

Scholarships are also provided by the School of Mathematical and Natural Sciences. In the upcoming year, \$25,560 will be awarded to approximately 40 students. These awards greatly reduce the financial burden on those that are attending college, thus improving retention. They also provide recognition for the top students in our unit. The scholarships that will be given during the 2015-16 academic year are:

Scholarship	Year Budget
Gregory A Devine Memorial Scholarship	\$1,590
Mr. Jim Huey Scholarship	\$746
Mathematics & Physics Scholarship	\$830
Jack H Tharp Scholarship	\$1,590
William & Anna Hill Scholarship	\$3,784
James Gordon Culpepper Scholarship	\$1,194
Dr Albert L Etheridge Scholarship	\$1,244
Victoria Ku Scholarship	\$1,065
Wilburn C. Hobgood Scholarship	\$1,111
Herman C. Steelman Scholarship	\$867
Dr. Van C. Binns Scholarship -Pre-Med	\$2,099
Dr. Paul A. Wallick, Sr. Scholarship	\$711
Mathematics Scholarship	\$671
Miller Sisters Scholarship - Science	\$1,909
Anthony T. & Faye Chandler Scholarship	\$295
Carolyn Hibbs Thompson Chem Sch	\$2,048
Dr. C. Lewis & Wanda W. Hyatt Sch	\$921
Robert H. Moss Endowed Scholarship	\$707
Earl K. Phillips Math & Sciences Sch	\$1,188
Bland Scholarship	\$1,000

The School of Mathematical and Natural Sciences also uses both institutional and federal work study funds to employ as many of our students as possible. They are employed as general office help, math tutors, lab teaching assistants, graders, museum and herbarium help, and research assistants. It is a strong belief that the more the student works on campus, the stronger the connection the student will have with the University, and the more likely the student will be to graduate.

We also use the Biology Club, the Medical Science Club, Sigma Zeta, and the Math and Physics Club as social hooks for students. Getting involved in these clubs gives them more of a purpose to be here other than just attending classes. It also gives them a glimpse of the future that a degree in the Math and Sciences areas can provide. These clubs bring in speakers from other universities and from industry. They do community service

projects, such as highway clean-up, Saline River stream team clean-up events , and Relay for Life. Last year, the Biology club raised money to help build a clean water supply for an African village. They have social events such as football tailgating and cookouts.

The overall goal of the School of Mathematical and Natural Sciences is to produce successful students, which in most cases implies graduating with a degree; however, it is ironic that the most successful students often gain admission to a professional school prior to completing their degree. We do allow courses to transfer back for degree completion purposes within the guidelines set by the University (see page 62, 2015-16 UAM Catalog); however, especially in allied health programs, those students do not have enough hours to qualify. Those students are encouraged to complete the associates degree, but many do not choose to take the specific remaining courses to do so.

In most of the Math and Science majors, there are a fairly large number of students who change their major, often to majors in other units, after their first semester or first year. The rigors of chemistry, biology, math and physics often are greater than the student expected. Many people enter UAM with an interest in pharmacy or medicine, but after one or two courses decide that their skill level isn't adequate for those pursuits. Those students are often encouraged to change their major to something else. When these students change majors, this is not necessarily a retention problem since they are likely to graduate in another major; however, since we do not attempt to track these students, our numbers of graduates relative to the numbers of majors does not look good. For numbers of majors and numbers of graduates over the past several years, see Appendices D & E. After the freshmen year fall-off, a fairly large percentage of the students do graduate and are successful in industry, a graduate program, or in the field of education. For a list of initial placement of our graduates from the current year, see Appendix B.

Letters and emails have been sent to several students that have completed a significant portion of their degree and then dropped out. Options are reviewed to see if prior biology and chemistry majors are closer to a Natural Science or the Bachelor of General Studies degree. In the past year, several students have been contacted about the possibility of completing their degree through the Bachelor of General Studies major, or using the professional school courses to complete their degree. Two students qualified for the Bachelor of General Studies degree without even taking an additional course.

