Division of Biological and Physical Sciences  
College of Arts and Sciences  
Delta State University

Annual Report of Effectiveness

Academic Year 2002-2003  
Academic Year 2003-2004

Unit Mission Statement

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August 2004
Mission Statement

The mission of the Division of Biological and Physical Sciences is to provide quality instruction in the natural sciences, to encourage students to perform to their full potential, and to instill a scientific attitude that will develop scientifically literate, educated professionals. The Division seeks to develop the technical competence and the broad intellectual foundation needed to understand the impact of science and technology on humans and to make informed decisions on social, ethical, and environmental questions. The Division also endeavors to meet the general educational needs of the University; to contribute new knowledge in science, and science education; and to serve the needs of educators, other professionals, and communities within the service area.

Unit Data
Degree programs

Bachelor of Science with Major in Biology
  General Option
  Pre-Medical Science Option
  Plant Science Option
  Industrial Biology Option

Bachelor of Science with Major in Chemistry
  General Option
  ACS Certified Option
  Pre-Medical/Biochemistry Option
  Science Teacher Certification Option

Bachelor of Science with Major in Environmental Science

Bachelor of Science in Education

Master of Science in Natural Science

Credit-hour production (for Fall 2003, Spring 2004)
  Undergraduate  7678
  Graduate  244

Number of majors (as of Aug 2004)  328

Number of graduates
  Fall 2003, BS  16
  Fall 2003, MSNS  1
  Spring 2004, BS  28
  Spring 2004, MSNS  5

Graduate placement
  Accepted to professional schools  14
  Accepted to graduate programs  1
  Employed in science-related job  3
Personnel
- Dr. Barry Campbell was awarded tenure
- Dr. Keith Hughes was awarded tenure
- Dr. Charles Smithhart was hired as Assistant Professor of Chemistry
- Dr. Donald Sudbrink was hired as Assistant Professor of Biology
- Dr. Thomas Lehman was hired as Assistant Professor of Biology
- Dr. Alline Somlai was hired as Assistant Professor of Chemistry
- Dr. Jeffrey Duguay was hired as Assistant Professor of Biology
- Dr. John Tiftickjian was appointed Department (later Division) Chair
- Dr. Grady Williams retired
- Dr. David Craig resigned
- Dr. William Hayes resigned
- Dr. Shawn Thomas resigned

Presentations were presented at regional and national meetings by Don Sudbrink, Sam Faulkner, Nina Baghai Riding, Mark Steele.

Drs. Campbell, Hughes, Steele, and McEwen were involved in grant-funded projects.

Dr. Barry Campbell was selected as a Technology Champion for the second year in a row.

Unit Goals
- Ongoing and new goals of the division have been formulated as they relate to the mission of the University and its goals. Current departmental goals stem from a commitment to achieving the University mission. Generally stated these goals include:

  Review and update undergraduate and graduate programs to adequately address basic skills, knowledge, and competencies necessary for students to be properly prepared in their chosen fields, to complete licensure requirements, enter the work force, and/or continue advanced study in graduate or professional school.

  Accommodate non-traditional students and the general public by offering a comprehensive program of continuing education, including off-campus classes, independent study courses, non-credit courses, conferences, and workshops.

  Increase and improve the use of instructional technologies in support of the education process.
Enhance educational experiences at all levels by encouraging student and faculty research and other creative work.

Support interdisciplinary centers that contribute to our regional mission.

Pursue outside funding opportunities.

Specific unit goals

Goal 1. Provide adequate space, equipment, and resources so that students have the opportunity to develop research and technological skills required for success in their future employment or professional or graduate training. This goal is applicable to all degree programs.

Relationship to University goals

The division strives to maintain currency and appropriateness of its programs by adequately addressing basic skills, knowledge, and competencies. We are expected to optimize and improve the use of instructional technology. We are challenged to do more to encourage research and creative activities and to increase experiential learning components in our programs.

