External Review Team Report

Summary

On September 16-17, 2004 an external review team site visited North Carolina Agricultural and Technical State University to assess the Department of Biology. The team assessed departmental mission and goals, curricula, faculty, students ( advisement and mentoring), facilities and resources, and administration/leadership. In conducting the assessment the team interviewed faculty of the department including the Department Head, key University administrators, and students matriculating in departmental degree programs. The team found strengths and weaknesses in each of the indicated categories. Key recommendations of the team are presented here, however, all recommendations are detailed in body of the report.

- The Department of Biology should engage in a formalized ongoing self assessment to promote effective evaluation of it goals, objectives and programs.

- The operating budget of the Department of Biology must be increased for the department to meet its teaching and research responsibilities.

- Examinations given by the Center for Student Success indicating a need for student reading remediation should result in these students demonstrating reading abilities at a level such that this skill does not factor into their success in courses of the department.

- In order that the Department of Biology meets the goals and objectives of “FUTURES”, additional faculty and staff positions must be provided, and new faculty hires should be based on capability to develop ongoing interdisciplinary research and training programs.
External Review Team Report

TO

North Carolina Agricultural & Technical State University

ON

Assessment of the Department of Biology

September 16-17, 2004

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External Review Team Report
Assessment of the Department of Biology at
North Carolina Agriculture & Technical State University
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INTRODUCTION

This is a report resulting from an external review of the Department of Biology at North Carolina A&T State University. The purpose of the review was to determine how well the department is achieving its stated mission, including the quality and appropriateness of departmental goals, faculty, curricula, facilities, instruction, and other resources needed to support effective teaching and learning in the department. The report will provide observations on the strengths and challenges currently existing in the department and make recommendations to help the department achieve its goals. Accordingly, the report includes observations and summary findings with respect to the Biology Department's mission and goals, programs, faculty, students, facilities and resources, and administration. The final section of the report lists recommendations for improvements in the categories addressed by the review team, which may be used as possible guidelines in setting foundations for building stronger interdisciplinary teaching and research programs in preparing the next generation of science students and research faculty.

The team interviewed representatives from all constituent groups within the department, to include faculty, current and former undergraduate and graduate students, the Interim Dean of the College of Arts and Science, the Director of the Center for Student Success, the Director and a staff member from the Division of Research, and the Biology Department Chair. Records reviewed include the Undergraduate and Graduate Bulletins for 2003-2005, course syllabi, vitae of faculty, architecture drawings for the proposed new annex, the departmental Annual Report for May 2004, informational posters and brochures on departmental events as well as research and other information available on the website. The visit also included a tour of the facilities.

OBSERVATIONS/FINDINGS

Mission and goals

North Carolina A&T State University is a public, comprehensive land-grant university with a formal mission statement framed around the fundamental purposes of the university. The statement, published in the University Bulletins sets forth future directions and delineates the major goals of the University as approved by the faculty.

The Department of Biology's mission statement relates well to the mission of the University and is published in the department's May 29, 2004 Annual Report. The second page of the report contains an elaboration of the mission along with departmental goals. The mission statement and goals for Biology represent a thoughtful appraisal of the purposes of a Biology Department in a public, comprehensive, land-grant university.
and a refinement of the departmental objectives described in the University Bulletins. Particular attention is given to the preparation of students for graduate or professional studies and science education as well as to enhancement of scientific literacy in students who complete general education courses in biology. The mission statement calls for well-prepared students and it acknowledges the University’s responsibility to help faculty and staff maximize their potential while carrying out their responsibilities in the department. Selected core values such as collaborative engagement, excellence, and intellectual growth are mentioned in the mission statement. More importantly, however, is the degree to which the departmental faculty, students, administration, and staff are able to describe the mission and goals in their own terms. The review team noted widespread understanding that the department's transition toward more emphasis on interdisciplinary courses, research, and larger numbers of students pursuing graduate study will require adjustments on everyone’s part. It was less obvious that all constituents recognize and are committed to embracing the magnitude of the changes necessary in order to realize their goals. Such changes include, but are not limited to, enhanced study habits, advising, instruction, scholarly productivity, and service.