**Appendices for the
Annual Assessment Report
2013-2014**

School of Mathematical and Natural Sciences

- Appendix A Nationally Scored Exam Results
PCAT, MCAT, and DAT Scores
- Appendix B Initial Placement Information
- Appendix C Exit Surveys
- Appendix D Number of Graduates
- Appendix E Number of Majors

Appendix A

Nationally Scored Exam Results

PCAT Scores

MCAT Scores

DAT Scores

GRE Scores

PCAT Exam Scores

Student A Test Date July 2014 The Psychological Corporation

Multiple Choice Scores	Scaled Score	Percentile Rank
Verbal Ability	409	63
Biology	435	92
Reading Comprehension	406	62
Quantitative Ability	393	33
Chemistry	426	85
Composite	412	72

This student was accepted for 2015 admission into pharmacy school at UAMS and Harding University. The student will be attending UAMS.

Student B Test Date June 2014 The Psychological Corporation

Multiple Choice Scores	Scaled Score	Percentile Rank
Verbal Ability	451	98
Biology	411	63
Reading Comprehension	419	84
Quantitative Ability	396	39
Chemistry	418	76
Composite	419	84

This student was accepted for 2015 admission into pharmacy school at UAMS.

Student C Test Date June 2014 The Psychological Corporation

Multiple Choice Scores	Scaled Score	Percentile Rank
Verbal Ability	403	52
Biology	435	92
Reading Comprehension	402	54
Quantitative Ability	404	55
Chemistry	415	72
Composite	412	76

This student was accepted for 2015 admission into pharmacy school at UAMS and Harding University. The student will be attending UAMS.

Student D Test Date June 2014 The Psychological Corporation

Multiple Choice Scores	Scaled Score	Percentile Rank
Verbal Ability	412	68
Biology	430	89
Reading Comprehension	388	29
Quantitative Ability	416	77
Chemistry	422	81
Composite	414	76

This student was accepted for 2015 admission into pharmacy school at UAMS.

Student E Test Date January 2014 The Psychological Corporation

Multiple Choice Scores	Scaled Score	Percentile Rank
Verbal Ability	401	49
Biology	405	51
Reading Comprehension	392	36
Quantitative Ability	416	77
Chemistry	411	65
Composite	405	57

This student was accepted for 2015 admission into pharmacy school at UAMS and Harding University. The student will be attending UAMS.

MCAT Test Scores

Student A

Test Date	July 2014	Score	Percentile
	Verbal Reasoning		
	Physical Sciences		
	Biological Sciences		
	Total Score	20	23

This student was declined for admission in 2015 at UAMS. Subject subscores were not provided by the student.

Student B

Test Date	July 2014	Score	Percentile
	Verbal Reasoning	6	26.1
	Physical Sciences	8	54.7
	Biological Sciences	8	41.1
	Total Score	22	32

This student was declined for admission in 2015 at UAMS, William Carey, and Lincoln Memorial; however, the student accepted a Research Associate position at Yale University

Student C

Test Date	July 2014	Score	Percentile
	Verbal Reasoning	11	95.3
	Physical Sciences	7	40.2
	Biological Sciences	8	41.1
	Total Score	26	55

Student D

Test Date	July 2014	Score	Percentile
	Verbal Reasoning	9	66
	Physical Sciences	10	79.2
	Biological Sciences	10	72.6
	Total Score	29	72.6

This student was accepted for admission in 2015 into the Ph.D./M.D. program at Yale University and the University of Texas-San Antonio. The student will be attending UTSA.

DAT Test Scores

Note: Standard Scores used in the testing program range from 1 to 30. Only standard scores are reported to dental schools.

Academic Average is the average of the five scores rounded to the nearest whole number, QR, RC, B, GC, OC

Total Science score is a standard score based on all 100 questions in Biology, General Chemistry, and Organic Chemistry
It is not the average of the three science standard cores.

Student A

August 2013 Test Date

	Score	Percentile
Perceptual Ability	22	97
Quant. Reasoning	18	74
Reading Comp.	23	92
Biology	20	89
Gen Chemistry	21	89
Org Chemistry	19	75
Total Science	20	88
Academic Avg	20	86

This student was selected as an alternate for the 2015 entering class at UT-Memphis. The student was not accepted.

