

UAM Biology Department Program Review

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Reviewer:

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Overview:

The University of Arkansas at Monticello (UAM) has an amazing Biology Department. I was so impressed with the faculty, their work ethic, their commitment to the students, and their ability to do amazing work with severely limited resources. The doors that are opened for UAM students as a result of passing through the Biology Department are truly amazing. Their clubs, research opportunities, course offerings and the acceptance rate of students entering graduate or professional programs deserve praise.

I. Review of Program Goals, Objectives and Activities

A. Are the intended educational (learning) goals for the program appropriate and assessed?

The Department of Biology outlined five educational goals:

- 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.*

These are very appropriate and align with the information and feedback I received on campus. The Biology program is very focused on student success and they measure success based on students' ability to be admitted into graduate or professional school. The Biology Department made it very clear that their goal is to get every student into graduate or professional school. This is a very lofty goal; however the Department has amazing success at placing students into post-baccalaureate programs. It is obvious that the curricula combined with talented advising is not only appropriate for the Department but is serving the UAM students very well.

In addition to servicing their own students, the Department offers courses that service 20 other programs on campus. This includes agriculture, forestry, nursing, education, psychology, and wildlife.

B. How are the faculty and students accomplishing the program's goals and objectives?

The curricula that the Department have developed support the stated educational goals. Biology's commitment to learning moves beyond the classroom. The Department supports three clubs, which judging from the number of fliers hung in the building, are very active. This is particularly impressive given the size of the Department. Student research is also a priority of the Department. All of the faculty I spoke to have active research labs, and several serve as mentors for the UAM-RPMS program. I was also particularly impressed with the number of external resources available to UAM faculty and students, including the Ouachita Mountain Biological Station and Gulf Coast Research Lab.

Students are engaged and, from what I saw, active participants in their college careers. The Department creates a collaborate environment with their students that includes active advising, and mentoring to help guide students to appropriate post-baccalaureate programs. I witnessed numerous conversations where faculty spoke about working with students to find their niche in the biology world. A lot of attention was paid to students' goals, whether students reached their goals, and how students were performing once they left UAM. Most of this information seems to be collected by voluntary reporting by the student and during casual conversations. It is impressive that students are reporting back to the Department at the level I saw, and that the faculty remember the alumnus' goals and backgrounds. A more structured method for tracking student success may, however, be useful.

The number of service courses for other UAM programs is impressive and it appears as though there is a growing demand for these courses. It is always exciting to see high course enrollment. However, many of the faculty are teaching large labs (30+) which is challenging at best and in some field situations may present unsafe situations. The use of student workers was lauded by both faculty and students in these courses. The addition of a new faculty member may help alleviate some course crowding. I am also concerned about the lack of prerequisites for the upper division courses (particularly microbiology and anatomy and physiology). Without a proper introduction to basic biology principles, students will struggle. The failure rate of the students that lack basic biology courses in these classes that lack the basic biology courses is a testament to the need for prerequisites. I strongly encourage instituting prerequisites for upper division classes to improve success.

C. How is the program meeting market/industry demands and/or preparing students for advanced study?

The Department did a wonderful job justifying its program and identifying regional need for the students it is producing. Demand for UAM students is obviously high; the Department

has a 96% acceptance rate for those that applied to professional school. Arkansas has a demand for qualified health professionals and UAM is working to fulfill this need.

D. Is there sufficient student demand for the program?

The Department also boasts a growing student body, the number of majors has been increasing over the past 10 years, and this is reflected in the growing demand for particular courses. The combination of a robust job market for medical professionals in the region and an increase in enrollment would indicate that the UAM Biology Department is doing a good job and is poised to grow in the future.

E. Do course enrollments and program graduation/completion rates justify the required resources?

Currently the Biology Department is struggling to meet the demands of its students and additional faculty are needed to properly staff labs and cover courses. The current building is woeful, and when I was there water was leaking onto the floor in several classrooms. The labs were small, dark, and smelled of mildew. Despite this, the faculty were doing research and persevering with the resources they had. I know that there are plans for a new science building, which is certainly needed and deserved, and that funding is in place to revitalize the herbarium and repurpose portions of the Natural History Museum (a VERY cool asset!).

