

Program Review Committee Report

Fall 2015

Biology

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 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, pre-veterinary medicine, 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 Biology program is to offer Bachelor of Science degrees with a major or minor in Biology, or to contribute to a double major in Biology and Biochemistry. The program prepares graduates to continue their education in a variety of pre-professional and graduate programs, or for immediate employment in a number of industrial, business, or educational situations. Students

are encouraged to consider post-graduate education upon graduation. Students are advised to begin thinking about their post-baccalaureate education during their first freshman semester. The most important objective of the School of Mathematical and Natural Sciences is to help the students achieve their educational and career goals.

Faculty members 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 Biology Club, UAM Medical Science Club, UAM Tutoring Center, UAM Research Program for Minority Students (UAM-RPMS), mentoring of students through scientific research, Biology Seminar, University of Southern Mississippi Gulf Coast Research Laboratory, Arkansas Academy of Science, Ouachita Mountain Biological Station, and Arkansas Idea Network for Biomedical Research and Education (AR-INBRE).

An important goal in the Biology program 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. BIOL 1063, Introduction to Biological Science, and BIOL 1071, Introduction to Biological Science Lab, are most often used to help fulfill this requirement. In addition, there are twenty-one majors and minors at UAM that require additional Biology courses beyond the general education requirement (Table 1).

Table 1—Biology Classes Required for Other Majors and Minors at UAM

Agriculture (General Agriculture Option and Agri-Business Option) – 6 courses
Agriculture (Animal Science Option) – 6 courses
Agriculture (Plant and Soil Science Option) – 6 course
Chemistry (Biochemistry Option) – 9 course
Forestry Minor – 1 course
General Studies (Biology Emphasis Area) – 4 course
General Studies (Health Care Professionals Preparation Emphasis Area) – 8 courses
General Studies (Wildlife Management Emphasis Area) – 5 courses
Health and Physical Education – 2 courses
Health and Physical Education, Exercise Science Option – 5 courses
Middle Childhood Education – 2 courses
Natural Science Major (All options) – 1 course
Natural Science Major (Life Science Option) – 4 courses
Natural Science Minor – 2 courses
Natural Resources Management, Environmental Science Option – 4 courses
Natural Resource Management, Communication in Natural Resources Option, Forestry Option, and Geospatial Science Option – 3 courses
Natural Resource Management, Wildlife Management and Conservation Option – 8 courses
Natural Resources Minor – 3 courses
Nursing – 6 courses
Wildlife Management Minor – 6 courses

Graduates of the Biology program may advance to professional schools such as medical school, dental school, pharmacy school, and to other health-related programs. Some graduates enter graduate school, teaching programs, or positions in industry. Applicants to the University of Arkansas for Medical Sciences who come from rural areas (including all of southeastern Arkansas) are given extra consideration for acceptance to the medical school, and may receive partial or complete tuition relief. Graduates of the UAM Biology program are in demand by medical schools; 22 of the last 24 medical school applicants have been accepted during the last 10 years. In addition, there are two pharmacy schools in Arkansas (at University of Arkansas for Medical Sciences (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. 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 Biology 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.

Demand for the Biology program has generally remained strong through the last 10 years, with some fluctuation from year to year (Table 2). Pre-Medicine students generally complete a degree in

Biology, or for the last five years, a double major in Biology and Biochemistry. However, some students listed as Pre-Medicine majors may receive a degree in Biochemistry or Chemistry alone. In addition, due to a quirk of UAM's registration software, a student is sometimes listed as both a Biology major and a Pre-Medicine student. However, the table gives an overall picture of demand for the program which is steady and strong. Another indicator of the demand for the program is reflected in the fact that from 2005-2009, Early College High School Students were allowed to declare a major, and an average of 20 of these students per year declared themselves as Pre-Medicine or Biology majors. Because of the overlap between Biology and Pre-Medicine majors, perhaps a better measure of demand is the number of students who graduate with Biology majors (Table 3).

Table 2.—Number of Majors per Class Level Per 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>
Biology	35	38	44	38	49	37	42	49	43	60
Pre-Medicine	31	39	28	29	22	33	33	41	35	36

Table 3.—Number of Biology 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>Average</u>
12	9	15	12	10	7	19	12	16	7	11.9

While the number of graduates fluctuates from year to year, overall demand remains fairly steady. During some years, a larger than usual number of potential graduates is unable to complete all required classes for a variety of reasons. When this occurs, the number of graduates naturally rebounds the next year, helping to explain some of the fluctuations seen in the table above. In addition, during 2011-2012, a special effort was made to contact students who were only a few credit hours away from graduation to encourage them to finish their degrees; this contributed to the unusually large number of graduates in 2012.

