

Program Review Committee Report

Fall, 2015

Natural Science

GOALS, OBJECTIVES, AND ACTIVITIES

The mission the University of Arkansas at Monticello (UAM) shares with all universities is the commitment to search for truth and 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. This statement serves as the basis for the goals of the programs housed in the School of Mathematical and Natural Sciences. The specific goals for the School of Mathematical and Natural Sciences are:

1. To provide academic programs which promote the development of professional scientists and mathematicians and provide opportunities for all students to enhance their understanding of the natural sciences and mathematics.
2. To prepare individuals for successful careers in industry and teaching and for graduate studies in science and mathematics
3. To provide curricula for pre-professional studies in dentistry, medicine, optometry, pharmacy, veterinary science, and allied health (physical therapy, radiological technology, respiratory therapy, medical technology, occupational therapy, and dental hygiene).
4. To provide technical and analytical courses to support studies in agriculture, forestry, nursing, education, animal science, psychology, and wildlife management.
5. To serve the general education program through courses in biology, chemistry, earth science, mathematics, physics, and physical science that provide a basic background for a baccalaureate degree.

The main objective of the Natural Sciences program is to offer Bachelor of Science degrees with a major or minor in Natural Sciences. Initially, the Natural Science major was designed to prepare graduates who would have the content knowledge to pass the appropriate Praxis exams, and the background to be an effective secondary science teacher upon completion of the Master of Arts in Teaching degree. Several students have successfully taken this path to a career in education; however, there have been a large number of students who completed this degree who entered professional or graduate programs, or have been employed in business or in

a science field. Most of these graduates have used the Natural Science degree as a back-up plan when they are unable to complete their initial degree plan in Chemistry or Biology. The existence of this degree has certainly improved retention in the School of Mathematical and Natural Sciences.

We encourage all our students to consider post-baccalaureate education upon graduation. In fact, we begin pushing students to think about their post-baccalaureate education during their first freshman semester. Our most important objective is to help our students achieve their educational and career goals; we truly feel that their success is our success.

Faculty members have high expectations in the classroom in all science courses, and they willingly work with students outside the classroom to help them rise to the level of expertise needed to be successful in their course work. They also work closely with students in activities outside the classroom to enhance their overall experience at UAM, and to help them mature into well-rounded students who are involved with their community. Some of these specific activities include Sigma Zeta Math and Science Honor Society, Southeast Arkansas Regional Science Fair (SEARSF), Arkansas Space Grant Consortium (ASGC), UAM Medical Science Club, UAM Tutoring Center, UAM Research Program for Minority Students (UAM-RPMS) which is a Science, Technology, Engineering and Mathematics (STEM) program, Arkansas Academy of Science, Arkansas Idea Network for Biomedical Research and Education (AR-INBRE).

An important goal in the School of Math and Sciences is to provide support courses for other majors and for the General Education program. All majors are required to pass eight hours of science (including laboratories) at the 1000 level or higher, and all of our freshman-level courses are acceptable options for this requirement. Numerous courses in the Natural Science major are acceptable as general education science courses; however, all of these courses are part of Biology, Chemistry, Earth Science or Physics.

Secondary science teachers (life, physical, and earth sciences) are usually on the annual list of subject shortage areas compiled by the Arkansas Department of Education. Although the population of southeastern Arkansas has not grown as much as the rest of the state, the demand for science teachers remains high in this region. In fact, virtually every school district in the southeastern part of the state qualifies as a High-Needs District based on criteria established by the National Science Foundation. School districts throughout the region regularly solicit the UAM School of Education and the Dean of Math and Sciences for possible applicants. Many

graduates of the UAM Natural Science program have entered M.A.T. programs (including the one at UAM), and almost without exception have a job waiting upon completion of the program.

Graduates of the Natural Science program may advance to professional schools such as medical school, dental school, pharmacy school, allied health-related programs and even graduate programs in science fields. Some graduates enter positions in industry. Graduates of the UAM Natural Sciences program are in demand by medical schools; 22 of 24 med-school applicants have been accepted during the last 10 years. In addition, the demand for UAM pre-pharmacy students is very high. There are two pharmacy schools in Arkansas (at UAMS and Harding), and many UAM graduates are accepted at both. As with pre-medicine students, the vast majority of UAM pre-pharmacy students are accepted to pharmacy school upon application. Over the past ten years, 33 out of 34 applicants from UAM have been accepted in pharmacy programs.