Appendix B

Current Year Placement of Graduates 2014 -2015 Graduates and Other Placement

Graduate	Hon	Conferral Date	Major 1	Major 2	Minor	Initial Placement
Student 1		5/8/15	Biology		Natural Sci	UALR School of Nursing
Student 2	M	5/8/15	Biology	Chemistry (Biochem)		UAMS College of Medicine
Student 3	M	5/8/15	Chemistry (Biochem)			UAMS College of Pharmacy (P)
Student 4		5/8/15	Natural Science (Life)			Continuing employment at current job
Student 5	M	5/8/15	Biology	Chemistry (Biochem)		Continued prep for app to med school
Student 6	C	5/8/15	Biology	Chemistry (Biochem)		Work 1 year, then apply to grad school
Student 7		5/8/15	Biology	Chemistry (Biochem)		UAMS College of Pharmacy
Student 8		5/8/15	Chemistry (Biochem)			UAMS College of Pharmacy (P)
Student 9		8/4/14	Mathematics		Chem & Phys	UAF Mathematics Masters Program
Student 10	C	5/8/15	Biology	Chemistry (Biochem)		UAMS College of Pharmacy
Student 11		5/8/15	Biology	Chemistry (Biochem)		MS Biology at Texas A&M International
Student 12	C	12/17/14	Mathematics		Nat. Science	UAM MAT Program
Student 13		8/4/14	Mathematics		CIS	UAM MAT Program
Student 14		12/17/14	Natural Science (Life)			Research Intern Nat. Center for Tox. Res. Jefferson, AR
Student 15		5/8/15	Natural Science (Life)			Seeking employment
Student 16		8/4/14	Chemistry (Biochem)		Nat. Science	Univ. College of Pharmacy
Student 17		5/8/15	Natural Science (Life)			UAMS Dental Hygiene (P)
Student 18		5/8/15	Chemistry (Biochem)			ULM-College of Pharmacy (P)
Student 19	C	5/8/15	Chemistry		Math	Yale University Research Associate
Student 20	C	5/8/15	Mathematics		Coaching	UAM MAT Program
Student 21	S	5/8/15	Chemistry (Biochem)			UAM College of Medicine (P)

Acceptances to professional schools by students other than 2015 graduating class

Student #	Class	Major 1	Major 2	Minor	Position
Student 22	Junior	Biology	Biochemistry		UAMS College of Pharmacy
Student 23	Junior	Biology	Biochemistry		UAMS College of Pharmacy
Student 24	Sophomore	Biology	Biochemistry		UAMS College of Pharmacy
Student 25	Post-grad	Mathematics	Biochemistry		Purdue University Astronautics and Aeronautics Program
Student 26	Post-grad	Biology	Biochemistry		UTSA Ph.D./M.D. program
Student 27	Post-grad	Biology		Nat. Sci	Dr. of Chiropractic Medicine, Parker Univ., Dallas, TX

For honors: C= Cum Laude, M = Magna Cum Laude, S = Summa Cum Laude

Appendix C

Graduating Senior Exit Interviews

Mathematical and Natural Sciences Graduate Survey

Your response is very important to the internal assessment of our programs. Please complete the following. Feel free to give specific examples related to your job, your continued education, or about UAM courses that you have taken. Feel free to attach additional pages if needed. This page is also available on the Math/Science homepage and may be submitted by email as an attachment

What are your plans after graduation? (or what have you done)

Pharmacy school at UAMS, and possibly do the MBA through UALR at the same time. After that, I want to work in a retail pharmacy, anywhere.

Do you feel that UAM prepared you for your professional life? *Yes, very much so. I went to OBU for one year before coming to UAM. I was concerned at first, but quickly realized that I was going to get an excellent education in Math and Sciences. I was very prepared for the PCAT exam, and I feel very prepared for pharmacy school.*

What did you like most about the School of Math and Sciences? (Strengths) *Preparation of the teachers, good relationship with all of my teachers. Excellent advising*

What did you like least about the School of Math and Sciences? (Weaknesses) *The tests always seem to land on the same days! For any transfer student, it is difficult because all the courses have slightly different names and numbers. It was tough at first figuring out what was going to count as another course.*

What changes do you recommend? *I would absolutely change the final exams starting on Wednesday in the spring. That is totally ridiculous.*

Is there anything else you would like to add? *I can't imagine a college that would better prepare anyone better for a science field than UAM.*

The following information is optional but highly recommended:

Name: *Anonymous at the request of the student*

Major(s): _____

Minor(s): _____

E-mail address _____ facebook user name? _____

Postal Address _____ Telephone number _____

Feel free to drop in for a visit. There's usually coffee available. Students and faculty have tailgating at football games, etc... You are always welcome to join in. Keep in touch!