**Curricula/Program**

<table>
<thead>
<tr>
<th>Observations</th>
<th>13 full-time, 7 adjunct and 1 visiting</th>
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<tbody>
<tr>
<td>Faculty number</td>
<td>Approximately 360</td>
</tr>
<tr>
<td>No. UG Students</td>
<td>39 UG; 16 Grad; 2 Seminars → 55 – 57</td>
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<td>No. courses</td>
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**Comments**

The premise for evaluation of the Biology Department is that the University’s intent is to establish a lasting tradition of strength in faculty research and scholarship built around a firm commitment to the inclusion and development of students.

The Department of Biology has a large number of undergraduate student majors and provides service teaching for the NCA&T General Education requirements and for foundation courses in biology for other majors. Rather than having other majors take foundation courses from existing departmental courses, the Biology Department offers courses with specific content for the service courses. The number of courses listed in the catalogs is high for the number of faculty FTEs in the Department. The catalog listing of 39 undergraduate courses, 16 graduate courses and two seminars constitutes an excessive teaching obligation for the size of faculty. Most of the listed courses have some kind of teaching laboratory experience associated with the course. Many higher level courses are listed as available upon demand. The initial impression from an external perspective is that the number and type of courses exceeds the capacity of the current number and composition of faculty to provide top quality course experiences for the students and develop or sustain a viable program of research and scholarship.
The current mathematics requirement for biology students is stronger than most biology programs and provides a solid basis to develop cutting edge curriculum tracks for biology majors. These requirements should be sustained, with a caveat to ensure exposure of all biology students to descriptive statistics.

Two curriculum tracks now exist for biology majors: Biology; and Biology Education. It is commendable that the Biology Education track provides substantive exposure to the same biology courses required for the Biology major. It is highly desirable that the emphasis to provide substantive exposure to courses in “modern biology” continues as the Biology Department evolves future directions and emphases. It will be especially important to evolve the preparation of teachers as the fields of biology evolve.

The Department faces a challenge to modernize the biology curriculum to prepare majors for job opportunities in contemporary industry, pre-college education, and for advanced studies in doctoral and professional degree programs. Modernization of the curriculum and strengthening the capacity for faculty research and scholarship will constitute a major challenge to the departmental faculty and the university administration. Departmental faculty should assess the regional workforce needs and preparation as a critical component to influence decisions on how best to reshape the departmental focus. The Research Triangle businesses and institutes’ projections should be taken into consideration when assessing how well the curriculum prepares the NCA&T graduate to enter the scientific and technical workforce.

Recommendations

The recommendations are offered as objectives to guide Departmental faculty and administration toward modernizing changes for the department and programs. Progress in the department will benefit from establishment of a priority list and time line to achieve the objectives presented.

1. Reduce by one half the number of courses offered in the catalog. The goal, here, is to meet teaching-load requirements in ways that better support creative teaching and productive research.

2. Establish at least two thematic focus areas for departmental faculty research and scholarship. Assess the current faculty strengths and interests, and build the focus areas to promote intramural collaborations to increase productive research and scholarship. Consider building one focus around current strengths, and a second around a quantitative emphasis, e.g. evolution; population; informatics; etc. Others can be added as new faculty are hired to support expansion and growth in the department.

3. Redesign the graduate course offerings to reflect the emerging research emphases and strengths.
4. Design multiple, thematic, course work tracks for the Biology majors. Initially, start with two tracks in addition to the Biology Education. Possible examples of thematic areas to consider might include: Microbial Biology; Plant Biology; Molecular, Cellular & Developmental Biology; Plant and Environmental Biology; Biotechnology; etc.

5. Establish a core of courses for all majors and provide electives for the specific degree tracks.

6. Abandon attempt to offer a teaching laboratory experience with almost every course. The cost of continuing this approach is such that it will not be possible to offer first-rate, state-of-the-art courses. Even if the monetary resources were available to continue, the faculty number is insufficient to sustain the highest quality offering while simultaneously attempting to develop peer competitiveness of research and scholarship.