The number of majors remains small in Natural Sciences. The freshmen and sophomore years have especially small numbers until the past year when allied health majors were automatically entered as Natural Science majors. In the past, there has been a growth in the number of majors in the junior and senior year, largely due to Biology and Chemistry majors who changed their major to Natural Sciences (Table 2). The number of graduates in Natural Sciences in some years is larger than the number of seniors in the previous year due to last minute major changes from Biology or Chemistry. Rather than staying in college for an additional year to re-take courses, or take courses they could not schedule, they change to Natural Science in order to graduate on time (Table 3).

Table 2.—Number of Natural Science Majors by Year

	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>
Total	12	10	10	6	4	7	12	8	8	36

Table 3.—Number of Natural Science Graduates by Year

<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>	<u>2015</u>	<u>10 Yr Ave</u>	<u>3 Yr Ave</u>
4	3	7	2	8	4	12	2	4	4	5.0	3.3

In 2012, a review was done of former students that entered professional school prior to graduation. UAM has a policy that allows those students who achieve early acceptance into a professional program to transfer credits back from the professional program to complete their degree. Several of these students were contacted and informed that they qualified for a Natural Science degree if they chose to apply for graduation. Several students completed their degree, resulting in an abnormally high number of graduates in that year. While we felt this was the appropriate thing to do for the students involved, it has created several complications in performance funding due to the average number of graduates over the previous two years does not exceed the average number of graduates from the three prior years.

Over the past several years, the courses that make up the Natural Science major have seen growth in enrollment; however, that growth cannot be attributed specifically to the Natural Science major. The Biology and Chemistry programs have shown growth during the last several years, which is good for the Natural Sciences program due to the number of students that change their major to Natural Sciences.

CURRICULUM

The Natural Sciences majors take the same biology and chemistry courses as students majoring in those fields. Even though the UAM Chemistry department is not an American Chemical Society approved program, the curriculum is modeled after the ACS recommended program. UAM is one of few universities in Arkansas that uses ACS standardized final exams for many of its courses as a standard for assessment.

Biology, Chemistry, Earth Science, and Physics faculty members continually review the curriculum in an effort to meet the needs of their majors, minors, pre-professional students, and Natural Science majors. This goal is achieved in a number of different ways. All Natural Science faculty members are encouraged and expected to participate in regular professional development to stay current in their respective fields of expertise. Faculty members are given time to attend professional meetings and workshops, and the School of Mathematical and Natural

Sciences maintains a budget to pay the cost of attending these meetings. Besides the obvious benefit to individual faculty of professional renewal, meeting attendance allows faculty members to be exposed to the newest trends within the field, and allows them to network with instructors from other universities and to be exposed to new ideas for curriculum development.

The Chemistry, Biology, Earth Science, and Physics departments at UAM are relatively small. Although there are disadvantages associated with small size, the School of Math and Sciences uses its size to the advantage of students. With the small number of faculty, all faculty members are involved with curriculum changes and planning at all levels.

In addition, faculty members in the sciences constantly monitor requirements for various post-graduate programs to ensure that the curriculum contains all required courses and all necessary material within those courses.

As with all universities in the state of Arkansas, UAM is required by law to provide a curriculum which makes it possible for a student to enroll in a reasonable number of courses each semester and to fulfill all the requirements for a degree within four academic years. Although pre-professional programs are excluded from these requirements, we have arranged our schedule so that students can receive a Natural Science degree with either a Life Science Option or a Physical Science Option in four academic years.

