

UNIVERSITY OF WISCONSIN-WHITEWATER
AUDIT AND REVIEW SELF-STUDY

Program Title: Biological Sciences

Review Date: 2000-2001

I. Academic Assessment

A. Highlights/Initiatives

1. Overview the current curriculum, including options available within the program (e.g., discussion of the different emphases).
 - Biology administers five emphases in the major, an interdisciplinary cross-college major, and two minors.
 - Students work toward a BS, BSE, or BA degree in General Biology, Cell Biology and Physiology, or Ecology and Field Biology.
 - General Biology is designed specifically for secondary education (BSE) majors, but other students with select career goals, e.g. biological illustration, may select it as well.
 - Cell Biology and Physiology is primarily for students interested in laboratory sciences, such as genetics, cell biology, or physiology; and for students considering careers in the health professions.
 - Ecology and Field Biology is directed toward students seeking positions in conservation, natural resources management, animal behavior, or taxonomy.
 - Students planning to teach science at the middle school level may opt for the interdisciplinary BSE degree in General Science - Broadfield Biology emphasis.
 - The Early Admission Pre-Professional Emphasis in Biology is directed at high-performance students with the potential to gain admission to health professions schools after only three years of baccalaureate study.
 - Integrated Science-Business major. It is an interdisciplinary major, in cooperation with the College of Business caters to students interested in administration of science organizations and to those interested in management or marketing in the science and technology industries.
 - Biological Sciences offers two minors. The Biology minor serves mostly Psychology, Geography, and Chemistry majors, as well as many pre-professional students. The Biology Education minor is a common option for BSE students majoring in math, chemistry, physics, elementary education or PE, but is available to any BSE student.

(Attach the program's APR(s) as Appendix A.)

1. Highlight any new academic assessment initiatives you anticipate for the upcoming review period.
 - The department will work with the LEARN Center to identify strategies for collecting data and drawing conclusions from our student portfolios.
 - Revisit the exit exam for all majors, and again explore options for substituting a nationally or state standardized subject exam. Our previous attempt to institute the Education Testing Service Biology Exam for this purpose dissolved in 1995 for lack of administrative permission to charge special student fees for the purpose. We lack sufficient departmental budget to underwrite the exam ourselves (\$20 per student in 1995, \$23.25 in 1999). One possibility is that the Department of Public Instruction will be developing

subject exams for teaching certifications, and that process may be co-opted for departmental evaluation of all students.

B. Educational Objectives and Assessment Techniques

1. State the subject matter, cognitive development, and skill objectives for the program, indicating what students will know and be able to do upon completion of the program.
 - a. Subject Matter
 1. Students will have a broad knowledge base in a variety of areas in the biological sciences.
 2. Students understand major concepts and themes in biology.
 3. Students will relate chemical and physical laws to biological phenomena.
 - b. Cognitive Development
 1. Students will think critically and solve problems creatively.
 2. Students will present effective oral and written persuasive arguments.
 3. Students will read and understand scientific articles and texts.
 4. Students will understand the different areas of biology and the career opportunities in each, in order to make well considered decisions about future studies and career goals.
 - c. Skills
 1. Students will develop hypotheses, collect and analyze data, and report results scientifically.
 2. Students will perform standard techniques and use standard equipment for field and laboratory research.
 3. Students will conduct thorough reviews of biological literature germane to their selected sub-disciplines
2. Describe the data collection techniques used to determine if the program has been successful in achieving the desired outcome for each objective above.
 - Collecting student scores on Graduate Record Examinations and Medical College Admissions Tests.
 - Tracking placement into medical school through reports from the American Association of Medical Colleges and records maintained by the Pre-Medicine advisor.
 - Other placement as communicated by alumni to faculty.
 - Administering exit exams to all senior level students in the General Biology, Cell Biology and Physiology, and Ecology and Field Biology Emphases.
 - Assembling portfolios from written assignments, exams, and APRs.
 - Conducting exit interviews at which students and the department chair assess portfolios and students are polled on opinions of their education in the Biological Sciences program.
 - Audit and Review Survey Results provided by the Associate Vice Chancellor
1. Explain how individual courses are related to the student outcomes that are part of the program's assessment plan.
 - a. Subject Matter

The introductory course sequence, 630-141 and 630-142 (now re-named Biology I: Plant Focus and Biology II: Animal Focus) survey in relatively brief detail all standard content found in Biology curricula. The 200-level courses, (Introduction to...) genetics, cell biology, and ecology, give more in-depth treatment of these areas, all three of which are central to biological literacy, regardless of sub-discipline. Three hundred- and 400- level courses allow students to specialize within the quite broad field of biology. Chemical and

physical laws are taught in the unique requirements from the chemistry department (two to four semesters minimum, depending on emphasis). Fundamental laws in physics and chemistry as applied to biological systems are subject matter in all biology majors' courses. Furthermore, most biology majors and minors select chemistry, physical sciences, physical geography, or geology as their complementary minor or major, where these laws are covered more thoroughly.

- b. Cognitive Development and c. Skills are taught in tandem.

All courses include critical analysis of classical experiments, and lab courses train students to solve problems and think critically by collecting and analyzing their own data. Biology I, Biology II, Introduction to Genetics, Introduction to Ecology, Writing in Biology, Plant Physiology, Animal Development, Animal Physiology, Organic Evolution, Planning and Presenting Biological Research, Conservation Biology, General Ecology, Animal Behavior, Endocrinology, and Independent Studies all include substantial components of scientific writing and/or critical reading and review of primary literature. Increasingly, where possible, student driven investigation is being incorporated in addition to or in place of the more traditional "cook book" laboratory exercises.

2. List any dual-level courses and indicate how course content, pedagogical processes, assignments, etc. create different educational experiences for graduate and undergraduate students.

- 630-390/590 Workshop
- 630-491/691 Travel Study
- 630-492/692 Laboratory Teaching Experience
- 630-494/694 Seminar
- 630-496/696 Special Studies

Graduate students are required to produce more extensive projects than undergraduates, and usually asked to lead a field session for the class based on their projects, where field work is required. For Laboratory Teaching Experience, graduate students would have more autonomy in instructional design and delivery in select laboratory periods.

(Attach a list linking courses to assessment objectives as Appendix B. Attach a list of any dual-listed courses delineating graduate expectations as Appendix B1.)

C. Assessment Data

1. Summarize the assessment data gathered during the review period. If it is helpful to include data from previous years for comparison purposes, then please do so. (Use tables where necessary.)

- Graduate Record Examinations and Medical College Admissions Tests.

25 GRE's are on file since April of 1995, with average percentile scores of 43.4 in verbal, 49.9 in quantitative, and 57.7 in analytical.

The American Association of Medical Colleges distributes institution and national score summaries every four years. The most recent was released in 1999. They report the biology sub-score's national average as 8.4 out of 15. UWW's average of 34 students in the 1995-1999 period was 7.88. Examination of the students listed, however, shows that we receive scores for many students who begin at Whitewater and transfer out, and for a number of students applying for Medical School from programs other than biology, such as the Business College. In calculating the biology score average **only** for the 18 students graduating from the biology program, the corrected score is 8.8, above the national average on this exam.

- Placement into medical school.

We purchase annual matriculation reports from The American Association of Medical Colleges. Again, limiting the analysis only to students graduating from UWW Biology, nine of thirteen applicants (69%) were admitted to medical school since 1995, including this month's acceptance of a student to the Medical College of Wisconsin through their early admission program. The last year for which I have data, 1999, had a 45% national acceptance average.

- Other placement as communicated by alumni to faculty.