I was shown new microscopes and several equipment purchases that will be assets to Biology. However there is a distinct need for student computers in the computer lab and a printer. This was the primary complaint of students when asked about resources.

II. Review of Program Curriculum

A. Is the program curriculum appropriate to meet current and future market/industry needs and/or to prepare students for advanced study?

The program curriculum is very appropriate for the current and future market as indicated by the needs outlined in the Program Review. The curriculum is well rounded and there is obvious thought put into the courses students are required to take. Courses are offered on a rotating basis and students seemed able to get all the courses they needed.

B. Are institutional policies and procedures appropriate to keep the program curriculum current to meet industry standards?

Biology faculty meet regularly to discuss the curriculum. They bring input back from professional meetings within their discipline as well as professional development opportunities for advisors. This is particularly clear in the pre-professional options with regard to changing entrance pre-requisites and MCAT requirements. The information is discussed within the Department and appropriate adjustments are made to ensure students are properly prepared

for graduation. A good example of this process is the development of the Pre-Veterinary curriculum based on the entrance requirements of every vet school in the region.

C. Are program exit requirements appropriate?

The Biology degree requires 120 hours of study, including 35 hours of general elective credit, which is in line with other universities. All Biology majors are also required to have a minor.

D. Does the program contain evidence of good breadth/focus and currency, including consistency with good practice?

The course offerings within Biology cycle appropriately and cover the needs of the students. There is a nice balance of lab and field courses. I am particularly impressed with the number and diversity of natural history courses which include a good mix of plant and animal taxa.

E. Are students introduced to experiences within the workplace and introduced to professionals in the field?

This was unclear from the information I received. Students are obviously exposed to and encouraged to perform research with faculty mentors, which would be an introduction to professionals in their field.

F. Does the program promote and support interdisciplinary initiatives?

Yes. The Biology Department teaches numerous service courses for other programs at UAM. Additionally most Biology majors are double majoring in biochemistry and there is clear collaboration between the Biology and Chemistry Departments.

G. Does the program provide respect and understanding for cultural diversity as evidenced in the curriculum, in program activities, in assignment of program responsibility and duties; in honors, awards, and scholarship recognition; in recruitment?

The report did not include any data on diversity. The Biology curriculum does include 39 hours of general education credit from across the disciplines, including the social sciences, fine arts, humanities and history or government. Within the Biology major requirements, there is no specific requirement that covers cultural diversity, which is to be expected. My observations of the student body and the faculty within the Department appear to reflect the community and my knowledge of the participants in clubs is appropriate for the makeup of the student body.

III. Review of Academic Support

A. Does the program provide appropriate quality and quantity of academic advising and mentoring of students?

The advising within the Biology Department is very good. All faculty advise students from door to door. The faculty seem to know the students names and goals on sight and appear readily available to help students not only during peak advising times, but throughout the semester. The faculty spoke about the lists of advisees that were distributed during the semester which allowed them to reach out and contact students to set up appointments. I was also impressed with the Advisement Report and degree completion plan that the advisor and student complete together after 70 hrs.

The Department also recommends the tutoring center to students and works with students on a one on one basis for both academic and personal issues.

B. Does the program provide for retention of qualified students from term to term and support student progress toward and achievement of graduation?

According to the data provided it appears as though the Biology Department does a good job of retaining students and working with them towards graduation. The focus on advising and the personal interactions they have with students has produced a strong rapport that was evident not only with my meeting with students but in the hallway interactions I witnessed.

IV. Review of Program Faculty

A. Do program faculty have appropriate academic credentials and/or professional licensure/certification?

The faculty at UAM are excellent and are truly the university's greatest assets. All tenure track faculty have doctorate degrees and the lab instructors have the appropriate levels of education. There is wonderful diversity of interests that fulfill the needs of the students and that provide for a good mix of research experience.

B. Are the faculty orientation and faculty evaluation processes appropriate?

UAM hosts a Faculty Development Week to orient all new full-time faculty hires. The orientation includes information on advising, regulations, resources and facilities. From discussions with faculty, new hires are supported and mentored within the Department to ensure that they are successful.