Students who arrive at UAM with a sufficient background in science and mathematics are advised to take a Biology course with lab or an Earth Science course with lab. Students that require remediation in mathematics or have not had a sufficient high school science courses are encouraged to take mathematics and other courses in order to gain maturity and study skills. Currently, this is done through academic advising; however, there has been some thought of setting a minimum ACT requirement for entry into some of the entry level science courses. Typically, first semester freshmen with low ACT scores do not perform well in science courses. Students who need to start with a more basic science course than required by the Natural Science major, such as Introductory Chemistry have difficulty in completing either option of the Natural Science degree within four academic years unless the student attends summer school. Likewise, students who transfer from other universities, or those who declare Natural Science as a major later in their college career may have difficulty completing a degree within four years. However, every effort is made to help these students catch up through aggressive advising, and enrollment in summer courses.

In the sciences, some courses are taught almost every term. Others are taught on a once per academic year schedule, and many upper level courses are scheduled on a two-year cycle. Most courses that are offered on a two-year sequence are upper level electives that can have another course substituted quite easily.

The Bachelor of Science degree in Natural Science requires 120 hours, which includes 35 hours of General Education program, the Bachelor of Science identity requirement, 17-18 hours of supportive requirements, 16 hours of major core requirements and either 28 hours Life Science Option courses or 27-29 hours Physical Science Option courses . A minor is not required for the Natural Science degree. Electives will be needed to reach 120 hours. Since 40 hours of 3000-4000 level credit is needed for all degrees, Natural Science majors must take additional upper level hours. These hours can be from any discipline. Some students take additional math or science classes. Some take Education courses, others take courses in a discipline that will lead to a second area of teacher certification.

The Natural Science minor is 25 hours which is comprised of 8-hour blocks from two of the three areas of Biology, Chemistry, or Physics, and 9 hours of upper level electives from one of those areas.

Science faculty members continually review the curriculum and make appropriate adjustments. Whenever a curriculum change is needed, faculty members discuss the changes and construct a proposal. Individual faculty members who wish to assemble new classes may also construct a proposal. Such proposals are reviewed by the entire Math and Natural Science faculty before further submission. The proposal is reviewed by the Dean of Math and Sciences. When approved, the Dean submits the proposal to Academic Council, which is a group that includes the Deans of all units, the Registrar, and the Vice Chancellor of Academic Affairs. A review period of ten days begins at this point. This procedure ensures that all academic deans are aware of the consequences to their own programs before the new course is reviewed by the Curriculum and Standards (C&S) Committee of the Faculty Assembly. This ten-day review process usually affords sufficient time for minor issues to be resolved. The proposal is reviewed at an Academic Council, which meets approximately 7 times per semester. With Academic Council approval, the proposal is forwarded to the C&S Committee. The School of Mathematics and Natural Sciences representative then presents the proposal to the C&S Committee. Occasionally, the Dean or a faculty member will attend the meeting to answer any questions that

may arise. With approval of the C&S Committee, the proposal is forwarded to the Faculty Assembly where it is brought to a vote. Once it has received the approval of the Assembly, the proposal is reviewed by the Chancellor, the Board of Trustees, and then the Arkansas Department of Higher Education. Once all approvals have been made, the proposal is sent back to the Registrar's Office for final operation and inclusion into the official catalog. If the proposal does not meet the approval of any of the required committees, it may be returned to the Department for review and revision. Note that the procedure for graduate-level courses is identical, except that such proposals are submitted to the Graduate Council rather than the C&S Committee.

No required courses in the Natural Science program have been offered by distance delivery in the past ten years. Meteorology and Lab, an optional course in the major requirements is offered as a hybrid course. The lecture and lab materials are provided by The American Meteorological Society. All exams are taken face-to-face on the UAM campus. For the most part, the science faculty and the Dean of Mathematics and Natural Sciences are opposed to totally online courses, especially in laboratory offerings.

PROGRAM FACULTY

The School of Mathematical and Natural Sciences' Natural Sciences program consists of 14 faculty members. Dr. J. M. Bramlett, dean, serves as the quarter-time faculty member, which is the required course load for those serving as dean.