While the number of Biology majors and graduates has remained more-or-less steady, the number of persons taking Biology classes has increased by over a third during the last 10 years (Table 4).

	Table 4.--Enrollment in Biology Lecture Courses Offered Each Fall Semester									
	F14	F13	F12	F11	F10	F09	F08	F07	F06	F05
Totals Students Enrolled	564	538	541	530	499	532	512	470	450	421

CURRICULUM

Biology faculty members continually review the curriculum in an effort to meet the needs of Biology majors and pre-professional students. This goal is achieved in a number of ways. All Biology faculty members are encouraged and expected to participate in regular professional development to stay current in their respective fields of expertise. All tenure-track faculty members maintain memberships in professional organizations appropriate for their biological specialties.

The Biology Department at UAM is relatively small. Although there are disadvantages associated with small size, the Biology Department uses its size to the advantage of students. One way in which this is true is that changes to one field of biology can be quickly communicated to all faculty members. In addition, faculty members 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 the schedule so that students can receive a Biology degree or a Biology/Biochemistry double major in four academic years.

Students who arrive at UAM with a strong interest in biology and an ACT score of 22 or above are eligible to go directly into each of the Biology curricula. Those who arrive with an ACT score or less than 22 are required to take BIOL 1063, Introduction to Biological Science, before enrolling in

BIOL 2053, Principles of Biology I. For these students, it is more difficult to complete any of the Biology curricula within four academic years. However, with proper advising and a willingness to take some classes during summer terms, completion of a Biology or Biology/Biochemistry double major within four years is still possible. Likewise, students who transfer from other universities, or those who declare Biology as a major after their first semester, may have difficulty completing a degree within four years. However, every effort is made to help these students catch up through aggressive advising, and the Department is exploring the possibility of adding sections of the Principles of Biology sequence to help such students graduate more rapidly.

The Biology curriculum schedule operates on a two-year cycle. Most courses are offered at least once per academic year, and some upper-level electives are available every other year.

The Bachelor of Science degree in Biology requires 120 hours, which includes 35 hours of General Education program, The Bachelor of Science identity requirement, 39 hours of major requirements and 29-30 hours of supportive requirements. A minor is also required for the Biology degree. Electives may be needed to reach 120 hours, depending upon the minor; most Biology majors who do not double major in Biochemistry minor in Chemistry or Natural Science.

The Bachelor of Science degree in Organismal Biology requires 120 hours, which includes 35 hours of General Education program, the Bachelor of Science identity requirement, 39 hours of major requirements, 14 hours of approved Biology electives, and 23 hours of supportive requirements. No minor is required.

The Biology minor includes 12 hours of required courses, plus 10 hours of upper-level biology electives, for a total of 22 hours.

Biology faculty members continually review the curriculum and make appropriate adjustments. Whenever a curriculum change is needed, Biology 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 Biology 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 10 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 meeting, which occurs approximately 8 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 courses within the Department of Biology are currently offered by distance delivery. Two on-line sections of BIOL 1063/BIOL 1071 Introduction to Biological Sciences are offered and administered by the Office of Academic Affairs.

PROGRAM FACULTY (FULLTIME/ADJUNCT/PART-TIME)

The School of Mathematical and Natural Sciences' Biology program consists of one half-time and eight full-time faculty members. Dr. Marvin Fawley, assistant dean, serves as the half-time faculty member. Additional faculty, listed below, include the dean and one chemistry professor who taught one Biology course (Pharmacology) in the spring of 2015.

Faculty members include one professor/dean (J. M. Bramlett, Ph.D.), another full professor (John Hunt, Ph.D.), six associate professors (Karen Fawley, Ph.D., Marvin Fawley, Ph.D., Glenn Manning, Ph.D., Chris Sims, Ph.D., Mary Stewart, Ph.D., and Jeff Taylor, Ph.D.), one instructor (Ed Bacon, Ph.D.) and two lab instructors (Jessie Chappell, M.Ed., and Lauren Morgan, B.S.). Because biology falls under the School of Mathematical and Natural Sciences, other faculty members provide their expertise as it relates to biology. 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 biology 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 biology, 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 Biology department has received one of these grants; several have won multiple grants. Finally, faculty members are encouraged to serve on university committees.

The Biology 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 25 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 two instrumentation grants awarded by Arkansas INBRE. Over the last several years, two standard thermal cyclers, a gradient thermal cycler, centrifuge with rotors, bench top fluorometer, micropipetters, and miscellaneous laboratory supplies for teaching labs and undergraduate research have been purchased with these AR-INBRE instrumentation awards.