Assessment

Standing division committees on curriculum and facilities along with individual faculty will continually examine our facilities, resources, and programs relative to good practice standards in science education and professional employment requirements. Areas in need of development will be identified and recommendations for improvement made. Records of recommendations, requests, and acquisitions relative to appropriate space, equipment, and resources and their use in enhancement of research opportunities will be used to assess success in meeting this goal. Assessment will also be based on examination of course syllabi that relate the incorporation of research and technological skill-building experiences.

Outcomes

- During 2003-2004, the projection equipment in Caylor 105 was upgraded with larger, brighter projector, dual-platform computing capability, and interactive Sympodium presentation system. This room is now adequate for multimedia presentations to large and small classes and is being used extensively by a number of faculty.

- During summer of 2004, Caylor 147, a smaller lecture classroom, was
outfitted with projector and computer. Access to this room has helped to alleviate some of the faculty demand for projection-capable classrooms. These rooms, along with several portable projectors have helped increase access to technology-enhanced learning.

- During 2004-2005 we hope to be able to add at least one more projector-equipped classroom in Walters Hall.

- Plans are being made to improve the usefulness of the student computer lab in Walters hall by adding Internet access and other enhancements. It is hoped that this will provide a discipline-specific center where science students can access computer-aided assignments.

- Aging microscopes need to be replaced in several biology laboratories.

- "Probe-ware" systems need to be purchased and incorporated into general and advanced laboratories. Plans are being made to being this during 2004-2005. Such systems enable students to carry out experiments and collect data digitally for later analysis.

Goal 2. Add laboratory components to BIO 300 – "Cell Biology" and BIO 328 – "Genetics" in order to incorporate sufficient skill development and to reform the traditional pedagogy of lecture-only in those courses. Techniques associated with laboratory exercises will enhance skill development, critical thinking, and retention of content in our students

Relationship to University goals

The University is committed to Learning, Scholarship, and Student Engagement and to providing programs that cultivate intellectual curiosity and promote scholarship among its students. Cell biology and genetics are areas of science especially important in today's research climate. Addition of laboratory components to these courses will expose students to hands-on techniques they will need to be able to use in their careers.

Assessment

Evaluate laboratory facilities noting equipment needs and skill development by students.

Outcomes

- This goal has been partially reached over the past two years, but is still under development. More modern equipment will be required to bring
these laboratories up to standards that meet the needs of students in these courses. A large number of students are affected. These courses are taken by all biology majors and most biology minors.
Goal 3. The division will evaluate and revise degree requirements where needed, especially with respect to pre-health programs that require coordination between the biological and physical sciences.

Relationship to University Goals

The division is expected to maintain currency and appropriateness of its programs by adequately addressing basic skills, content, and competencies in undergraduate and graduate programs. Part of this expectation is to ensure that students who are pursuing pre-professional programs are properly prepared for advanced study in their chosen professional schools.

Assessment

Evidence used to measure the success in meeting this goal will be the documentation of degree requirements their relationship to preprofessional prerequisites published by medical and other health related professional schools.

Outcomes

- We will reestablish an active pre-health advisory committee composed of all faculty currently advising in the pre-health programs. This committee will collaborate on devising improved methods of advisement.

- The premedical options under the biology and chemistry majors will be re-evaluated and revised where necessary so that premedical students are receiving the most appropriate curriculum to (1) prepare them for application to professional school, and (2) receive a broad background in either chemistry or biology, depending on their chosen major.

Goal 4. The division will devise an equitable formula for calculating faculty load that will be fair to all division faculty regardless of discipline.

Relationship to University goals

The University is committed to Teaching and Faculty Development. The quality of Delta State's academic programs is central to its educational mission. That quality is partly depending on a workload that enables its faculty to devote sufficient time to instruction and mentoring of students and to personal development of improved teaching methods and engagement with students in research and other endeavors.
Assessment

A division committee will evaluate teaching load with respect to each faculty member and where possible consider effort required in all teaching and related duties. Where inequities are found, and attempt will be made to modify stated division policy on calculation of load.