Faculty members include one professor/dean (J. M. Bramlett, Ph.D.), one assistant dean for science and research (Marvin Fawley, Ph.D.), one professor (John Hunt, Ph.D.), six associate professors (Jinming Huang, Ph.D. [Dr. Huang is currently away conducting research at Wake Forest University], Jeff Taylor, Ph.D., Karen Fawley, Ph.D., Glenn Manning, Ph.D., Chris Sims, Ph.D., and Mary Stewart, Ph.D.), two assistant professors (Andrew Williams, Ph.D. and Jared Gavin, Ph.D.), two instructors (Ed Bacon, Ph.D. [Museum Director/Fund Raising] and Kelley Sayyar, M.S.) and one lab instructor (Jessie Chappell, M.Ed.). Dr. Jim Edson and Dr. Juan Serna left the institution so they were not included in the total numbers. However, they were part of the faculty until recently. Dr. Edson, Ph.D. served as a professor and Dr. Serna, Ph.D. served as an associate professor. Because Natural Sciences falls under the School of Mathematical and Natural Sciences, other faculty members provide their expertise as it relates to Earth Science and

Physics. All tenure-track faculty have terminal degrees. All faculty members have significant experience outside academia relating to their teaching fields, and all faculty members regularly undertake professional development and scholarly activities in order to maintain currency. All faculty members have also engaged in significant university and community service.

All new faculty in Natural Sciences undergo the official university orientation process offered during the Faculty Development Week preceding the fall semester. New faculty also partake of follow-up workshops focused on topics such as academic advising. Faculty undergo an annual evaluation process that consists of an evaluation report reviewed by colleagues, and student course evaluations. Classroom evaluations are also part of this process. These various evaluations are reviewed by the dean to complete an annual performance review, which is then discussed with the faculty member and forwarded to the Provost.

Faculty, in Natural Sciences, teach approximately 12-15 hours per semester. Credit hours per instructor vary based on rank and the needs of students. Opportunities to teach overloads and summer courses are also available.

PROGRAM RESOURCES

Institutional support available for faculty development in teaching, research, and service include encouragement for faculty to develop special topic courses, financial incentives for the development of hybrid and online courses, technical support in instructional software, and access to “smart” classrooms in the Science Center. Additionally, competitive faculty research grants are available to faculty through the university. Almost every tenured faculty member in the Natural Science department has received one of these grants; several have won multiple grants. Finally, faculty members are encouraged to serve on university committees.

The Natural Science department has been very active in professional development activities. A large portion of the School of Mathematics and Natural Sciences faculty development money is used by the faculty members each year to attend professional meetings. Additional departmental funds are also used for faculty development. The report includes a table with fifty five entries detailing professional development activities undertaken by the faculty over the past two years.

The Fred J. Taylor Library and Technology Center's collections comprise over 500,000 books, bound periodicals, microforms, government documents, and serial subscriptions. Many items are now available through on-line full text database resources (e.g., ScienceDirect, SpringerLink). The total budget for the entire School of Mathematics and Natural Sciences is \$15,000 and is spent on books, e-books, journals, e-journals, and databases.

Campus resources for the department include "smart" rooms for instruction, a computer lab for students, a Tutor Center, printed and electronic resources in the library, and consultations with reference librarians. The UAM administration has also directly supported student and faculty research by providing matching funds for grants awarded by Arkansas INBRE. Over the last several years, an Infrared Spectrometer, a UV-Vis Spectrometer, a workstation for molecular modeling, two standard thermal cyclers, a gradient thermal cycler, centrifuge with rotors, microcentrifuges, two research microscopes and digital cameras, bench top fluorometer, micropipettors, and miscellaneous laboratory supplies for teaching labs and undergraduate research have been purchased with these AR-INBRE instrumentation awards.

The following chart is a list of equipment purchases for the Natural Sciences department over the last three years. Note that this list does not include computers or audio-visual equipment for use in faculty offices, laboratories, or classrooms.

Item Description
Molecular Modeling workstation and software
Furnace
Okaton pH Meter
UV-Vis tabletop spectrophotometer
Water Distillation Unit (shared with Biology)
Nikon Stereo Microscope with Camera System
Biological Incubator

INSTRUCTION VIA DISTANCE TECHNOLOGY

Institutional policy in regard to orientation for distance technology courses is as follows (from UAM Faculty Distance Education Handbook):

“Conduct an orientation (online) in each course at the beginning of each term to ensure each student understands the requirements of the course and can access the course. Advise students of the time and energy demands of the course as well as establishing clear limits on what the course is and is not.”