Since March of 1995, personal reports to faculty of student placement announced in department meetings indicated...

wildlife management	1
laboratory technician	3
teaching	1
law school	1
allied health professional schools	5
dental school	2
veterinary school	6
medical school	9
graduate school	10

- Administering exit exams to all senior level students in the General Biology, Cell Biology and Physiology, and Ecology and Field Biology Emphases.

semester	mean	s
fall, 1997	61	10.6
spring, 1998	57	12.2
fall, 1998	57	12.8
spring, 1999	60.6	9.3
fall, 1999	57.2	9.2
spring, 2000	57.9	12.7

- Assembling portfolios from written assignments, exams, and APRs.

Initiated for all students enrolled in Senior Colloquium in spring 1999, required for General Biology, Cell Biology and Physiology, and Ecology and Field Biology emphases, and restricted to seniors to make sure they have completed most of their program. Portfolios include an APR, a resume, the student's self-identified three best works from their classes in the major or closely associated programs (e.g. their minor or unique requirements). These folders are available for committee study on request, but formal assessment by the department awaits consultation with Steve Friedman of the LEARN Center to determine appropriate measures and indicators.

- Conducting exit interviews at which students and the department chair assess portfolios and students are polled on opinions of their education in the Biological Sciences program.

Student responses are collected as notes by the chairperson, summarized in Annual Reports to the Dean's Office, as reproduced here.

Spring, 1999

1. Current pre-requisites in biology are appropriate and important for student success.
2. Students want additional training in biotechnology instrumentation or field methods.
3. Many pre-health professionals would like human anatomy and physiology for biology credit.

Fall, 99 - Spring, 2000

1. Students are pleased with equipment and facilities in classes.
 2. They are largely pleased with their lab experiences, though they sometimes feel they need more guidance, particularly when offered inquiry-driven experiences. A number of them felt that there is a high rate of failure in experimental protocols and sometimes got frustrated when they did not get results they expected.
 3. They seek even more lab experiences. Students in Ecology and Field Biology especially desire more field and investigative opportunities in their courses.
 4. Students seem to appreciate the availability of their professors. This is especially true of transfer students, whether from two-year, comprehensive universities, or research universities.
 5. Students feel the emphases are logically structured, have sufficient and appropriate pre-requisite requirements, and are effective curricular guides.
 6. Some students feel upper division courses are not offered frequently enough, even on a two year rotation, and express interest in taking majors' courses in summer session.
 7. Internships and Field Studies courses were repeatedly cited as extremely valuable experiences.
 8. Several students were critical of their advisors' interest, preparation, and commitment to their advising sessions.
- Audit and Review Survey Results provided by the Associate Vice Chancellor

Only surveys from graduating seniors were received. I discuss only items under control of this program, and ignore institutional concerns, e.g. parking availability. In response to the open-ended question about UW-Whitewater positives, most enjoyed the relatively small class size at UW-Whitewater (9). Other responses were the amount of personal attention from faculty (7), the qualifications of their instructors (3), and their professors' accessibility (3). Biology minors also cited personal attention from faculty as a positive factor (2).

Areas for improvement identified by majors were a need for renovations in the science building (5), better advising (3), a need for more qualified professors (2), a more direct pre-chiropractic major (2), and a larger department of Biology (2). One biology minor wanted to see more distance education and one believes there is inadequate communication between departments.

In ranking how well we have prepared students, high scoring items were in creativity and in peer interactions with an average of 6.3 out of 7, followed by problem solving and writing skills (6.1), enjoying the major (6.0), and lifelong learning (6.0). Low scoring items were appreciating effects of international, multicultural, and ethnic factors on the major (4.6), transferring knowledge from relevant majors (5.3), understanding professional literature (5.5), and developing a commitment to the major (5.5).

D. Program Improvement Resulting from Assessment Efforts

1. Highlight some of the important changes to the curriculum, the assessment objectives, and/or the data collection techniques/processes that have occurred during the review period. Make sure to link the changes to the data collected during the review period.

With the number of students applying for and getting accepted into medical, dental, veterinary and similar programs, basic sciences in preparation for health professions is clearly a priority for many of our students. To facilitate that, the Early Admission Pre-Professional Emphasis was instituted as of 1999-2000. It is an interdisciplinary broadfield-type science emphasis within the biology major, which unlike those described above, does not require a minor. It is aimed at high performing pre-health professions students, allowing them to complete all math and science requirements required for admission to medical, dental and veterinary schools in their first two years of college. Students may then take professional school admission exams after their sophomore year, and apply for admission in the fall of their junior year as they complete their general education requirements. If they are admitted to professional school at this time, they may

transfer science credits back to UW-Whitewater to earn their Bachelor of Science degree. If they do not receive early admission, they may convert to a Cell Biology and Physiology Emphasis with a Chemistry or Physical Sciences minor. They would complete their BS degree in residence at UW-Whitewater as they repeat their admission test and re-apply to professional school during the normal cycle in their senior year.

In that same vein, the chair has assisted Dr. Steven Anderson of chemistry, the pre-chiropractic advisor, to propose a transfer agreement with Palmer Chiropractic School in Iowa to allow direct transfers from UWW to their school. This addresses the stated desire by two graduating seniors in the Assistant Chancellor's survey who asked for a "more direct pre-chiropractic major".

Relatively few of the majors reporting back to professors following graduation have gone into life sciences or biotechnology industries. The new Integrated Science-Business major. It is an interdisciplinary major, in cooperation with the College of Business, may improve placement into such positions. Like the Early Admission Pre-Professional program, this is an extensive major which precludes the typical requirement for a minor. It incorporates science requirements from at least three science disciplines, selected from biology, chemistry, geology, or physics, twelve credits of business courses, and three courses designed expressly for this major. It is administered by Biological Sciences, since it was designed at the initiative of a biology faculty member who serves as its principal academic advisor.. It caters to students interested in administration of science organizations and to those interested in management or marketing in the science and technology industries.

Only one student in the table above is known to be teaching. In cooperation with Virginia Epps and the Curriculum and Instruction Department, we just received approval of a drastic revision of our second minor, Biology Education, to insure that its students are well trained in the topics most germane to current biology education, namely, genetics, ecology, and evolution.

To improve both advising and hopefully biology scores on standardized tests, we have re-aligned credit assignments in lower division courses for the major without increasing net credit hours in their programs, established a clear course sequence, and re-numbered two of our courses to clarify their sophistication and optimal time in a student's career.

The credit assignments move the freshman courses, General Botany and General Zoology, from five credits to four, from 3 lectures per week with two 2 hour labs to 3 lectures per week and one 3 hour lab. Introduction to Genetics has increased from three credits to four, from two lectures with a two hour lab to three lectures with a three hour lab. Those three courses are required for all majors, and the first two for all minors. Introduction to Cell Biology remains a three-credit course, but will add a lecture and delete the two hour lab. We will replace the former two hour lab in Introduction to Cell Biology with an independent one-credit, three-hour per week lab course called Biotechnology Laboratory Methods. The new lab course will be required for students in the Cell Biology and Physiology emphasis.

These changes will reduce course redundancy in the freshman "General" sequence and increase depth and breadth of the sophomore "Introduction to" sequence. This department has submitted a proposal to install a prerequisite of General Botany for General Zoology and change their names to Biology I: Plant Focus and Biology II: Animal Focus, to allow even further reduction in course redundancy, and clarity of course sequence.

Desire for more field experiences are appropriate. Unfortunately, field trips are expensive and insufficient continuing, additional funding has come to the department in this five year review period for the service and supply budget, in spite of the rapidly escalating numbers of majors (see trend data in II C below). One effort to increase field work has been that by Biology II instructors in developing a new field sampling unit for active, student-initiated investigation of population and behavioral ecology of freshwater organisms, sampling springs from near Whitewater Lake. Another constraint has been the loss of tenured field biologists whose positions have been re-defined or unfilled. We are currently searching for an aquatic biologist who will provide additional field opportunities in aquatic biology. The anticipated hire of an invertebrate zoologist may, depending on the individual's approach, may also help in that area.