7. Design two teaching laboratory courses to replace all current laboratory offerings.
   a. Basic Biological Sciences Methods
   b. Advanced Methods Laboratory in Molecular, Cellular, and Microbial Biology

8. Consider developing an undergraduate capstone course as alternative to an undergraduate research exposure. Although it would be highly desirable for every student to have an undergraduate research experience, the number of majors would quickly overwhelm the small number of faculty.

9. The budget for faculty and staff FTEs in Biology should contain specific support for service teaching responsibilities. The current budget is inadequate to support and sustain the teaching required.

10. Develop and utilize team-teaching approaches to decrease faculty workload while sustaining student capacity. This may mean increasing lecture class sizes in the core courses. The team-teaching approach would be advisable also in the graduate course offerings.

Further Comments

Curriculum is an area where faculty have to have a complete sense of ownership. A number of specific aspects of current course offerings raise specific questions that faculty have to answer. The academic area of “biology” is vastly broader than the other scientific disciplines. Indeed, the campus of NCA&T underscores this point in the presence of multiple biological sciences departments and emphases on campus. An example is a major in Animal Sciences, and in Natural Resources and Environmental Design in the School of Agriculture. The School of Nursing is another example. Some courses considered necessary to provide a core exposure for students of Nursing or of Agricultural sciences may not represent the strength of a modern or modernizing Department of Biology. For example, the courses on Human Anatomy and Physiology,
and Comparative Anatomy are not a current focus or strength of the Biology Department. While these could be potentially important for future biomedical and health professional students, it currently appears unlikely that these areas will constitute a future focus or strength of the Department. If the Schools of Nursing and Agriculture want the Department of Biology to offer these and other courses that require special consideration for those School requirements, the budget of the Department must include resources to hire specific faculty to meet the teaching needs. It would be desirable to have two to three additional FTEs go to the Biology Department to hire new faculty with research interests that fit in the new foci and who have the teaching capabilities to meet these service course needs. The Biology Department faculty should look at the overlap in animal physiology course offerings, in Animal Sciences and in Biology, and determine whether one might meet the other’s needs possibly through interdepartmental cooperation. These are a few of the specific areas for Faculty attention on curriculum revision.

Faculty

The NC A&T State University Department of Biology faculty currently comprise 13 full-time members, 8 temporary/part-time members, and two instructional staff members. Together, they serve over 360 Biology majors and more than 800 non-major students in University service courses. Despite this incredible faculty to student ratio, the department continues, to maintain its stated core values and, under the leadership of a new Chairperson, seems poised to fulfill its mission – albeit with some level of strong institutional support.

With the new leadership, the department is currently in transition, slowly changing its face in attempting to build stronger educational programs, create broader research opportunities/experiences, while reducing barriers to scholarly productivity and cross-disciplinary collaborations. In general, the challenges facing the department, its Chair and the institution as a whole are enormous. With respect to the faculty, several strengths and weaknesses were apparent from the review. Among the strengths are:

1. The faculty has seen some growth in the past year. Four new faculty were recently hired to complement existing members. Most of the new hires are evidently well trained and have plans to initiate active research programs within the department. This reflects the Chair’s commitment to foster improvements in the local scientific enterprise and contribute to the training of scientifically competent and nationally competitive student cohorts in biology for the future.

2. A cohort of faculty who is generally committed to the department and institution. Most of the faculty appear generally supportive of the department and its goals. In addition to heavy teaching loads, the Biology faculty have extensive committee assignments, which for many is excessive. Their commitment is also reflected in the fact that the biology faculty generates more than 9,000 credit hours annually, mostly in service courses, and often utilizes their own funds to provide supplies for student
labs. During the review discussions, they appeared generally impressed with the current direction of the department and seem willing and ready to embrace the move towards more interdisciplinary coursework and research.