Please drop off your survey to the Math/Science Office in the Science Center, submit by :
Attaching to an email to Bramlett@uamont.edu or mail to:

Graduate Survey
School of Math and Sciences
P.O. Box 3480
Monticello, AR 71656-3480

Mathematical and Natural Sciences Graduate Survey

Your response is very important to the internal assessment of our programs. Please complete the following. Feel free to give specific examples related to your job, your continued education, or about UAM courses that you have taken. Feel free to attach additional pages if needed. This page is also available on the Math/Science homepage and may be submitted by email as an attachment

What are your plans after graduation? (or what have you done)

I have been working full time as a UAM employee and will continue. I am considering applying to the MAT program, but haven't made that commitment yet. I am going to take GRE and Praxis exams and see what happens. Depending on the results, I'll decide then.

Do you feel that UAM prepared you for your professional life? *Yes, I feel that I am well rounded professionally.*

What did you like most about the School of Math and Sciences? (Strengths) *I really like how caring all the professors are about their students. They are not only your professor, they take time to build bonds with students. They are very positive and are willing to help you with anything. Their positive attitude and caring demeanor helped me through a rough patch in my life. I'm not sure I would have been able to do the last year without their help.*

What did you like least about the School of Math and Sciences? (Weaknesses) *I was a transfer student from UALR and one class was lower level there and upper level here. That messed me up on upper level hours. The transfer process is tough.*

I also hate the fact that the stalls are so low in the women's bathrooms. The building is bad overall, but that can be fixed.

What changes do you recommend? *Fix the transfer process. Having to go back and take principle of biology set me back a year*

Is there anything else you would like to add ? *I wish I had started here. I strongly recommend UAM to any incoming freshman*

The following information is optional but highly recommended:

Name: *Ashley Hayes*

Major(s): *Biology*

Minor(s): *Natural Science*

E-mail address *ANH1112@uamont.edu* facebook user name? *Ashley Hayes*

Postal Address *1688 Little Foxfire Rd, Star City AR 71667* Telephone number *(870)370-0714*

Feel free to drop in for a visit. There's usually coffee available. Students and faculty have tailgating at football games, etc...You are always welcome to join in. Keep in touch!

Please drop off your survey to the Math/Science Office in the Science Center, submit by :
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What are your plans after graduation? (or what have you done)

Pharmacy school at UAMS,

Do you feel that UAM prepared you for your professional life? *Yes, very well*

What did you like most about the School of Math and Sciences? (Strengths) *Teachers are very caring and compassionate, and very educated in their field*

What did you like least about the School of Math and Sciences? (Weaknesses) *The building is in bad shape. The bathrooms are terrible.*

What changes do you recommend? *Improve facilities. Taller bathroom stalls*

Is there anything else you would like to add? *A big thanks to all the teachers and administrators that helped and pushed me to be successful.*

The following information is optional but highly recommended:

Name: *Brannon Hill*

Major(s): *Biology/Biochemistry*

Minor(s): _____

E-mail address *hillbrannon@gmail.com* facebook user name? *Brannon Riley Hill*

Postal Address *1669 HWY 165, Dumas AR 71639* Telephone number *(870)377-4587*

Feel free to drop in for a visit. There's usually coffee available. Students and faculty have tailgating at football games, etc...You are always welcome to join in. Keep in touch!

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What are your plans after graduation? (or what have you done)

Medical School at UAMS. I'm doing the Rural Practice Program, so I'll be going to a practice in a rural area when done.

Do you feel that UAM prepared you for your professional life? *Yes*

What did you like most about the School of Math and Sciences? (Strengths) *Professors. It was easy to build relationships with all the professors, and it was easy to get help outside of class.*

What did you like least about the School of Math and Sciences? (Weaknesses) *Everything about the facilities are bad*

What changes do you recommend? *Implement a dead period before final, especially in the spring. Starting finals in mid week is a terrible idea*

Is there anything else you would like to add? *I am glad that I took certain electives, like comparative anatomy.*

The following information is optional but highly recommended:

Name: *Joe Brown*

Major(s): *Biochemistry/Biology*

Minor(s): _____

E-mail address *jwbrown2614@yahoo.com* facebook user name? _____

Postal Address _____ Telephone number _____

Feel free to drop in for a visit. There's usually coffee available. Students and faculty have tailgating at football games, etc... You are always welcome to join in. Keep in touch!

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What are your plans after graduation? (or what have you done)

I have applied to UALR and UAMS nursing programs, so I will be moving to Little Rock.