We are also searching for a molecular biologist who will assist in incorporating more biotechnology into existing labs. We have separated the Introduction to Cell Biology course's lab

into a course separate from the lecture. The new lab course, Biotechnology Laboratory Methods, will provide more contact hours than its predecessor, and will include more gel electrophoresis and other biotechnology lab work. Introduction to Genetics also has expanded its lab contact hours, and that time will be used in large part to allow additional instruction in genetic engineering methodologies, again, if the budget will allow for the relatively expensive reagents.

Pre-health professions students have been requesting a human anatomy and physiology course rigorous enough and with enough credit hours to transfer to nursing schools, and for inclusion as credits to the major. In response, the former four-credit anatomy and physiology course for non-majors has been discontinued and replaced with a two course sequence, for four credits each, that can fill a requirement for cell biology and physiology majors, or an elective for other emphases. It should also provide better biology training for non-majors who are taking the Medical College Admissions Test.

This department is considering options to improve academic advising, in response to college-wide initiatives and to student concerns raised in exit interviews, subsequent advising sessions, and the Assistant Chancellor's survey. Our likely response will be to mandate that students submit evaluations of their advisors anonymously prior to release of their advising holds. These evaluations will be scored as are teaching evaluations and be included in merit, reappointment, and promotion decisions.

We are proud of the feedback from students about the value of undergraduate research experiences and internships. We continue to hire and evaluate faculty on the basis of effective undergraduate research sponsorships. Dr. McKinnon has been appointed internship coordinator on a continuing basis, and has worked diligently to identify internship opportunities and to recruit students into them.

Students cite small class size as a major advantage of our program. Unfortunately, as the major's enrollment has grown, we have not received additional faculty in compensation. The result is a decline in our faculty/student ratio. We hope that administration will respond appropriately to this problem in the near future.

2. Indicate how the program has responded to recommendations relevant to assessment from the most recent Audit and Review Evaluation Report.

(Attach Audit and Review Evaluation Report from last review as Appendix C.)

Program weaknesses cited in the last Audit and Review were addressed as follows

- **Reduce the number of credits taken by majors to attract majors early.**

We are resuming our "Biology Day" activities under a new coordinator, Dr. George Clokey. Biology Day is an instructional and educational workshop experience for high school biology teachers. By demonstrating the high quality program in biology at UWW, we hope they will be more likely to recommend UWW to their students applying to college biology programs. Dr. Clokey is working closely with Continuing Education for publicity.

Tri-Beta, the undergraduate biology honors organization, under the guidance of Drs. Woller and McKinnon co-sponsor our annual "Darwin Day" with help from the Letters and Sciences Lecture Award in the last two years. Nationally renowned evolutionary biologist give an evening public lecture, advertised in local print and radio meeting and by mailings to nearby biology programs at UW-Milwaukee, Beloit College and UW-Madison. Prior to the lectures, we publicly celebrate Charles Darwin's birthday by constructing an evolutionary tree from cakes and confections baked in the shape of students favorite organisms. The public, entertaining festivities provide additional profile for local student recruiting.

- **Continue to expand experiential learning opportunities** The internship director has actively sought both student interns and internship opportunities with the assistance of other faculty. The Audit and Review Report for 1995 cited an average of 4.5 interns per year. We had 19 interns in 1998-1999 increasing to 26 in 1999-2000. Undergraduate research is a central goal for this department, and faculty actively and aggressively recruit quality students into research experiences. Biology sends more students to the National Conference for

Undergraduate Research than any other department. BSE students also take advantage of the Laboratory Teaching Experience course, allowing them to participate in undergraduate laboratory instruction under the close supervision of faculty mentors.

Dr. Eshelman is currently preparing a curricular proposal for a new emphasis in Marine and Freshwater Biology, according to the initial suggestion and administrative explorations of Dean Ross. This program will be field intensive relative to other emphases at UWW. The final year will be completed at Warnambool, Australia, requiring enrollment in several field Marine and Freshwater field courses at Deakin University. This program has received administrative approval at the highest levels of both UWW and Deakin, and now awaits faculty committee affirmation.

- **Library holdings are inadequate.** This problem continues and is likely unaddressable. See III. G. below.
- **Pursue external funding to meet space and equipment needs.** We have dealt with this concern aggressively and largely successfully, to the point where other departments are benefiting from our sacrifices, in some cases without compensation to this department. See III. G. Below.
- **Work with other sciences and administration for factoring laboratory instruction into workloads.** Continuing discussions with college administration has led to Dr. Ross' cooperation in allowing caps on faculty contact hours, even though it means less than 12 credit hours for all faculty, due to the 2:1 or 3:1 contact hour: credit hour tradition for laboratory sciences. We continue to advocate 12 contact hour limits, particularly for faculty active in teaching activities un-credited for individual faculty, such as supervising undergraduate researchers in independent study or experiential activities in Laboratory Teaching Experience. Given college and university resources, this may not be feasible, but it is necessary to draw us closer to norms for other premiere comprehensive universities and with elite private colleges emphasizing undergraduate research, allowing us to more successfully compete for faculty hires and retention.
- **Explore an interdisciplinary minor in chemistry and physics.** The hierarchical nature of science instruction, along with the absolute necessity of student literacy in mathematics, chemistry, and physics, make it difficult to reduce unique requirements and pre-requisites while still providing a high quality education. Physics, chemistry, and math have cooperated by devising the Physical Sciences minor, used by many of our majors since it incorporates several of our unique requirements and courses recommended or required for students applying for admission to graduate and professional schools.

The emphasis system instituted in 1993 also has reduced number of credits by providing clear advising guidelines, and more routine scheduling of required courses. Credit reductions for students in the major should be further facilitated by recent general education reforms, enacted with this department's chair as a strong advocate.
- **Continue to explore a combined science and business major.** Under Dr. Sibdas Ghosh's leadership, this major has been approved and is being implemented with UWW and UW System financial support for development.
- **Install sinks in fume hoods.** Done.
- **Replace metal stools with backed, adjustable stools.** Stools have been replaced with backed chairs or at least covered with foam cushions to make them more comfortable for students.
- **Refine the assessment plan by emphasis and better articulate course goals.** Development of specific learning outcomes for each emphasis has not been clearly addressed to date. Part I.B.3 above describes how courses fit program goals.
- **Other Weaknesses identified in previous Audit and Review**
 - **insufficient expertise in some disciplines.** While the names have changed, the problem remains. This department has had difficulty recruiting and retaining quality faculty due to low

pay, high teaching contact hours, and/or modest research support, relative to other premiere comprehensive regional universities, such as Truman State in Missouri, UW-Stevens Point, UW-Eau Claire and UW-Oshkosh. Several searches have failed. Five untenured faculty have resigned in 11 years at least partly over these issues. On the other hand, the faculty we have retained continue to set a high standard for teaching, research, and service of which we are very proud. Those accomplishments are documented below in the relevant sections.

budget for services and supplies per student ranks in the lower quartile among peer institutions in the UW system. This issue has not been adequately addressed. See Item III. F. for a full discussion.

D. Information Shared with Constituencies

1. Discuss how the assessment information has been shared with important constituencies, including students, staff, advisory boards, etc. In particular, indicate systematic efforts—e.g., regularly scheduled orientation meetings, departmental newsletters, etc.

Assessment information is announced as available in department meetings open to the public. A student representative from Tri-Beta, the Biology Honor Society, is routinely invited, as is the campus News and Public Affairs Office. Both receive meeting agendas at least one day in advance, in addition to the normal venues for announcing open meetings. Relevant information is disbursed to prospective, new, and continuing students in mandatory individual advising sessions every semester.