3. Improvements in the biology department’s technological capabilities. A ‘Change Agent’ was included among the new faculty hires that have been instrumental in facilitating improvements in the computer labs as well as in establishing ‘smart classrooms’ within the department. These changes are significant and should expand the capabilities of the faculty in delivering lectures and presentations, students’ ability to access information and educational databases, as well as facilitate e-learning, problem-based activities, and possibly promote faculty-student communication, particularly among self-supporting students who are generally employed outside of the institution and currently has minimum contact with faculty outside the classroom.

4. Faculty development activities. Discussions with the students, faculty and Chair of the Biology Department indicate a significant increase in the number of seminars and information forums in the department. These range from scientific and research-based sessions to those relevant to career opportunities in the sciences. Sessions such as these are invaluable means of information exchange, as important to student training as it is to the scientific careers of faculty alike, and should be encouraged and allowed to flourish wherever possible within and outside the department. Additional strengths have been the initiation of grant-writing workshops and the hiring of a part-time Science Editor for the faculty. These reflect major commitments on the part of the Department Chair (and institution) in supporting and promoting opportunities geared toward enhancing the faculty’s scholarly productivity. It is recommended that the new faculty take full advantage of these resources in their efforts to win new grant awards. Further, the existing faculty should embrace these as part of an effort to retool, and thereby maintaining a place in the mainstream, research-based workplace. These resources should also be of significant help to teaching faculty, who should be instrumental in developing state-of-the-art teaching materials, learning tools, etc., deliverables that can be useful throughout the department and elsewhere in facilitating improvements in the biology knowledge base of science students. The Biology department continues to support faculty travel to scientific meetings, which is commendable.

5. Establishment of Strategic Partnerships with other institutions. This is an important and commendable effort, which could be invaluable based on existing needs of the Biology department. Similar efforts have, in the past, provided Postdoctoral Fellows (as an example) to the department who assist in teaching and student research training. This should be encouraged and supported; having such partnerships is visionary and evidence that the department is on the right track for the future in this regard. The opportunities created by these endeavors are also major resources for the Biology faculty as they allow for the forging of new collaborative interactions and partnerships with faculty from research-intensive institutions and other programs. These should also expand the possibilities for student training both at the Graduate and undergraduate levels.
6. Improvements in the research infrastructure/capacity of the Department. There are ongoing and planned renovations of space for both research and teaching occurring in Barnes Hall, which will be of significant benefits to the department in the future. The establishment of a Molecular Biology/Bioinformatics Core will bring new technologies and research tools to the faculty as well as expose students to state-of-the-art approaches to solving biological problems on many levels. It is the hope of the review group that establishing Cores such as these is only a beginning in providing other similar resources to faculty in the department. While the specific needs for other facilities should be carefully assessed, these will be invaluable to the future growth and development of the department’s interdisciplinary research and teaching capabilities. Other renovations currently underway, including a planned annex, should expanded teaching facilities as well as improve faculty research and office space availability. **Modernization of the existing facilities may also improve the ability to attract and retain quality faculty candidates.**

7. Changes in the department’s leadership/administration. The department has been under the leadership of a new Chair since the Fall of 2003, who has been instrumental in garnering support of the faculty and senior administration in implementing changes in the Department of Biology. In addition to appointing an Associate Chair to assist with administrative responsibilities, she has mobilized the faculty to become more actively involved in departmental research and service activities, secured release time for new faculty to establish a research base, initiated remodeling and renovation activities, hired a Grants Administrator, and expanded the department’s support staff. The Chair has been resourceful in facilitating improvements and change in a department, which has been overlooked and neglected for many years prior. The Chair’s vision, professional expertise, and enthusiasm for moving the department forward are clear and she benefits from the support of faculty, students and administrators alike.