The evaluation process for faculty is appropriate. Full time faculty are evaluated annually using student evaluations and one peer evaluator. Evaluations of faculty with less than 6 years' experience include a self-evaluation that is submitted to the Dean, evaluation by at least 3 peers and an in-class peer teaching evaluation. Full time faculty with more than 6 years of experience undergo this full evaluation once every 5 years.

C. Is the faculty workload in keeping with best practices?

The teaching load for UAM faculty is high. Although UAM is ultimately a teaching university, a decrease in teaching load would be appropriate especially for faculty that have active research programs. This could be accomplished by counting student research into load. It is notable that faculty are given 2/3 contract hours credit for teaching lab and that lab coordinators are given 3 hours credit for preparation time. However, UAM still requires evidence of a research program. Faculty publish papers, mentor students, and work on grants. This research is very difficult with the current assigned workload.

V. Review of Program Resources

A. Is there an appropriate level of institutional support for program operation?

The administrators I spoke to were very supportive of the Biology Department. They were aware of the work that they were doing and spoke highly of the faculty. There is support for professional development, faculty research grants, providing matching funds for external grants, and technical support for equipment and software. The most notable administrative support is the funds raised to build the new Plant Research Herbarium. This will be an incredible asset to the Department and university. The administrators also were acutely aware of the deplorable conditions in the Sciences building and for the need for a new building.

B. Are faculty, library, professional development and other program resources sufficient?

The current faculty in the Department are wonderful. They are concerned, conscientious, and student centered. Their only fault is that there aren't more of them. The Department announced a new hire during my visit, and it is my hope that this person can help alleviate some of the concerns I have about overcrowding in labs. With a growing Department, it may be time for UAM to consider adding a Department head in Biology or appointing someone as a program coordinator. The Interim Provost indicated that Education recently appointed a faculty member as a coordinator and this model may be good for Biology.

The library's resources seem appropriate for a campus of UAM's size. I did not hear complaints about the library and my personal belief, coming from a small institution, if the on-line data bases are good and the interlibrary loan office is liberal with requests and relatively quick, that the library is in good shape. Both appear to be true.

The Biology Department has roughly \$6600 annually to spend on travel to professional development. The money appears to be spent annually with a good cross section of the Department taking advantage of the funds. It is also worth noting that the funds appear to go far, because each faculty member is only taking a small portion.

The building is an obvious source of concern, and I won't belabor the point here. Other Departmental lab resources are okay. The students did have concerns about the quality of the microscope slides in some courses. The purchase of a set of new microscopes, and micropipettors is notable and I am glad to see the teaching equipment needs are being met. There was concern about an autoclave, which was purchased, but has yet to be installed correctly. Proper functioning of equipment is a collaborative effort between faculty and

facilities. It is unfortunate when the equipment is in place but can't be used because of a failure in infrastructure.

Computer equipment for student use in the Sciences was lacking and a primary complaint of the students I met with. They were particularly concerned about the lack of access to a printer.

VI. Review of Program Effectiveness

A. Indicate areas of program strength.

1. The faculty are a huge strength to the Biology Department. They are incredibly hard working and are obviously concerned about the success of their students and the program. I have not seen more committed faculty.
2. The advising model the Department has adopted is impressive. There is obvious care and consideration that goes into ensuring students are successful in their program.
3. Collaboration with the chemistry Department is notable. Almost every student I spoke to was a double major in Biology and Biochemistry which is a brilliant model. In fact I came back to my university and pitched the idea to our chemistry Department.
4. Faculty are doing a really great job with research considering their teaching loads and available space and resources.
5. The Natural History Museum and the commitment to a building for the Herbarium is a valuable resource, one that hopefully with a new building and redistribution of space in the existing building will be utilized more in the future.
6. I cannot say enough about how the Biology Department prepares students for their post baccalaureate careers. Their acceptance rate into professional school speaks for itself.
7. The students spoke highly of student lab helpers.

B. Indicate the program areas in need of improvement within the next 12 months; over the next 2-5 years.

The Biology Department is doing a great job. I do have several suggestions.