Over the last three years, the School of Mathematics and Natural Sciences has purchased a variety of office equipment and instructional materials. The following chart is a list of equipment purchases for the Biology department.

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

The School of Math and Sciences strongly feels that face-to-face course instruction is far superior to on-line or even Compressed Interactive Video (CIV) courses. The department has purposely avoided offering upper level biology courses using this medium. The department has focused attention on providing top-notch face-to-face courses for students. Faculty members are not discouraged from developing on-line or hybrid courses; however, very little has been done in this area. No courses within the Department of Biology are currently offered by distance delivery. Two on-line sections of BIOL 1063/BIOL 1071 Introduction to Biological Sciences/Introduction to Biological Sciences Laboratory are offered and administered by the Office of Academic Affairs.

The UAM campus governance and academic approval processes are followed for any new course added to the curriculum. Any new degree program, regardless of the method of delivery must be reviewed by the faculty, approved by the academic unit dean, The Academic Council, Assembly, Chancellor, the University of Arkansas Board of Trustees, and the Arkansas Department of Higher Education Coordinating Board prior to implementation.

University of Arkansas at Monticello faculty and students have access to infrastructure and technology that includes intranet, BlackBoard, Compressed Interactive Video, broadband Internet, and access to the online catalog, electronic books, and journals available in the Fred J. Taylor Library and Technology Center, as well as web-based mediums. Regular funding is an ongoing process that includes technology upgrades, software licensing, and technical support.

The UAM Information Technology Department sets forth guidelines for the protection of personal information following information security policies regulated by the State of Arkansas security recommendations. These guidelines state that UAM can only collect personal information through a secure link and with prior approval from the individual involved. Personal information cannot be stored on the course management system by the students or faculty. The Office of Academic Computing regularly scans web sites for the presence of personal information. The removal of any personal information found on the course management system is immediate. The Learning Management system (BlackBoard in this case) is subject to the same security measures as all other

Information Systems on the UAM campus and meets State of Arkansas security guidelines for protecting personal information.

Online students receive the same advising support as students taking courses on-campus. Advisors are available via published contact phone numbers and e-mail and are always ready to help students with preparation for registration. In regard to course registration, students who are registering for only online courses are directed to contact the UAM Office of Academic Affairs for support and assistance. For financial aid for distance education students, students may complete the Free Application for Federal Student Aid (FAFSA) online and can view their financial status via WeevilNet.

Support services are provided to students enrolled in distance technology courses primarily by the Office of Academic Computing. Faculty members also assist with issues with which they are familiar to help share resolutions. The Office of Academic Computing supports distance technology courses with training workshops on how to use Blackboard, online tutorials, e-mail forms for support, and by providing contact phone numbers for the Support Center, and a web option for Live Chat with support personnel. Blackboard training workshops are now required for all students using any form of distance education.

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. For the Advanced Microcomputer Applications course, there is an on-campus orientation session where 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 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 Biology students in UAM’s Biology program has remained stable over the last three years. The Biology program has developed a multifaceted strategic plan to recruit, retain, and graduate Biology students. Recruitment involves establishing relationships with area High School Biology teachers, regular visits to Middle Schools and High Schools, and events held on the UAM campus designed to create interest in the program. Retention and graduation efforts include: E-

mentoring; the First Four Weeks Program; the First-Year Experience Program; Students Services; and, remediation.

There were 12 graduates of the UAM Biology program in 2013, 16 in 2014, and seven in 2015, or an average of 11.7 per year. This is almost exactly the same as the 10-year average of 11.9. The low number of graduates in 2015 is due in part to a greater-than-usual number of students that were granted early acceptance into pharmacy schools the year before. These students will likely receive degrees from UAM during the next two years as they complete coursework in pharmacy school and transfer credits back to UAM.

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, senior students often take a standardized exam involving biology, including the MCAT pre-medical examination, the PCAT pre-pharmacy exam, the DAT pre-dental exam, or the OAT pre-optometry exam. 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.

Thirdly, Biology Seminar, BIOL 4701, is a capstone course required of all Biology majors. One goal of this course is to validate the student's biology background through the development of a research presentation in which the student applies previous knowledge to a topic that was not specifically taught in the curriculum. Students in the course must write a research paper and give an oral presentation, demonstrating knowledge and understanding in a specific area of biology. Students may use original research if they are participating in such research with faculty. Some of these students also present their work at a state, regional, or national meetings. This year, seventeen students took Biology Seminar. This group was very strong compared to past years, and all students performed very well and met the desired learning outcomes.