II. Strategic Purposes and Performance

A. Centrality

1. Describe the centrality of the program to the mission and strategic plan of the University of Wisconsin-Whitewater.

From the UWW Mission

a. The University offers an extensive range of undergraduate programs and degrees, including interdisciplinary programs, in letters, sciences, and the arts, as well as programs and degrees leading to professional specialization. We currently offer four separate programs in the major, administer another that is interdisciplinary in the sciences and with the business college, and we fully anticipate approval of a fifth this semester emphasis in the major. We offer two different majors. All our emphases are strongly interdisciplinary, as illustrated by unique requirements in math and chemistry, and strong recommendations to all our majors to include physics. Ecology and Field Biology also use a number of methods and information from geography and geology.

c. The University expects scholarly activity, including research, scholarship and creative endeavor, that supports its programs at the associate and baccalaureate degree level, its selected graduate programs, and its special mission. Research, with emphasis on undergraduate participation, is a strength of these programs, drawing high enrollment and volunteers in faculty research and independent study research credits.

g. The University provides continuing education and outreach programs as an integrated institutional activity. Faculty and staff in this program offer young scholars programs, the Biology Day workshop for high school teachers, the Darwin Day public celebration raising awareness of the role of fundamental principles of biology in daily life, and participates in the Upward Bound program. We regularly host visiting groups, pre-K to high school, at our biology museum and greenhouse.

From the Strategic Plan.

Our programs support all six priorities of the strategic plan, with especially effective roles in Priorities 1, 2, 3, and 6.

PRIORITY 1 UW-Whitewater will keep student learning as the paramount focus of its programs and services. Quality instruction and curriculum has been and continues to be the primary concern in these programs. They are principal criteria in programmatic assessment and in personnel evaluations. We radically revised the curriculum in our previous Audit and Review Period, with those reforms continuing today with adjustments in emphases, pre-requisites, course offerings, and development of new programs.

PRIORITY 2 UW-Whitewater will deliver state of the art programs and services. These programs have been fitted with all new equipment for instruction in biotechnology over the last seven years. Pending renovations will improve facilities and access for this equipment. Recent curricular adjustments provide more emphasis on middle and upper level lab experiences, where most laboratory and field techniques are taught.

PRIORITY 3 UW-Whitewater faculty and staff will be exemplars in their fields. Review of sections III A, C, and D below will show that faculty and staff are extraordinarily well-published, both in quantity and quality, present frequently at national and international meetings, and hold leadership positions in a number of national professional organizations.

PRIORITY 6 UW-Whitewater will continue to strengthen its leadership position as a premier comprehensive university. Success in priorities 1-3, lead to recognition of overall quality.

2. Explain the relationship of the program to other programs at the University.

Our majors rely heavily on training in writing from Languages and Literature, perspective of their chosen career in our society from Humanities and Social Sciences, and supporting disciplinary training from mathematics, physics, chemistry, psychology, and geography and geology. Conversely, students in the science and related disciplines listed often choose biology minors. We provide the lion's share of general education-laboratory science credits, many general education-math/science credits, and designated sections of Ecology and Society specifically for teaching certification requirements in environmental education credits. Biology of Aging is a required course for the Gerontology minor. Students seeking admission to health profession schools do not necessarily have to take science majors or minors, but they all require at least two biology lab science courses to qualify for admission to any such program. Finally, the new Business/Integrated Science major is coordinated through a faculty member in this department, and our courses contribute to requirements in that major.

B. Goals and Objectives

1. Describe the current (non-assessment) goals and objectives of the program, plus any stated mission for the program itself.

The following goals and objectives were listed in the most recent Biological Sciences annual report. Since assessment is intimately related to any sincerely articulated objective, I leave it to the review committee to exclude any goals that they consider strictly assessment.

1. Continue to use biology major emphases and supporting minors as advising tools to direct each biology student into a coherent and meaningful set of courses
2. Evaluate both current and potential new emphases and minors in biology and new related interdisciplinary majors, including molecular biology/biochemistry, environmental studies/environmental sciences, and pre-health professional training programs.

3. Continue cooperative review and revisions of laboratory exercises in *Biological Foundations*, and pursue innovative teaching strategies in non-majors' Biology.
4. Continue to encourage students to participate in independent research and internship programs, and to present their results at meetings.
5. Continue to encourage faculty to write grants for new equipment for classrooms and for research.
6. Continue to hire new faculty who will be outstanding teacher-scholars, while also attempting to meet AA/EO goals.
7. Develop plans to accommodate pending sabbatical requests.
8. Continue to explore ways to encourage and better reward faculty research and faculty supervision of undergraduate research.
9. Explore strategies to bring UW-W Biology faculty contact hours at least into line with those at our sister institutions, or better, to match those at comprehensive universities recognized nationally as centers of excellence in biology.
10. Start the joint degree program in Freshwater and Marine Biology with Deakin University.
11. Develop a systematic approach for evaluation of advising, to use as a tool in faculty reappointment and promotion reviews as well as for formative review of the department as a whole.

MISSION OF THE DEPARTMENT OF BIOLOGICAL SCIENCES University of Wisconsin-Whitewater

The mission of the Department of Biological Sciences is to provide quality educational and research experiences for undergraduate students in the life sciences, and to provide a regional resource of biology expertise. This mission is accomplished by attaining the following specific goals.

1. Develop and deliver outstanding and diverse curricula; preparing students for careers in the biological sciences, for graduate training in biological sciences, and for entry into health professional programs.
 - 1.1 Offer up-to-date courses relevant to the needs of modern Biology that demand high standards of academic performance, preparing biology students for success in post-baccalaureate programs and in a global job market.
 - 1.2 Offer targeted Emphases in Biological Sciences majors; through imparting knowledge and developing skills requisite for careers within the biological sciences.
 - 1.3 Offer well-informed and accurate academic advising to students in the Biological Sciences majors, Combined Science/Business major, General Science- Broadfield Biology major, and selected pre-health professional advising tracks; delivered in supportive and constructive advising sessions.
 - 1.4 Offer opportunities in research and career-related internships, recognizing that such activities are essential to a complete biology education.
2. Improve science literacy for student citizens, consistent with the philosophy of liberal studies, and the needs of the College of Letters and Sciences and the University of Wisconsin-Whitewater.
3. Develop and maintain a diverse community of scholars in the field of Biological Sciences
 - 3.1 Require high standards in teaching, scholarship, and integrity for successful candidates for faculty positions, for continuing faculty and staff, and for tenure and promotion.
 - 3.2 Conduct original research in biology and in science pedagogy; presenting such research at regional, national, and international professional meetings and publishing them in peer-reviewed professional journals.

4. Serve the College of Letters and Sciences, the University of Wisconsin-Whitewater, the University of Wisconsin System, and the greater community in committees and other structured development or advocacy organizations in our roles as educators, science professionals, university faculty, and community citizens.
 - 4.1. Accept committee work and other service opportunities at all levels of the University System consistent with our talents, training, and interests.
 - 4.2. Serve as a community resource for biological information; hosting and visiting regional schools, youth and civic organizations, and symposia.

2. Summarize the progress in fulfilling any stated goals and objectives for the program beyond the assessment program. Explain failure to fulfill specific goals and objectives.

Efforts in items 1-5 of this year's goals and objectives are proceeding satisfactorily.