Each faculty member interprets this orientation process in a slightly different manner, but all complete the requirements to ensure students understand how to use the software, view the syllabus, utilize the calendar and discussion boards, and how to access other software features. In addition to this, the Meteorology and Meteorology Lab courses host a face-to-face orientation the first week of class. The instructor covers the basics of Blackboard, discusses homework requirements, and presents testing dates in person. Each style of orientation session presents the instructors contact information, office hours, and expectations for student performance in the course.

In addition, all students utilizing any form of distance education are required to undergo training through a mandatory e-mentoring course. UAM has developed a fully electronic version of the E-Mentoring program that is accessible at the students’ convenience. Students learn the fundamental computer-related skills needed to succeed at UAM, including how to log on to WeevilNet (the student management system), how to access their UAM e-mail accounts, how to use Blackboard, and how to use electronic library resources.

In regard to faculty course load, again referring to the UAM Faculty Handbook: “The course load for fulltime faculty holding the rank of instructor is 15 semester credit hours. The course load for fulltime faculty holding the rank of Assistant Professor or above is 12 semester credit hours.”

Distance education courses are treated as part of faculty’s standard workload. Thus, distance technology courses are viewed the same as classroom courses in the area of workload, credit hours taught, and compensation. Faculty members are given a special one-time incentive payment for development of each new on-line course that they teach.

In regard to ownership of intellectual property in the area of previously copyrighted materials, the UAM Distance Education faculty handbook sets forth the following guidelines for the use that all faculty must abide by: “Under Section 107 of the copyright law

(www.lcweb.loc.gov/copyright) passed in 1976, educators are given special exemptions from the law under the Fair Use Doctrine (<http://fairuse.stanford.edu>). Educators may use copyrighted works without first obtaining permission of the copyright holder, within limits. There are four criteria for determining whether copyrighted materials have been used legally under this doctrine: (1) Purpose and character of the use; (2) Nature of the materials used; (3) Amount and importance of the part used; and (4) Effect on the market of the use. This site (www.cetus.org/fairindex.html) shows illustrations of the amounts of copyrighted work that may be used under the Fair Use Doctrine.

The Technology, Education and Copyright Harmonization Act (TEACH Act) passed in 2002 expands the Fair Use Doctrine to cover distance education. Generally, exemptions given for face-to-face instruction will apply to online instruction. Please visit the American Library Association website for more information.

MAJORS/DECLARED STUDENTS

The number of Mathematics and Natural Science majors increased significantly in the last year primarily due to the way allied health majors are listed at the University. Additionally, the School of Mathematical and Natural Sciences currently engages high schools in the area in order to increase program visibility, and recruit students. One faculty member initiated an on-going, five year program with the Arkansas Advanced Initiative in Math and Sciences (AAIMS). Another way the School of Mathematical and Natural Sciences has embraced outreach is through training to over 1000 AP Chemistry students and their teachers over the last 5 years. Finally, the School of Mathematical and Natural Sciences also recruits potential students during their visits to events such as Scholar's Day, Weevil Welcome Days, and Parent/Family Appreciation Day. These are all efforts to increase visibility, and promote the program.

With regards to retention, the School of Mathematics and Natural Sciences has implemented five approaches: 1) E-mentoring; 2) First Four Weeks program; 3) First-Year Experience program; 4) Student Services; and, 5) Remediation. Academic advising also seems like a way to address retention as well.

There were 2 graduates of the UAM Natural Science program in 2013, 4 in 2014, and 4 in 2015, or an average of 3.3 per year. The ten-year average is 5.0 per year; however, that number is elevated by the excessively large number of graduates in 2012. Several in that group

were students that received early admission into professional programs without ever graduating from UAM. Six Natural Science graduates from that year were students that completed their degree requirements from professional school in the previous year, but had never applied for their degree. Since the Natural Science degree contains courses that are part of the major or minor requirements of other disciplines, or general education courses, it is considered an embedded program, and is not subject to the minimum number of yearly graduates required by the Arkansas Department of Higher Education.