Despite the above mentioned strengths, there were several areas of concern, which were apparent throughout the review process and could significantly impact the Department of Biology and its quest to improve qualitatively. These should be taken seriously at the departmental and senior administrative levels, discussed extensively, and plans developed and implemented to offset these and thereby moving the department and institution forward. The concerns are as follows (and recommendations indicated):

1. Too few faculty for the student/teaching load. The expectation that the current faculty members in biology can effectively teach, mentor and train over 360 majors, over 800 non-majors, in addition to more than 20 masters-level graduate students, is not realistic. The retention rates, uncompetitive GPAs and low numbers of students progressing to graduate and professional schools are direct reflections of this. Current information on NC A&T State University’s student pool suggests they may benefit from smaller class sizes and more direct mentoring and advising. To facilitate this, and ensure a future pool of more qualified and competitive students, **the Biology Department must increase its faculty hires and consider fostering opportunities for**
inter-departmental and cross-disciplinary teaching. Further, if the plan is to move towards hiring new faculty (or facilitate retooling of existing faculty) to build a stronger research base, the Department and institution must undertake a serious and ‘realistic’ needs assessment/analysis, significantly modify the existing Biology curriculum, provide training for faculty in effective mentoring, honor faculty release time commitments, as well as expand provisions for providing the necessary research infrastructure support and resources.

2. Little evidence of scholarly activity/productivity among the Biology faculty. Based on the information made available during the review, it is apparent that only very limited research is ongoing in the department and the individuals involved constitute less than a third of the faculty. The consensus is that the majority of the faculty are not currently involved in active research, individually or collaboratively. Further, it would appear many lack the desire or motivation to pursue research or to retool in preparation for such possibilities, should the opportunity arise. To foster continued growth and progress towards a research base and hands-on experiential student training in the department, faculty development activities should include provision of travel for faculty to professional conferences that provide experiences which stimulate interest in life science research and training.

3. Too few faculty taking advantage of faculty developmental activities. It seems too few faculty members in the Biology Department participate in developmental activities geared toward building research and/or mentoring capacity. This is reflected in the faculty’s general lack of motivation and limited involvement in research, which is obviously mirrored by the apparent slow mobility of NC A&T’s Biology students/graduates into research/academic and professional careers. With the current national trend directed toward multi-disciplinary and cross-disciplinary science training, it would be unwise and a disservice to the students to allow any further erosion in the science education process of NC A&T’s Biology students.

4. Limited to absent student mentoring. During the review, students report too few faculty make themselves available for mentoring/advising sessions or for academic consultations, even during their posted office hours. Some formalized training for faculty in mentoring would probably help in resolving this issue. Additionally, the Department should consider instituting mechanisms to ensure some level of oversight in this regard.

5. Evidence of faculty commitment to outstanding teaching and research was weak, which was reflected in expectations for tenure and promotion. Most faculty are of the impression that having tenure review at A&T is of little consequence; maintaining tenure is more or less automatic once tenure is achieved.

6. Impression of the Biology faculty that students admitted to the Department at both the graduate and undergraduate levels are not reasonably qualified. Recruitment currently occurs at the institutional level, and some faculty would like to have a more active role in the process. This should be strongly encouraged, especially for those
faculty who are committed to high quality research and teaching and who can lead and mentor by example.

7. Limited faculty scientific/research expertise. The lack of broad and diverse areas of specialization among the current faculty, particularly those few involved in research, reflect the limited course offerings available to Biology majors; limited active on-site research training opportunities for undergraduate and graduate students; and, the general absence of research interactions and collaborations among faculty. To overcome this would ensure the development of a student cohort that is well trained, technically and intellectually competent, and better informed with regard to career options.

Additional recommendations, which may help in facilitating the above include:
1. Refining courses within the Biology major curriculum and identify and strengthen them to emphasize cross-disciplinary training research and exposure to make courses generally more current. Consider incorporating problem-based activities and critical thinking skills.

2. Develop mechanisms for joint sharing of faculty between departments for service courses (e.g., using Nursing faculty for Nursing Service Biology course). A team-teaching approach may be worth considering at the outset.

3. Expand and refine the graduate program such that faculty members can better concentrate on pedagogy in lectures, while graduate students oversee laboratory activities for undergraduates and lead tutorials (possibly as part of their teaching practice).

4. Encourage faculty and graduate student research talks as part of routine departmental activities and/or Journal Club. This would help in vetting the quality of the work as well as provide important feedback and guidance in presentation skills for students, etc.