Finally, the program is assessed by placement of the graduates. Most graduates are successful in finding positions. Over 95% of UAM Biology students who have applied to medical schools over the last 10 years have been accepted (although not all made it on the first try). The students' acceptance

rate in pharmacy schools is nearly as strong. Others have attended graduate programs; almost every student who has applied for graduate school in the last ten years has been accepted. 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 Biology program 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 Biology program appears to be specific.

BIOL 4701, Biology Seminar, is the capstone course for the Biology major. This course provides students with an opportunity to use concepts previously learned in their curriculum and to apply creativity and critical thinking to a project in the development of a paper and oral presentation. The course requires that each student conduct library research on a specific topic in biology. The student is required to submit a word-processed report in a pre-selected journal format, with references, and to give a fifteen-minute oral presentation on the topic.

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 instructors, and the courses themselves. Student evaluation of teaching is accomplished through a secure online survey operated by CoursEval. 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 courses in Biology above the general education core. 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 three years, five students have been accepted into medical school, nine have been accepted into pharmacy school, one has been accepted into dental school, one has been accepted into veterinary school, six have been accepted into graduate school for biology or other sciences, and two have entered the MAT program at UAM.

Each year, graduating seniors are invited to an exit interview with the Dean of the School of Mathematical and Natural Sciences. This year, seven graduating biology students participated in the exit interview. The report included “typical responses” and noted that the answers were similar to those from previous years.

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 biology or other sciences. UAM students are widely praised by school administrators for their content knowledge.

Every effort is made by the Dean of Math and Sciences and by faculty members to remain in contact with Biology alumni. Very few of these students have indicated that they have experienced any problems because of weaknesses in the program. Instead, most report that they have been exceptionally well-prepared for professional school or graduate programs. Many have been highly complimentary of the Biology-Biochemistry double major. A few graduates who have attended medical school have mentioned that a class in Histology might have been helpful had it been available. Several others have commented that Comparative Anatomy might have been useful. UAM has usually offered a course in Comparative Anatomy, but in the past it has not been required of pre-med students; this situation will change beginning in Fall 2016.

Arkansas has an extremely strong demand for health-care professionals, including doctors and pharmacists. The Biology faculty constantly monitors the requirements for medical and pharmacy schools (as well as dental, veterinary, graduate, and other post-baccalaureate programs) to ensure that the curriculum is properly aligned with these schools. The Dean and Biology faculty remain in constant contact with school districts in the area to ensure that demand for teachers is met. The curriculum is broad enough, with three different degree tracks and enough upper-level electives that graduates are well-prepared for careers in health, the laboratory, agriculture-related industries, or other private industry.

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

A major strength of the Biology program is the devotion of the faculty who are continually in search for better methods to serve the students. The faculty is extremely student-focused with virtually every activity conducted with the student in mind; this student focus extends to faculty research programs and service activities.

Another strength of the program is the strong relation with other science faculty. Their collegiality extends to Chemistry, Mathematics, Physics, and Earth Science faculty.

Finally, the program receives positive support and feedback from administrators and staff across the University. The Dean of Math and Science is the strongest support of Biology, constantly fighting for funding and always facilitating any suggestion by the faculty that will benefit students. The Admissions department works closely with Biology to recruit outstanding students and to find scholarship or other financial aid for deserving students. The administration recognizes the quality and success of the program and has moved to support it.

Biology faculty are underpaid compared to faculty at similar institutions in the state and across the region. In consideration of the experience and abilities of faculty and the success of students, the disparity in compensation does not reflect the strengths of the program.

Furthermore, due to the algorithm for computing 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.

Finally, 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 Department of Biology, its faculty, and its students have been consistently successful for the last decade. Faculty members continue to receive nominations and awards for teaching, student research results in awards and publication of results, and students continue to be accepted into post-graduate programs at an extremely high rate. To continue this success, changes and additions to the curriculum and attempts to upgrade equipment and facilities have been implemented over the past two years. Additionally, an additional lab instructor was hired within the last two years. The new position has eased some of the workload from professors, removed a bottleneck in Microbiology and Genetic labs, which allow more students to graduate on time, and has allowed faculty to create new, needed courses and laboratories for biology and allied health students. Finally, the department received funding to allow the replacement of most of the obsolete microscopes in the two largest teaching labs. The replacement of the microscopes with updated, current microscopes has resulted in more student learning and research opportunities.

The department received permission in 2015 to add a tenure-track biologist position. The new faculty will be hired in Fall 2015 and begin teaching in Spring 2016. Addition of a faculty member will allow the Department to add offerings of some courses as well as add upper-level courses in the specialty of the new hire. Additional 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.

Institutional Program Review Committee

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