PROGRAM ASSESSMENT

The School of Mathematics and Natural Sciences uses four primary means for assessment of students as they work through the program and as an annual assessment of the program itself. First, students are evaluated by course examinations and projects to measure their learning. Secondly, several chemistry courses use the American Chemical Society standardized final exams. The Natural Science majors all take a minimum of 8 hours of chemistry, and most of those that choose the Physical Science Option will take chemistry as their upper level electives. Even though many of the universities that utilize this exam are private, and highly exclusive in nature, UAM students have achieved an average score at or above national average on many of these exams. Currently, the ACS exams are being used in General Chemistry, Organic Chemistry, and Biochemistry.

Thirdly, Math and Natural Sciences junior and senior students often take a standardized exam involving chemistry, biology, physics, or general science knowledge, including the MCAT pre-medical examination, the PCAT pre-pharmacy exam, the DAT pre-dental exam, or the OAT pre-optometry exam. Each exam has one or more sections that are specific to the natural sciences, or include specific science discipline course content as a major component. Others may take the GRE, as a prelude to application to graduate school or veterinary school. Students are strongly encouraged to report results of these exams to the School of Math and Science, specifically so that the scores can be used to assess program effectiveness.

While the Natural Science degree does not have a single upper level course that all majors take, they are strongly encouraged to take Chemistry Advanced Lab Techniques if they are a Physical Science Option with Chemistry as their specialty, or Biology Seminar if they are the Life Science Option. Both courses require library research and writing a professionally

formatted paper. An oral presentation is required at the end of the term. They are also encouraged to participate in undergraduate research which leads to a presentation at a local, regional, or national meeting.

Finally, the program is assessed by placement of the graduates. Most graduates are successful in finding positions. The UAM Natural Science graduates have entered a broad variety of jobs, graduate programs, and professional programs. The allied health students have a high rate of acceptance into their program of choice. Some students have applied to MAT programs; again, the acceptance rate is very high. A few have gone into private business or industrial positions.

In addition to these methods of assessment, the School of Mathematics and Natural Sciences undergoes an annual assessment reporting process whereby faculty assess the program on the basis of student learning outcomes and how they relate to the mission of the University, student performance and evaluation, and program efforts in the area of student retention. This report is submitted to the Provost each August. The assessment of the Natural Science program appears to be sufficient.

The Natural Science major's broad range of topics makes it difficult to have a single capstone course that would be relevant to both the Life Science Option and the Physical Science Option of the major. Some of the Natural Science majors take the courses that serve as capstone courses for the Biology or the Chemistry programs; however most do not.

Teaching evaluation is one of the main components of the faculty evaluation process. Courses are evaluated through classroom observation by the Dean of the School of Mathematical and Natural Sciences and peer faculty, and by student evaluations. Student evaluations are an important means of feedback. Students are asked to evaluate themselves as a student, the instructor, and the course itself. Student evaluation of teaching is accomplished through a secure online survey operated by CourseEval. Instructors may access evaluations at the end of the semester. The evaluation is being transitioned to Blackboard during the 2015-2016 academic year, but the evaluation process will be the same.

There have been very few transfer students entering the program, and most of those have had very few upper level courses in Chemistry, Physics, and Biology; however, with the large number of electives allowed in the major, it is very transfer friendly. All eligible courses follow the requirements of the Arkansas Course Transfer System, which sets standards for transfer of

coursework in general education and some other courses between public universities in Arkansas.

Over the past ten years, 1 Natural Science major has been accepted into medical school, 6 have been accepted into pharmacy school, 1 has been accepted into law school, 2 have been accepted into graduate school in sciences.

Each year, graduating seniors are invited to an exit interview with the Dean of the School of Mathematical and Natural Sciences. While the program noted that “many” students take the exit interview, it did not provide aggregate results, but a list of questions and the “most common responses” which were not quantified.