Students

Advisement and Mentoring of Students

Review of the advisement and mentoring programs for undergraduate students of the Department of Biology revealed strengths and weaknesses. Strengths of the program lie in requiring students to see advisors prior to enrolling in classes each semester. The advisors activate student registration pin numbers, which allows students to enter their courses. Thus, the process is an effective method of monitoring students’ progress as they matriculate through the curriculum of the department. The faculty post their office hours on or outside their office doors for students to know periods when they are available. The Center for Student Success, which is an Education Support Center housed
in Academic Affairs is another strength of the advisement program of the University and
department. This center was organized to provide services to students who need
assistance in strengthening their academic skills. It was found that the center was
established with the intent of addressing the needs of undeclared majors but has extended
its services to all students. Through the center, special classes in reading, mathematics
and university survival are provided. Also available to students and the department is the
Office of Counseling Services, which is housed in the Division of Student Affairs.
Through Counseling Services the University provides counseling, testing and guidance
for all students. All freshman students are tested and the results are used to assist
freshman in the planning of their educational and vocational careers. The Office also
conducts other testing programs that are either required or desired by departments of the
University. Also of significance is the department Chair holding sessions with students
to learn of their concerns and provide a mechanism for student input to improving the
departamental programs.

In review of the advisement process of graduate students it was found that the procedures
and regulations used by the Biology Department and the University's School of Graduate
Studies are typical of graduate training programs. The students must establish an
advisory committee that will advise them as they matriculate through their graduate
training. This is the case for both thesis and non-thesis track students. It was not clear at
what point in their matriculation process students must have established their advisory
committee, but the departmental graduate coordinator conducts advisement of these
students until their committees are established. The students are required to pass a
comprehensive examination and defend their thesis research or non-thesis project.

Undergraduate Program Weaknesses and Recommendations

There were a few of weaknesses identified in the undergraduate advisement program. It
was noted that students in need of reading remediation are allowed to enroll in the
general biology and non-majors biology courses. These students should be required to
gain remediation prior to enrolling in these courses. The success of a student
matriculating in these courses is directly linked to their ability to read material at least at
the high school tenth grade level.

    • It is recommended that if exams given by the Center for Student Success indicate
      a need for reading remediation, then these students should not be allowed to enroll
      in these courses until they have demonstrated ability to read at a level such that
      this skill will not factor into their success in these courses.

In conversation with both undergraduate and graduate students majoring in biology it was
found that often times faculty are not available during their posted office hours to provide
advisement, nor mentoring sessions with students. It should be noted that the students
indicated that this situation was not the case for all faculty but a large majority. This
situation is viewed as a major problem because it was noted that faculty are loaded with
academic advising, committee assignments, research, graduate training and teaching
responsibilities.
- It is recommended that efforts should be made to reduce faculty committee assignments and general academic advisement load. For instance, several of the committees might be collapsed into one committee and academic advisement, which consist of monitoring student progress (registration pin activation, etc.) in the degree program, might be carried out by setting a small number of faculty (two or three) to be available at specified times to carry out this process. Of course, this responsibility could be rotated amongst the faculty. This would eliminate faculty having as many as 40 advisees to attend to, which is overwhelming in many ways, and probably leads to the issues indicated in our conversations with students.

- It is recommended that the department establish a formal student survey process to easily gain an overview of student opinions in a number of areas and that the department opens the lines of communication with students providing them information on the department’s efforts to address their concerns. This will decrease the apathy of students and lead to their increased cooperation and academic productivity.

- Finally, there was no evidence of the department’s active involvement in recruitment of undergraduate and graduate students to matriculate in its degree programs, thus it is recommended that the department become more involved in identifying and recruiting students to its programs.

Of major concern is that there is no formal mentoring program for the undergraduate students. A large number of these students are seeking a career in medicine, whether it is as a physician, dentist, optometrist or other area they are in need of mentoring. It is highly unusual that a pre-health professional program would not exist in a department where such a large number of students are interested in these careers. Many institutions have student organizations such as the American Medical Student Association and Student National Medical Association that assist in providing these students formalized professional activities. Also of concern is that there was no formal program in place to mentor students interested in pursuing teaching, research, and other professional life scientist careers.