Item 6 is a carry-over from last year, when three search and screens were closed and deferred to this year. One top candidate withdrew from the search prior to interview, when she accepted a faculty position at UW-Madison. Another declined an offer in order to pursue a research associate position in her husband's laboratory. She succeeded in that endeavor, and is now located at UW-Madison. Another declined an offer in order to accept tenure and promotion at Loyola University in Chicago. A minority candidate rejected an offer on a financial basis, citing better pay in his position as a U.S. government post-doctoral equivalent. Two other candidates were deemed acceptable but without strong recommendations from the department, and an administrative decision was made not to offer positions. All three positions were re-approved this year following re-writing in an attempt to draw a larger pool of applicants. It was advertised in the journal *Science's* print and on-line versions the week of October 16, and less formally through various Email discussion groups

A plan to support this year's sabbatical requests has been submitted for the Dean's consideration for item 7. New plans to encourage even more faculty research and supervision of student research (item 8) rely on contact hour relief (item 9), and have been under study by the Dean to determine whether adequate resources are available. The Freshwater and Marine Biology Emphasis proposal is nearly complete, and will be submitted to the college by the end of October for curricular approval (item 10). A proposal for evaluating advising will be considered by the department on October 23)

3. Describe how the program contributes to meeting specific state and societal needs.

Science literacy is fundamentally important for informed citizenry, considering both the promise and threat of technological advances and environmental changes have on our society and our survival as a species. Wisconsin's governor has made technology industries a priority for Wisconsin development. Biotechnology is a central player in those plans, and will be applied to problems in agriculture, environment, and health at the state, national and global levels. Environmental expertise is critical for Wisconsin from two perspectives. First, a large section of our economy draws directly or indirectly from nature/sportsman tourism, and the natural resources providing that tourism must be protected. Second, environmental impacts from municipal and industrial development must be monitored and ameliorated for the safety of our citizenry. Our programs train undergraduates for jobs or advanced training in biotechnology, environment and conservation, life sciences support industries, and health industries.

4. Explain any changes in goals and objectives that have occurred since the previous audit and review, indicating how the program has responded to the recommendations listed in the previous audit and review report. Refer to the Appendix C as necessary.

While re-phrasing and clarifications have been made on a number of goals and objectives since the last Audit and Review, I will address only those that have been substantively revised or deleted.

1.b.1 Support the Science and Technology in Society course. This course has been withdrawn from the list of core courses, and is now an elective. The Dean's Office has

encouraged this department to re-direct our general education efforts toward laboratory sciences and to more efficient sch/fte avenues for GM courses, such as Ecology and Society and Biology of the Brain.

1.b.3. Send a representative to a Project Kaleidoscope colloquium on “Revitalizing Introductory Science and Mathematics Courses” The Dean's and Provost's Offices have been generous in supporting these activities in the past. Under current budget limitations, this department has little funds for supporting professional or development travel. This type of goal is subsumed under the more general statements #1 and #2 from the department mission statement reproduced under II B. 1. above.

1.e.1. Write an annual Biology Department newsletter to keep in touch with Biology alumni. The current chair has not pursued this goal, for sake of time priorities and department budget. It is a valuable goal, however, and may be included again in future goal statements.

Various. We no longer specifically identify **computer upgrades or DSS accommodations.** These responsibilities have been assumed by higher level administration, but it may be worthwhile to reiterate some or all in our own goals and objectives.

Various. Maintain equipment and facilities. This is routine within the limits of budget allowances, and is in the job description of our laboratory manager, Ms. Terre Golembiewski. It is not appropriate within programmatic goals, but is an issue for facilities planning and management and other higher administration.

2.c.2. Set aside \$200 per faculty member for professional activities and expenses. With expanding enrollment without budget compensation and more research active faculty, this is no longer a realistic goal given current resources.

C. Trend Data

1. Respond to the following trend data for the program:

a. Number of students enrolled each fall for each of the past five years. (Data provided from the University's fact book.)

There was a **30%** increase from 199 to 259 in the five year interval from 95-96 to 99-00. This fall's enrollment figures show the trend has continued with 290 majors this fall, for a total of **46%** increase in the six years. The previous Audit and Review lists 118 Biology majors and an additional 26 in biology education, for a total of 144 in 1990-91. The enrollment change over the eleven year period has been $(290-144)/144 = \mathbf{101\%}$, with the greatest growth (51 students) coming in the last two years.

Other than undeclared, Biology majors are fourth in the college behind speech, MCS, and psychology. We are the eleventh largest program in the university. Note that this data **excludes** data on pre-veterinary, pre-dentistry, and pre-medicine (23 total in fall 2000) most of whom are taking a biology-type selection of courses, and eventually declare biology as a major or minor.

Enrollment in the minor is similar with 37% increase from 19 to 26 according to the five year trend data.

I point out here and in more exhaustively in section III.F. that this growth is **not** paralleled by assignment of resources to this department, either in FTE or in budget. No additional FTE have been granted to the department. The budget has been increased but only by 22% (\$24,595 to \$30,000), less than the rate of increase of the major and minors. The growth has been accommodated by elimination of courses, mainly upper division electives, and by increasing lecture size either by raising caps/section, or more often, lecturing to more sections at a time.

b. Number of degrees granted each year for the past five years. (Data provided from the University's fact book.)

You see the same trends as above for majors, going from 29 in 94-95 to 40 in 98-99, a 38% increase. The number of minors, however, has decreased from eight to five.

- c. Average number of total credits completed by those earning degrees for each year for each of the past five years if the program is an undergraduate major. Undergraduate majors with a consistent pattern of students graduating with more than 120 credits should provide an explanation of the program elements that require credit accumulation in excess of that number.

Credits to degree rose from 137 in 94-95 to 141 in 96-97. As addressed above, this is an area of continuing concern, but may be largely unavoidable, due to the need for supporting coursework in mathematics, chemistry and physics. This may even be a positive indicator, since preparation for graduate and professional school requires ten credits of physics, but is not required for graduation. Perhaps some of this increase is due to an increasing number of students preparing for advanced training?

This is not to say we have not attempted to reduce this credit load for students. Strategies implemented to date, however, would not have shown up in this data which ended in 96-97. The emphasis system, giving carefully prescribed course selections for students depending on their sub-disciplinary preference was not fully implemented and required 1997's graduating class, and essentially the last students grandfathered out until 1998's graduating class. The physical science minor proposed by physics and including math, chemistry, and physics courses, designed to cover most of biology students' unique requirements within a recognized minor was not approved until 1999, and not available to students in this data set. New general education requirements will allow more of their credits in their major or unique requirements to count toward general education as well, since any GM/GL course will count toward this requirement formerly limited only to credits in Science and Technology in Science requirement.

It is still too early to tell if strategies to reduce credits to degree are effective. The next Audit and Review's data set should be more informative.

- d. Student placement information. (Data to be provided by the department/program.)

The recent survey from career services, reporting on 1998-99 graduates included in appendix D, showed that all Biology-General graduates found employment in related jobs. This emphasis is designed for teacher education. Given the current shortage of science teachers, this is no surprise. Of the other two emphases, all reporting alumni found employment, with 76.5% of the Cell Biology/Physiology and 87.5% Ecology/Field Biology in related jobs. Given that biology is often viewed as a liberal studies major, with little direct career preparation outside of health sciences, this is encouraging. While the report does not cite types of non-related positions, biology graduates corresponding individually with faculty often describe employment in computer sciences, business management, and sales.

D. Demand for Graduates

1. Identify career opportunities available for graduates of the program. Placement statistics to be considered may include:

Statistics are discussed in section C.1.e. immediately above. Reports to faculty from alumni in the last five years include employment or continued education in the following venues.

Biology graduate schools

Health professions

nursing

chiropractics

physical therapy

pharmacy

health technology

physician's assistant

dentistry

veterinary medicine
medicine
Teaching
Wildlife management
Computer programming
Government agencies – e.g. Department of Natural Resources, U.S. Wildlife Service
Industrial or University Laboratory Technician
Zookeeper

E. Accreditation. N/A There are no accrediting agencies for Biological Sciences.

F. Location Advantage

The close proximity of prairie remnants, kettle moraine areas and parks, and numerous lakes allow faculty and students a wide variety of habitats and ecosystems for courses in Ecology and Field Biology, as well as provide a recruiting inducement for Ecology faculty. The proximity of UW-Milwaukee and UW-Madison allows numerous convenient faculty collaborations, and access to equipment that can not be efficiently maintained outside of large institutional research settings. Students and faculty compensate for our deficiencies in library holding through visits to libraries at UW-Milwaukee and UW-Madison. We have drawn many premiere speakers for our department colloquia from those two institutions, the University of Chicago, Beloit College, and Northern Illinois University. Museums in Madison, Milwaukee, and Chicago are used as educational resources, and for occasional class field trips. Sunshine Genetics, an *in vitro* cattle breeding firm one mile outside Whitewater has hosted an Animal Development field trip.