Outcomes

- Faculty load will fairly take into consideration the differences in effort related to lecture and laboratories duties. Laboratory credit will be defined based not strictly on credit hours but on a combination of student contact hours and consideration for preparation time.

- Frequency of course offerings will be studied and modified where needed to ensure that faculty load is equitable while maintaining a reasonable cycle of courses so that students are not presented with difficulties in taking their required courses in a timely fashion.

- Any change in load calculation will be done in a way that will not jeopardize faculty load specifications of accrediting bodies, notably the certification requirements of the American Chemical Society.

Goal 5. The division will work to continue to enhance the operations of the Center for Science and Environmental Education (CSEE) which provides both community service and university academic program components. The CSEE will work to meet the resource, professional development, and other educational support needs of Delta school districts, science teachers, and their students and to provide for continuing science education experiences for the broader community. This is an ongoing goal that began with the establishment of the Center.

Relationship to University Goals

The University has identified as one of its goals to “strengthen the cooperative relationships with business, industry, community groups, government, and other educational institutions.” Through its emphasis on development of a comprehensive support structure for pre-college science education in the Mississippi Delta, the CSEE is assisting the University in meeting these goals by establishing partnerships with many of these entities.

Assessment

The CSEE will carefully track utilization of the programs and services that it
offers during the coming academic year. Questionnaires will be used to collect information from individuals participating in CSEE programs and workshops.

**Outcomes**

- The CSEE will continue efforts to provide pre-college teacher workshops designed to improve the skill of area teachers to provide appropriate science instruction.

- The Center will continue its efforts to provide instructional units associated with the Great Explorations in Math and Science (GEMS) program. The CSEE is a national network training site for the GEMS program.

- The CSEE’s facility in Merigold, MS will continue to be enhanced and serve as a resource center for area science teachers. The division will continue efforts to expand the impact of CSEE and its programming on stakeholders in the Delta through an emphasizing development of a mechanism to insure its sustainability into the future.

**Needs and Requests**

The division proposes the following recommendations and requests in response to existing demands to meet our vision of excellence in education of science majors and in the science component of general education. The University is asking that we place greater emphasis on student engagement. We have expanded our efforts to secure external funding through increased involvement in development activities and in grant writing. These new pressures are redefining the traditional roles of faculty at Delta State University and in the Division of Biological and Physical Sciences. To date, it has not been possible to fully achieve desired levels of success relative to these new pressures because of lack of significant institutional investment to facilitate the effort required by faculty and the division. The following recommendations and requests summarize the attention that needs to be given to the division if we are to continue meeting “both” existing and new goals.

1. Enhance support of the division so that it may attain the goal of becoming truly excellent and a standard against which other university science departments are measured. Expand the division budget to assure adequate laboratory instructional equipment, field experiences, and other program needs and resources.

2. Support a new definition of the “full load” to include provision of release time for individual faculty to pursue scholarly activity, community and university service functions, and support of student research. Provide this
incentive to division faculty who desire to embrace the institution’s expanded emphasis on research, grant writing and development activities, community engagement and service, and other outreach functions.

3. Endorse the CSEE as the science education outreach function of the university and the recommendation to umbrella all science education programs under the CSEE for the benefit of the University, Delta science teachers, their schools, and their students.

4. Provide improved funding mechanisms dedicated to acquisition, maintenance, and replacement of equipment, technology, and other programmatic needs.

5. Develop a plan and strongly support the funding of significant renovation and expansion of the physical facilities of Caylor-White and Walters halls, emphasizing primarily modernization of laboratory and instrumentation facilities, but also focusing on improved utilization of space and technology for state-of-the art instruction. Over the course of the 2004-2005 academic year, the faculty will work to enumerate and describe the current deficiencies in a very specific manner so that we may work with the College of Arts and Sciences on a renovation plan that can be brought to realization.