1. I think it is very important to look at the size of laboratory sections. Many of the lab sections are too big to be effective and some could have safety concerns.
2. Consider adding a program coordinator or chair for the Department.

3. Develop a mechanism to count involvement of student researchers into teaching loads.
4. Develop a mechanism to better count the number of enrolled students. Currently students are double counted in some majors, which create issues with determining enrollment.
5. Add pre-requisites for upper division courses including Anatomy and Physiology and Microbiology.
6. Consider using a nationally normed test for all majors. Currently assessment of majors is dependent on student reported scores from the GRE, PCAT, MCAT etc. There is no mechanism to identify weaknesses in the curriculum.
7. Move the on-line biology courses into the Biology Department.
8. Work towards purchasing new slides for biology labs and providing students with adequate computer resources.
9. Students I spoke too were unaware of UAM's student's post-baccalaureate success rate when they applied. I would put that on a billboard.
10. The pay for the faculty and staff needs to be evaluated. I suggest looking at the mean salaries for faculty at peer institutions and ensuring that all faculty are within 85% of the mean for their rank.

Suggestions for the long-term (most of these will be beyond the control of the Biology Department)

11. A new building is imperative!
12. Instituting an Office of Research and Grants
13. Students complained a lot about financial aid. It is unclear what steps can be taken to fix the office, but it is worth mentioning.

C. Indicate areas for program development based on market/industry demands that have not been identified by the institution.

I cannot identify any areas for development in this category.

VII. Review of Instruction by Distance Technology (if program courses offered by distance)

A. Are the program distance technology courses offered/delivered in accordance with best practices?

The Department of Biology does not currently offer any distance learning courses. However, there are two on-line sections, Introduction to Biology and Introduction to Biology Lab, offered through the Office of Academic Affairs. It is upsetting that an administrative office would offer a course without the permission or oversight of the home Department. The Department expressed concern over content, grading, and laboratory material. It is my recommendation that this course be turned over to the Biology Department.

Because this course is not offered in the Department I cannot assess the following questions:

- B. Does the institution have appropriate procedures in place to assure the security of personal information?
- C. Are technology support services appropriate for students enrolled in and faculty teaching courses/programs utilizing technology?
- D. Are policies for student/faculty ratio and faculty course load in accordance with best practices?
- E. Are policies on intellectual property in accordance with best practices?

VIII. Review of Program Research and Service

A. Are the intended research and creative outcomes for each program appropriate, assessed, and results utilized?

The Department does a really good job doing research and securing grants for research especially in light of their facilities, space, and available resources. All of the faculty I spoke to had active research programs. The Fawleys are of particular note. Results are published when appropriate and shared at regional and national meetings.

B. Are the intended outreach/service/entrepreneurial outcomes for each program's initiatives appropriately assessed and results utilized?

The faculty are also engaged in an appropriate amount of service. There are three active biology clubs that are mentored by faculty and UAM School of Math and Natural Sciences hosts the regional science fair (59 years and counting). Faculty serve on university committees and assist with both Departmental and school wide requests.

IX. Local Review Comments

A. How is the program meeting market/industry demands and /or preparing students for advanced study?

I was incredibly impressed with how the Department is preparing students for advanced study. I routinely heard 'We have failed if a student doesn't go on to graduate or professional

school'. This statement is not just lip-service. Students were aware of this expectation and expressed how hard they are working toward that goal. One look at UAM's acceptance rate should show the dedication of the Department to this goal.

B. What program modifications are needed?

See VI B above.

X. Report Summary

A. Include reviewer comments on the overall need for the program graduates/completers in the local area, region, and/or nation over the next 5 years.

The Department did a wonderful job laying out the regional need for their graduates. The UAM Department of Biology is a gem in Montacello. I spoke to several out of state students that were convinced by their friends to come to UAM specifically for the Biology program.

B. Include reviewer comments on overall program quality, state program review process, etc.

As outlined above in VI A, my feelings about the Department are positive and the Department is an asset to UAM. The state review process is odd, the academic program review every 10 years is completely appropriate, however the need for the state to comment on changes to the major curriculum (including adding new courses) seems a little much. I am not sure why these small changes to a program can't occur internal to the university.