G. Comparative Advantage

Our relatively young faculty (all hired since 1990) provide unusual vitality to our undergraduate and faculty research program. Research facility upgrades due to the unflagging commitment of Dean Ross and faculty success in securing federal grant support makes our research infrastructure above average for comparable institutions. Our faculty have been deliberately selected to range over most sub-disciplines in biology, but we are particularly well staffed in the areas of plant taxonomy, ecology, and cell biology. Our early admission pre-professional program is unusual and should draw high quality freshmen to our campus. Similarly the proposed Marine and Freshwater Biology program is unique to the midwest, and has drawn an unprecedented number of inquiries from area guidance counselors, prospective students, and their parents. We expect this program to be very popular. We have been aggressive and successful in developing internship and undergraduate research opportunities, and have had outstanding success in student authorship on professional publications and in placing students into professional school and prestigious graduate programs.

H. Community Impact

Faculty give presentations to local schools, garden clubs, and other local civic and volunteer organizations. Terre Golembiewski, our laboratory manager, has created displays for the public library and the high school, serves on the City Tree Commission, and offers a Young Scholars program to local elementary students. Several faculty volunteer annually to judge the Fort Atkinson Science Fair.

I. Strategic Planning

1. Discuss potential revisions to the curriculum that you foresee over the next review period in view of projected trends in employment and the development of new technologies, etc.

As mentioned in a variety of contexts above, we will be introducing a proposal in the next few weeks to the Letters and Sciences Curriculum Committee for a new emphasis in the biology major, in collaboration with Deakin University in Australia. The program, Marine and Freshwater Biology, will allow students to earn a joint degree from the two institutions by taking their first three years of courses at UW-Whitewater and their final year at Deakin. It has received

preliminary approval from the overseeing administrators at both universities, and now awaits faculty committee approval before it can be implemented.

Our department played a role in the development of the new environmental studies minor, and contributes courses and faculty expertise to that program. Two of the three faculty coordinating the pending proposal for an environmental science major are also in our department.

We have assembled a study committee in the department to work with the college and university Honors Council considering an honors option and honors thesis in the major. Preliminary discussion has begun of a possible undergraduate major in molecular biology and of a graduate program, but no definitive plans or proposals have been made to date.

We are currently funded by the UW System and a UWW Faculty Development Grant to develop Electronic Laboratories (Elabs) as an option for approximately one-half of the laboratory exercises in the high enrollment (up to 700 students/ semester) Biological Foundations General Studies/Lab Science course. Every other week, students will participate in traditional labs and conduct a variety of experiments and exercises using microscopes, biotechnology instrumentation, etc, identical to lab experiences currently in our curriculum. In alternate weeks, they will do lab exercises using visual data and computer programs provided for them on the WWW, reproducing data collected by their student peers in previous semesters, but allowing them to do independent analysis. Our hope is that this will improve student attitudes toward the course, learning outcomes, and reduce room scheduling constraints, given the dramatic increase in Biological Foundations sections we are offering since our release from teaching responsibilities in Science and Technology in Society (from 18 to 22-25 per semester). We are working with Dr. Steve Friedman of the LEARN Center to assess this approach for effective teaching, and expect to generate professional publications and presentations based on the project.

Instructors in the introductory sequence for majors have also been soliciting federal funding to allow them to upgrade equipment in their courses, leading to even more open-ended laboratory investigations in the future. In absence of such funding they have been introducing these opportunities gradually as time and departmental budget allow.

III. Resource Availability and Development

A. Faculty and Staff Characteristics

1. Discuss the characteristics of the faculty and staff responsible for the program.

All faculty have Ph.D.'s, and eight of the eleven had post-doctoral instructional or research experience prior to their appointment at UWW. All were hired specifically to fill voids in instructional and research expertise, especially since implementation of the emphasis system in 1993. We work in large teams to develop instructional goals and materials, most evidently in Biological Foundations where all students follow the same laboratory program, and in Science and Technology in Society where Biologists worked with faculty from other departments to establish and maintain similar objectives and instructional strategies for all sections. Through departmental and extra-departmental meetings, we encourage and largely manage cooperation between all instructors assigned to any given course, e.g. Biology I, Biology II, Introduction to Genetics, Introduction to Cell Biology, Introduction to Ecology, Ecology and Society. Faculty teaching the two-semester Anatomy and Physiology sequence similarly made sure that they developed the courses in tandem to coordinate content and student goals. See appendix F

2. Indicate the courses in the curriculum for which each faculty and staff member is responsible. See appendix F 1.

All faculty take turns coordinating 390 and 400, Biology Colloquia and Senior Colloquium

3. Identify anticipated staffing changes or areas of need, and the projected impact of these changes and needs on the program.

Even given hires in the positions now open, we will remain understaffed in Biology I: Plant Focus, as you can see by comparing the number of faculty available for Biology I (2) and Biology II (5). Both courses are required for entry into the major and minors, so enrollment is very similar. We hope also to hire an anatomist or physiologist to assist with the load in the new two semester anatomy and physiology sequence, so Dr. Woller will not have to take an overload in the semesters when Endocrinology is offered. The non-majors' courses Biological Foundations and Ecology and Society have almost always filled to capacity in the academic year, regardless of the number of sections we offer. Any additional faculty would help to make general education more accessible for non-science majors, as well as help in the majors' courses cited.

B. Teaching and Learning Enhancement

1. Summarize faculty and staff activities in the areas of teaching and learning enhancement since the previous audit and review. Factors to discuss may include:

a. Participation in on-campus and off-campus teaching enhancement activities

Dr. Urven attended Multimedia Development Center (now part of the LEARN Center) semi-regularly, and presented topics in Distance Education on three instances. Dr. Caporale (now at UW-SP), Dr. Eshelman, and Dr. Urven participated in a two day workshop at UW-Madison on Collaboration on Learning Materials in Biology in the UW-System in July of 1997. Dr. Urven attended the 1997 Distance Teaching and Learning Conference in Madison. Dr. Clokey was at the 1998 conference on Strengthening College Learning through a Focus on Public Health and AIDS.

b. Involvement in academic advising and efforts to maintain or improve advising performance

Dr. Woller participates in the College Master Advisor's Program, and serves as a source of information for other advisors. We anticipate instituting a formal assessment program for advising for use in merit, retention, and promotion decisions, to provide incentives to advisors who lack internal motivation to invest time and effort in this activity central to our missions at all levels.

c. Work with undergraduate students on research projects

See Appendix F2 for a list of the number of undergraduates registering for undergraduate research each semester since 1995-1996. This is not a comprehensive list of undergraduate participation, since some students volunteer for research projects if they have too low a GPA to meet course requisites, or cannot commit to sufficient hours in order to qualify for credit. Most or all of these projects have been presented at the UWW Undergraduate Research Day, many at the National Conference of Undergraduate Research or national professional conferences, and some have co-authored articles in peer-reviewed professional publications. These are cited in the sections below.

d. Initiatives in student-learning based outcomes

As a department, we are encouraging an increasing emphasis on open-learning opportunities, whether in structured classes or independent studies. Many classes, Writing in Biology, Introduction to Ecology, Animal Physiology, and Organic Evolution, to name only a few, are emphasizing primary literature to a greater degree, developing library research skills.

e. New course development

New courses initiated since fall of 1995

Course Number	Course Name	Proposer	Instructor	Notes
110	Biology of the Brain	Woller	Woller	Gen Ed
247	Bioethics	Urven/Nye (Philosophy)	Urven/Nye	Gen Ed and Majors

254	Biotechnology Laboratory Methods	Urven/Mesner	Mesner	Majors
303	Planning and Presenting Biological Research	Eshelman/Wentz	Eshelman	Unique Requirement/ Writing Proficiency
310	Biology of Aging	Sable	Waechter-Brulla	Majors, Minors, Gerontology minor
361	Human Anatomy and Physiology I	Woller	Mesner	Pre-Health and Majors
362	Human Anatomy and Physiology II	Woller	Lee	Pre-Health and Majors

Other courses that have been revised in name, number, credits, and/or contacts in this period are (see appendix B for the titles): 141, 142, 200, 251, 253, and 317.

f. Involvement with interdisciplinary course development and/or delivery.