Do you feel that UAM prepared you for your professional life? *Yes, I am more confident in myself*

What did you like most about the School of Math and Sciences? (Strengths) *Great science program*

What did you like least about the School of Math and Sciences? (Weaknesses) *Not enough options on classes. Some are taught only once every two years, and then they have a conflict with another class that you have to have.*

What changes do you recommend? *I wouldn't start finals on a Wednesday*

Is there anything else you would like to add?

The following information is optional but highly recommended:

Name: *Robert Dailey Bethell*

Major(s): *Biology*

Minor(s): *Natural Science*

E-mail address *rdbethell3@hotmail.com* facebook user name? _____

Postal Address *1311 Quapaw Street, Wynne, AR 72396* Telephone number *870-270-3218*

Feel free to drop in for a visit. There's usually coffee available. Students and faculty have tailgating at football games, etc... You are always welcome to join in. Keep in touch!

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What are your plans after graduation? (or what have you done)

I will be starting pharmacy school at UAMS in August.

Do you feel that UAM prepared you for your professional life? *Yes, I do! I feel like my teachers have helped me gain the knowledge I need to compete with others and be successful.*

What did you like most about the School of Math and Sciences? (Strengths) *The biggest strength is the faculty. They truly care about the students and challenge them to go above and beyond. This program is not easy, but that is why it pushes the students to learn.*

What did you like least about the School of Math and Sciences? (Weaknesses) *The building is pretty uninviting.*

What changes do you recommend? *Update the facility*

Is there anything else you would like to add?

The following information is optional but highly recommended:

Name: *Taylor Ashcraft*

Major(s): *Biology/Biochemistry*

Minor(s): _____

E-mail address *taylorashcraft@yahoo.com* facebook user name? *Taylor Ashcraft*

Postal Address *416 East Central Street, Warren, AR 71671* Telephone number *870-820-3683*

Feel free to drop in for a visit. There's usually coffee available. Students and faculty have tailgating at football games, etc... You are always welcome to join in. Keep in touch!

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What are your plans after graduation? (or what have you done)

Pharmacy school at UAMS, and working in a pharmacy

Do you feel that UAM prepared you for your professional life? *Yes, I feel very prepared for my professional career*

What did you like most about the School of Math and Sciences? (Strengths) *I liked that the professors knew their students and were always available and willing to help. The smaller size of the school allowed me to be familiar with all of my classmates.*

What did you like least about the School of Math and Sciences? (Weaknesses) *The only thing I disliked was the older building.*

What changes do you recommend? *I signed up for a summer class, paid for it, bought books, and came the first day to find out that it was cancelled due to having only 6 students. This kept me from being able to take biochemistry, which would have been a huge benefit for me in pharmacy school. The instructor would have taught it for six had he been allowed to. This policy needs to be revised.*

Is there anything else you would like to add? *I really enjoyed my time at UAM School of Math and Sciences, and I don't feel like I could have been better prepared anywhere else.*

The following information is optional but highly recommended:

Name: *Allison Haire*

Major(s): *Biochemistry/Pre-Pharmacy*

Minor(s): _____

E-mail address *allisonhaire@rocketmail.com* facebook user name? _____

Postal Address *908 Poplar Dr., Star City, AR 71667*

Telephone number _____

Feel free to drop in for a visit. There's usually coffee available. Students and faculty have tailgating at football games, etc... You are always welcome to join in. Keep in touch!

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Appendix D

Graduation Numbers by major per year

Math and Science Graduates by Year by Major

									Page	10 yr	3 yr
	08-09	09-10	10-11	11-12	12-13	13-14	14-15	Total	Total	Mean	Mean
Biology	12	10	7	19	12	16	7	200	11.9	11.7	
Chemistry	4	4	6	5	6	11	12	82	5.3	9.7	
Mathematics	2	4	0	8	2	3	4	78	3.9	3.0	
Natural Science*	2	8	4	12	2	4	4	55	4.7	3.3	
Bach of Gen St**						2	1	3	0.3	1	
Total	20	26	17	44	22	34	28	390	25.5	27.7	

	98-99	99-00	00-01	01-02	02-03	03-04	04-05	05-06	06-07	07-08
Biology	13	6	6	9	4	12	10	12	9	15
Chemistry	3	5	4	2	2	4	2	2	1	2
Mathematics	1	4	5	5	5	3	9	5	5	6
Natural Science*	-	-	-	0	0	4	1	4	3	7
Total	17	15	15	16	11	23	22	23	18	30