- Efforts should be taken to formalize assisting students to identify summer experiences that would provide them the kind of mentoring and experiences necessary to achieve their career goals. It is also suggested that students be linked with faculty in the department and throughout the University that have expertise in the area of the student’s interest for mentoring purposes.

- It is recommended that a pre-health professional mentoring program be established in the department. An advisory committee could be established that would carry out coaching of these students in preparation of personal statements and admissions applications, training of these students to handle interviews, tracking of these students to insure their success in meeting career goals, and assisting these students in building a resume (e.g., volunteering at health facilities, shadowing health practitioners, participating in community service activities, etc.)
that demonstrates the level of their desire to become successful medical practitioners.

- Also recommended, faculty should attend professional meetings where mentoring training activities are the primary objective.

Discussions with students of the department raised major concerns of the advisement and mentoring efforts of the department. It was indicated that the attitude of some faculty was very negative, which results in setting the attitudes of students. If the faculty instructing students allow their frustrations to flow into the classroom, one can anticipate that the students will become frustrated and apathetic. This is a very difficult issue to address. It really has to be addressed at a level higher in the institution than the department. In most cases, faculty frustrations result from lack of support (positive reception and financial) for them and their programs and excessive work loads/demands. The department has three student organizations, Biology Club, Beta Kappa Chi, a Scientific Honor Society and Beta Beta Beta the Biology Honor Society; however, there is very little student participation, which may result from the level of student apathy.

- It is recommended that the institution strongly consider decreasing the number of part-time/adjunct faculty while increasing the number of faculty positions and support staff of the department which would assist in decreasing the work load of full-time faculty and promote increased research and advising productivity. Also of major impact to the department is the need to increase the operating budget, which is likely a basis for faculty frustration. In many cases, faculty are utilizing their personal and external grant support to equip and supply teaching laboratory classes.

Graduate Program Weaknesses and Recommendations

Discussions with graduate students and faculty did not reveal major weaknesses in the advisement and mentoring of these students. It was noted that some of the graduate students conduct their thesis and/or non-thesis research with individuals not formally linked with the department. A process does exist within the department for a student who does not identify a mentor within the department to identify an individual outside the department/University to serve in this capacity. This individual essentially serves as an external member of the student’s advisory committee and does have signatory responsibility on the student’s thesis or non-thesis project. The external review team did not interview the Dean of the School of Graduate Studies to gain a full understanding of the policies and procedures of the Graduate School with respect to faculty gaining graduate faculty status and individuals external to the University serving as thesis and non-thesis project research advisors/directors. It was noted that 10 of the 23 graduate students are linked with departmental faculty for mentorship purposes. Thus, it is assumed that better than 50% of the graduate students of the department are linked with individuals outside the department to serve as their project advisors. Also, a few of the graduate students interviewed by the external assessment team indicated that faculty were often not available to feel their advising needs. The faculty workload has to be higher than what is evident by teaching loads. The department has matriculating in its programs
better than 360 undergraduate students and approximately 23 graduate students. In addition, approximately 800 non-majors matriculate in departmental service courses per semester and faculty are responsible for academic advisement, carrying out committee assignments, establishing an ongoing/maintaining a research/scholarly activity and mentoring of departmental majors. This work load is carried by 13 full-time/tenure track faculty, seven adjunct and one visiting faculties. The department Chairperson in our interview that only one faculty member teaches 12 credit hours and the other faculty teach less, but this does not consider the many other responsibilities of the faculty.

- As previously recommended, additional faculty and support staff are needed to provide a work load for faculty that would promote their increased productivity in the areas most important to the success of the department, i.e. teaching, academic advisement, mentoring of majors, and research/scholarly activities.
- Other recommendations are that 1) the department become familiar with the policies of the School of Graduate Studies and adhere to them, 2) individuals outside of the membership of graduate faculty servicing as graduate research advisors carry adjunct graduate faculty status, and 3) students seeking the non-thesis track of the graduate program not have an option of linking with an individual outside of the approved graduate faculty to serve as their project advisor.