Dr. Urven cooperated with Dr. Nye of Philosophy to develop and co-teach Bioethics. Dr. Woller developed and is teaching Biology of the Brain with the assistance of Meg Waraczynski of Psychology and Provost Prior. Dr. Mesner and Dr. Urven proposed Biotechnology Laboratory Methods. If Chemistry receives their faculty hiring request, we hope to team teach that course with a biochemist from their department.

Nearly all of our courses are interdisciplinary, whether taught by multiple departments or not. Cell Biology and Physiology courses depend heavily on chemistry, physics, and math concepts, and Ecology and Field Biology uses all those, plus geography and geology on occasion. All courses also incorporate training in discipline-specific oral and written communication skills.

C. Research and Other Scholarly/Creative Activities

1. Summarize the research and other scholarly/creative activities of the faculty and staff since the previous audit and review. Delineate participation in professional meetings, exhibits, performances, presentations and publications as means of presenting original basic and applied research initiatives.

Faculty and continuing staff have published 33 peer-reviewed articles or chapters in the review period. They have made 59 presentations at regional, national, or international professional meetings. Activities are broken down by person in Appendix F3

D. External Funding

1. Summarize the efforts and successes of the program to generate funding through grants, contracts and/or gifts. Indicate sources, requested dollar amounts, and current status of such requests.

Year	Funded	Unfunded
1995-96	\$97,512	\$1,131,000
1996-97	\$105,350	\$325,525
1997-98	\$247,303	\$1,219,762
1998-1999	\$232,163	\$3,353,278
1999-2000	\$470,344	\$1,787,096
total	\$1,152,672	\$7,816,661

Year-by-year detail can be found in Appendix F4. Please note that this table shows awards by investigator, not by institution. Some of these awards were shared with other universities.

E. Professional and Public Service

1. Summarize the professional and public service activities of the faculty and staff since the previous audit and review. Discuss such activities as:
 - a. **Service involvement in professional organizations at state, regional, national, or international levels;** Faculty have been members of education committees for the National Professional Organizations, American Microscopy Society, American Physiology Society, and American Botany Society. Another is a Counselor for the Council for Undergraduate Research, and has arranged for the National Conference of Undergraduate Research to meet here at UWW in 2002. Two have been on the local organizing committees for national meetings held in Madison (*Society for Reproductive Biology* and *Evolution*)
 - b. **Editing or reviewing for professional publications within the discipline;** Dr. Eshelman edited for a publication. Drs. Adams, Eshelman, McKinnon, Urven, and Woller have reviewed manuscripts for professional publications and/or federal grant applications.
 - c. **Non-compensated consulting or intervention activities related to the discipline; and** About one third of the department judges the Fort Atkinson Science Fair each year. Many give presentations to science classes to local elementary, middle, and high schools, as well as hosting such groups at the Upham Museum. We participate in the local Science Night for Cub Scouts, and we host an annual workshop for Biology Teachers. We also host an Annual Darwin Day Celebration and Public Lecture. One faculty member has consulted on arboretum construction at a local elementary school. Several have given presentations to civic groups.
 - d. Roles and memberships in university, college and departmental committees. We currently have three Faculty Senators in our department. Three have been or are currently chairs of university committees (Institutional Research Board for Human Research, Institutional Animal Care and Use Committee, and General Education Review Committee. One is chair of the College Honors Committee. Dr. Ghosh is Undergraduate Research Director for UWW. Most faculty are on one or more college or university committees. All have served on one or more Departmental Search and Screen Committees in this review period. We alternate on Department Merit Committees. All tenured faculty serve on the Department Personnel Committee. We have a three member Honors Committee.

(Include in the table of faculty and staff in Appendix F5.)

F. Resources for Students in the Program

1. Discuss the number of students in the program in relation to the resources available to the program. Factors which may be analyzed include:
 - a. The number of students per faculty member; and

SCH/FTE for the department appears to decline by 30 in the 1998-99 school year. This is attributable to the conversion of Terre Golembiewski's non-academic classified position as a laboratory technician, to a non-instructional academic staff position, for more equitable salary compensation and status. As I understand the calculations, even though she serves in a non-instructional role, here position is now counted as FTE in the SCH/FTE calculation. In absence of any other change, specifically no addition of teaching FTE, the measure suffered in consequence. Notice, however, that enlarging sections compensated for the reduction in SCH/FTE in the following year, due to increasing enrollment.

With the enrollment in the major doubling in 11 years with no compensation in teaching positions, we have assumed two strategies to manage the increasing load.

(1) Eliminate course offerings, especially upper division electives for majors and minors. Excluding the "490" courses of special studies, workshops, etc, in the 1989-1991 UWW Bulletin, there were 46 courses listed for the Biology Department. In 1995-97 and 2000-2002 Catalogs, there are only 39. The result is fewer electives to choose from, sometimes requiring students to select electives to complete their major which are not terribly appropriate for their selected emphasis, a complaint which has surfaced in their exit interviews. (See I. C. above)

(2) Enlarge lecture sections, or increase the number of lab sections in the same lecture. For the Gen Ed Lab Science offering, Biological Foundations, we averaged 62 students per lecture in the fall of 1995. In the fall of 2000, that average has doubled to 132. For the majors' introductory sequence (141 and 142), we have added one extra section per year for each of the two courses, reducing the impact since the last Audit and Review, but still up roughly 50% from ten years ago. I summarize the impact on lower division courses in the table below. Please note that the 200 level courses were new in 1993 as part of the curricular reform introducing the emphasis system in biology. These 200-level courses are required or strongly recommended for all majors and minors.

	<i>fall, 1990</i>	<i>fall, 1995</i>	<i>fall, 2000</i>
120	66.5	62.0	131.8
141	22.0	78.0	38.5
142	24.3	31.0	36.5
251*	10.0	31.0	34.0
253	N/A	15.5	38.0
257	N/A	25.0	42.0

*as number 444, Genetics, required for all majors

- b. The amount budgeted to student help, capital, supplies/services, etc.

This item is beyond the control of the department. Whereas the Dean's Office increased the routine S & S budget line for our department from \$24,595 in 96-97 to \$30,000 currently (22%). In this same interval, there was a **30%** increase from 199 to 259 in the five year interval from 95-96 to 99-00. We have actually lost ground, even before you consider inflation, and remain in tight budgetary straits. We have been unable to replace aging and damaged instructional models, office furniture is in poor shape, and laboratory supply and field trip budgets mandate large group work and limited field opportunities in spite of the abundant natural resources within a short van ride from Upham Hall.