									96-97	97-98
Biology									10	11
Chemistry									4	3
Mathematics									2	5
Natural Science*									-	-
Total									16	19

*Natural Science degree added in 2001

**BGS graduates shown if Math and Science emphasis areas are used; however, are not used in calculating the total number of graduates per year, or averages

Appendix E

Math and Science Majors by Class per Year

Majors By Class For Fall Terms

Major	Level	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Biology	Freshman	10	11	9	8	9	7	10	16	16	29
	Sophomore	7	4	10	7	11	8	3	10	5	8
	Junior	7	8	7	8	9	10	9	6	11	5
	Senior	11	13	18	15	17	12	20	16	10	18
	Pre-Freshman	3	1	3	1	3					
	Special*	0	1	0	0	1					
	Post Bach	0	1	0	0	2			1	1	
	Total	38	39	47	39	52	37	42	49	43	60
Chemistry	Freshman	5	6	3	1	3	5	3	6	10	13
	Sophomore	5	3	2	1	0	2	3	4	4	5
	Junior	1	5	7	2	2	2	3	4	7	4
	Senior	3	2	2	8	5	9	5	4	4	6
	Pre-Freshman	0	3	0	0	1					
	Special*	0	0	0	0	0					
	Post Bach	0	0	0	0	1					
	Total	14	19	14	12	12	18	14	18	25	28
Mathematics	Freshman	7	4	6	3	5	7	9	8	6	8
	Sophomore	3	5	7	7	5	5	3	5	2	2
	Junior	6	5	1	5	5	3	4	3	9	4
	Senior	7	7	8	2	5	5	5	3	4	3
	Pre-Freshman	0	1	0	1	2					
	Special*	0	0	0	0	0					
	Post Bach	0	0	1	0	0		1			
	Total	23	22	23	18	22	20	22	19	21	17
Natural Science	Freshman	2	1	1	0	0	1	2		1	14
	Sophomore	0	0	1	1	0	1	2	2		9
	Junior	2	3	2	1	0	1	4	3	2	7
	Senior	8	6	6	4	4	3	4	3	5	6
	Pre-Freshman	0	0	0	1	0					
	Special*	0	0	1	0	0					
	Post Bach	0	0	0	0	1					
	Total	12	10	11	7	5	6	12	8	8	36

Major	Level	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Pre-Medicine	Freshman	19	30	20	16	14	28	20	23	22	27
	Sophomore	5	7	5	7	4	2	7	6	6	3
	Junior	5	2	3	5	4	2	3	7	1	5
	Senior	2	0	0	1	0	1	2	4	5	1
	Pre-Freshman	5	21	21	20	19					
	Special*	0	0	0	0	0					
	Post Bach	0	0	0	0	0		1	1	1	
	Total	36	60	49	49	41	33	33	41	35	36
Pre-Pharmacy	Freshman	14	14	16	15	8	14	15	18	15	11
	Sophomore	9	8	3	9	7	3	8	5	8	6
	Junior	4	6	3	3	4	6	3	5	3	9
	Senior	1	4	0	1	0		3	4		0
	Pre-Freshman	1	7	7	12	5					
	Special*	0	0	0	0	0					
	Post Bach	2	0	0	1	0					
	Total	31	39	29	41	24	23	29	32	26	26
Pre-Engineering	Freshman	7	11	7	5	10	6	9	10	8	11
	Sophomore	2	3	3	2	2	2	1	2	2	3
	Junior	0	0	1	1	2				1	1
	Senior	0	0	0	0	0					
	Pre-Freshman	0	1	3	2	0					
	Special*	0	0	0	0	0					
	Post Bach	0	0	0	0	0		1			
	Total	9	15	14	10	14	8	11	12	11	15
Allied Health	Freshman	16	13	28	23	16	25	29	30	16	*
	Sophomore	8	8	8	8	11	6	12	11	9	*
	Junior	4	3	4	3	4	4	5	6	3	*
	Senior	3	0	0	2	1		1	2	1	*
	Pre-Freshman	0	9	8	5	9					
	Special*	0	0	0	0	0					
	Post Bach	1	0	0	0	0					
	Total	32	33	48	41	41	35	47	49	29	0
Math and Science	Totals	195	237	235	217	211	180	210	228	198	218

*Allied Health majors now listed as Natural Science-Life Science Option