**Facilities and resources**

The Biology Department is housed in Barnes Hall, a two-story structure constructed in the 60's. A computer laboratory, teaching laboratories and classrooms, research laboratories, and faculty offices are part of the facilities. Students use the public spaces for a variety of functions ranging from study and dialogue with peers to ideal places for interactions with faculty. The public or social spaces are in keeping with national trends toward spaces that bring students into communities of science where they prepare for careers and productive citizenship in a society in which science and technology have increasing influence. Renovations currently underway will lead to expanded spaces for research and faculty offices. Moreover, the department has developed preliminary plans for an annex that will accommodate additional research and office space. Such modernization will help the University improve and sustain the kind of teaching and learning that is student-centered, experiential, and hands-on. The proposed annex may provide further opportunities to blur disciplinary boundaries as teams work on interdisciplinary research. The auditorium was updated with new seats and installation of a smart classroom. The departmental office was recently remodeled to allow for additional staff and more efficient grant functions. Fresh paint, new furniture throughout the building and other recently implemented cosmetic changes give the department a more uplifting appearance. The staff member who has supervisory responsibility for the building demonstrated great interest and pride in carrying out his responsibilities. The facilities in conjunction with planned renovations and the annex are adequate for delivery of instruction to the majors. However, the large service functions of the department results in overcrowded laboratories and strains the existing facilities. Small long-term
leaks and over-crowded introductory laboratory classes are major detractors from an appealing learning environment. Efforts should be made to address these issues as soon as possible. The department budget of approximately $10,000 for goods and supplies is much less than adequate. Supplemental funds in the amount of $40,000 are usually available to augment the departmental budget. Without this supplement, the department could not carry out its teaching and learning responsibilities. Of note is that a $50,000.00 operating budget is not adequate for a life science department consisting of the number of faculty and students of the Biology Department to provide effective teaching and learning experiences.

Administration/Leadership

The Department is led by a Chair who began service in Fall 2003 and reports to the Interim Dean of the Colleges of Arts and Sciences. Staff in the office of the Department Chair include a receptionist, administrative secretary, and grants administrator. A recently appointed Associate Chair who has served on the faculty since 1995 assists the Department Chair with day-to-day operations. The departmental faculty support the Chair by serving on a number of departmental committees including facilities and renovations, graduate studies, tenure and promotion, and curriculum. The Chair displays a high degree of integrity, openness, professional expertise, and enthusiasm for moving the department forward. She is a change champion who was resourceful in leveraging limited financial and human resources to make several modifications in the department during her first year as chair. Previously mentioned remodeling and renovation accomplishments and plans as well as progress made in adding additional staff and securing release time for new faculty to launch their research all bode well for the leadership of the Department of Biology. Relationships, internally and externally were forged that will help the department achieve its goals and further connect the department to the outside world. Moreover the Chair helped anchor the use of technology in the overall development of learning biology and significantly augmented external funding in the department. Within a relatively short period of time, she garnered the strong support and respect of administrators, faculty, students, and staff.

Areas that would benefit from enhanced leadership include curricular modifications, assessment of student learning, and departmental support activities such as supplemental instruction and/or tutoring. As the department continues to grow and expand its offerings is will be more critical to have reliable, readily accessible data bases continuing “cradle to grave” information on students, faculty data, student learning achievements, and other information. The Chair should select and work closely with mentors to continue refinement of her organizational and administrative skills. Along these lines, it is critical to retain the position of Associate Chair to help with the many facets of leading the department. Once the Associate Chair has completed her semester of research which requires her to be away from the campus a number of days, she will be able to provide greater assistance to the Chair in planning and implementing further changes in Biology.
RECOMMENDATIONS

- The department should engage in a more formalized self-study and generate a report in advance of a site visit by a review team which will derive maximum benefits from the review process.

- Accelerate steps to address overcrowded introductory laboratory classes and problem leaks in the building’s structure.

- Increase dialogue with faculty and students on changes needed to propel the department forward.

- Enhance show cases in public areas with more current displays.

- Continue support for the Chair to hone her administrative skills and continue her research