The School of Mathematical and Natural Sciences has not conducted any sort of employee satisfaction survey concerning our graduates. However, constant contact with administrators and recruiters at professional schools indicates that UAM students are usually successful upon matriculation. Graduates of UAM are recruited strongly by medical schools such as UAMS and William Carey, and by pharmacy schools including UAMS, Harding, and UT-Memphis. The School of Math and Science works closely with school districts in the area, and its students are often hired as teachers of chemistry or other sciences. UAM students are widely praised by school administrators for their content knowledge.

Arkansas has an extremely strong demand for health-care professionals, including doctors and pharmacists. This area of the state has an exceptionally high need for those professionals. The Natural Science faculty constantly monitors the requirements for medical and pharmacy schools (as well as dental, veterinary, graduate, allied health, and other post-baccalaureate programs) to ensure that the curriculum is properly aligned with these schools. The Dean and Natural Science faculty remain in constant contact with school districts in the area to ensure that demand for teachers is met. Various industries in southeastern Arkansas call and inquire about graduates anytime a position is open. The curriculum is broad enough, with two different degree tracks, so that graduates are well-prepared for entrance into a professional program in health care, an industrial laboratory, or education.

Data provided by the program indicates that over the past ten years, program graduates have been admitted to medical school, pharmacy programs, and other graduate degrees. Several students have found employment teaching, but the majority of those reported and working in a

program-related field entered the health-care industry including dental assistant, surgical assistant, and lab tech, to name a few of the wide variety of positions taken in the private sector.

PROGRAM EFFECTIVENESS

The Natural Science program in an embedded program with faculty members involved in Chemistry, Biology, Physics, and Earth Science. The unit is well connected to the public schools, graduate programs, and professional schools in the region. The degree is extremely flexible twenty-three to twenty-five credit hours allowed the creation of curriculum to fit the individual student. It fits the needs of science education candidates, allied health, and for science majors who do not necessarily fit into one of the traditional science majors. The program receives positive support and feedback from administrators and staff across the University. Finally, the students in the program naturally take leadership roles in mentoring freshmen in terms of what is expected of them for successful completion of the degree.

The annual budget to support the School of Math and Sciences is \$10,000. While appreciated, this sum is not enough to support Math, Physics, Geology, Biology, and Chemistry equipment requests and purchases. Faculty members in Natural Science regularly apply and receive grants to support research and the purchase of equipment. Two years ago, a plan was implemented where part of the \$10,000 budget would be set aside in order to make larger purchases in the future. The physical facilities are dilapidated and are too small to cope with growth in size and number of classes. Additionally, the physical facilities have limited storage space, resulting in creative storage of non-hazardous materials. The decision to eliminate faculty positions upon a faculty member's retirement two to three decades ago has resulted in much larger sections even with more sections being taught. Enrollment today is twice what it was 20-30 years ago and continues to grow. With the increase in students and the stagnant state of faculty positions for the division, faculty have little time for research or other scholarly activities. Science faculty are underpaid compared to faculty at similar institutions in the state and across the region, which has led to a decrease in morale and difficulty in hiring faculty when an opening becomes available. Finally, due to the present calculation of teaching loads, faculty members receive no credit for one-on-one research training with students. The program has reached a point where most of the faculty members are unable to take additional students because they lack research space, equipment, and time.

Natural Sciences, and the departments that make up the major, its faculty, and its students have been consistently successful for many years. Faculty members continue to receive nominations and awards for teaching, student research results in awards and publications of results, and students continue to be accepted into post-graduate programs at an extremely high rate. The largest improvement over the last two years in the increase of undergraduates performing research and making presentations at professional meetings.

Planned program improvements include building a new Science Center contingent upon funding, building a new Botanical Research and Herbarium building that will house the UAM Sundell Herbarium, a new laboratory space, a library and conference room, and office space, and renovating portions of the Turner Neal Museum of Natural History. The funding for the Herbarium and renovation of the Museum of Natural History has already been secured. Improvement to equipment holdings will continue to be made via equipment grants from the Arkansas IDEA Network for Biomedical Research Excellence, a portion of the \$10,000 budget allotted to the School of Mathematics and Sciences, the UAM Centennial Fund and private donations.