The previous review criticized the department budget using S & S budget/ student in the major. I have not been able to locate complete data on numbers of majors at our sister institutions. Instead, the UWS Redbook provides data on S & S budgets and on faculty assignments for each biology department in the University of Wisconsin System.

school	S & S	instructors	S&S per Faculty
Stevens Point	\$154,841	24.5	\$6320
River Falls	\$39,785	10	\$3979
Green Bay	\$47,352	12	\$3946
Eau Claire	\$78,800	21.13	\$3729
Oshkosh	\$74,749	22	\$3398

Platteville	\$26,800	9	\$2978
LaCrosse	\$54,542	21	\$2597
Stout	\$20,787	9	\$2310
Superior	\$21,286	9.25	\$2301
Whitewater	\$30,000	15.38	\$1951
Parkside	\$10,000	6	\$1667
mean			\$3198
median			\$3088

While UWW has the fifth largest biology department among the comprehensive universities, it is 10th of 11 in Service and Supply budget per faculty. Our average is less than 1/3 the highest at Stevens Point, and less than 2/3 of either the mean or the median for the system. Our average is below even Stout, which lacks a biology major.

G. Facilities, Equipment, and Library Holdings

1. Discuss the adequacy of the facilities, equipment and library holdings available for the purposes of supporting a high quality program. Identify any deficiencies and describe plans to remedy them.

Facilities: Space needs have been largely ameliorated by conversion of three under-utilized teaching laboratories and a faculty meeting room into research space shared by faculty with their undergraduates, generously funded primarily by the College of Letters and Sciences. Unfortunately, some of this space freed at the cost of biology course scheduling and materials storage has been co-opted, at least in the short term, by other departments, specifically, Mathematics, Chemistry, and Physics. One of our research spaces, unoccupied pending hire of an aquatic biologist in our current search, has been loaned to Chemistry for a computer lab with the written promise that it will be returned in the summer of 2001 in time for occupation of our new hire. A second space, used for multimedia storage has been co-opted by Mathematics and Physics for conversion to a research space, for a one year period, agreed to in writing.. Physics has compensated us with the load of a darkroom. While this exchange is inconvenient for Biology due to location, we have agreed to this in the short term. We hope the college and university will be able to re-locate those departments out of Biological Sciences' assigned space in time to provide research space for the three new faculty hires, otherwise those searches will be jeopardized yet again.

Requests for renovations were fielded many years ago by the former chair, Dr. Downing, who initiated a movement in the natural sciences departments and the college to place Upham Hall on the priority list for renovation. That project is now funded, thanks to the efforts of various departments, the Dean, and Offices of the Provost and Chancellor. We hope in the longer term pending building renovations will provide the other departments adequate space to allow return of our space while simultaneously providing us with additional space for future growth of the department.

Equipment: Aggressive solicitation of federal, private, system, and university grants for equipment shared by instructional and research laboratories with generous matches from the college and university, and a strong commitment from the college to start-up money for new faculty has allowed purchase of a variety of equipment, including an ADA accessible sterile hood, centrifuges, gel electrophoresis rigs, microscopes, computers and digitizing equipment. While improvement is still needed, we have made considerable progress.

Library: Book holdings are satisfactory, thanks to the vigilance and dedication of Dr. Stephen Solheim, our library representative. Unfortunately, book holdings are a marginal resource for science programs. Professional journal are the principal and critical informational source, and in this area we continue to be woefully lacking. Science journals are extraordinarily expensive relative to those in areas such as business and humanities. Students and faculty depend heavily on interlibrary loan and collections at UW-Madison for our needs.

Appendices

The following appendices must be included as attachments to the self-study:

Appendix A: Program APR(s)

Appendix B: List Linking Courses to Assessment Objectives

Appendix B1: List of Dual-Listed Courses and Graduate Requirements (if any)

Appendix C: Audit and Review Evaluation Report from Last Review

Appendix D: Trend Data included from the University's Fact Book

Appendix E: Accreditation Report (if relevant)

Appendix F: Table of Faculty and Staff

Copies needed

- 1 complete package to the department
- 1 complete package to the Dean's Office
- 9 complete packages for Undergraduate Programs (13 for Graduate Programs) to:

Richard Telfer, Associate Vice Chancellor
Hyer Hall - Room 420

No later than October 15, 2000

Appendix B

Assessment objectives are identified by letter and number as keyed on page 2. Courses that will likely be dropped from the catalogue due to insufficient staffing and disciplinary expertise are excluded.

- 630-110 BIOLOGY OF THE BRAIN – **non-majors' credit only**
 630-120 BIOLOGICAL FOUNDATIONS - **non-majors' credit only**
 630-141 BIOLOGY I: PLANT FOCUS - **a. 1, 2, 3, b. 1, 2, 3, 4, c. 1, 2**
 630-142 BIOLOGY II: ANIMAL FOCUS - **a. 1, 2, 3, b. 1, 2, 3, 4, c. 1, 2**
 630-200 WRITING IN BIOLOGY - **b. 2, 3, 4, c. 1, 3**
 630-214 ECOLOGY AND SOCIETY – **non-majors' credit only**
 630-247 BIOETHICS - **a. 1, 2, 3, b. 1, 2, 3, 4, c. 3**
 630-251 INTRODUCTION TO GENETICS - **a. 1, 2, 3, b. 1, 2, 3 c. 1, 2**
 630-253 INTRODUCTION TO CELL BIOLOGY - **a. 1, 2, 3, b. 1, 3**
 630-254 BIOTECHNOLOGY LABORATORY METHODS - **a. 2, 3, b. 1, 2, 4, c. 1, 2**
 630-257 INTRODUCTION TO ECOLOGY - **a. 1, 2, 3, b. 1, 2, 3, c. 3**
 630-303 PLANNING AND PRESENTING BIOLOGICAL RESEARCH - **b. 1, 2, 3, 4, c. 1, 3**
 630-310 BIOLOGY OF AGING - **a. 1, 2, 3, b. 1, 3, 4**
 630-311 MICROBIOLOGY - **a. 2, 3, b.1, 3, 4, c. 1, 2**
 630-317 PLANT PHYSIOLOGY - **a. 2, 3, b. 1, 2, 3, c. 1, 2, 3**
 630-340 COMPARATIVE VERTEBRATE ANATOMY - **a. 2, 3, b. 1, 2, 3, c. 2**
 630-341 ANIMAL DEVELOPMENT - **a. 2, 3, b. 1, 2, 3, c. 1, 2, 3**
 630-345 ANIMAL PHYSIOLOGY - **a. 2, 3, b. 1, 2, 3, c. 1, 2, 3**
 630-351 THE PLANT KINGDOM - **a. 1, 2, 3, b. 3,**
 630-353 PLANT TAXONOMY - **a. 1, 2, 3, b. 1, 3, c. 1, 2**
 630-354 FIELD BOTANY - **a. 3, b. 1, 3, c. 2**
 630-361 HUMAN ANATOMY AND PHYSIOLOGY I - **a. 1, 2, 3, b. 2, c. 2**
 630-362 HUMAN ANATOMY AND PHYSIOLOGY II - **a. 1, 2, 3, b. 2, c. 2**
 630-370 AQUATIC BIOLOGY - **a. 1, 2, 3, b. 1, 3, c. 1, 2**
 630-375 INVERTEBRATE ZOOLOGY - **a. 1, 2, 3, b. 1, 3, c. 1, 2**
 630-390 BIOLOGY COLLOQUIUM - **a. 1, 2, 3, b. 1, 4**
 630-400 SENIOR BIOLOGY COLLOQUIUM - **a. 1, 2, 3, b. 1, 4r**
 630-415 ENDOCRINOLOGY - **a. 2, 3, b. 1, 2, 3, c. 1, 2, 3**
 630-422 ORNITHOLOGY - **a. 2, 3, b. 1, 3, c. 2**
 630-423 MAMMALOLOGY -**a. 2, 3, b. 1, 3, c. 2**
 630-430 ANIMAL BEHAVIOR - **a. 2, 3, b. 1, 2, 3, c. 1, 2, 3**
 630-444 CELL BIOLOGY - **a. 2, 3, b. 1, 2, 3, c. 1, 2**
 630-446 ORGANIC EVOLUTION - **a. 1, 2, 3, b. 1, 2, 3, c. 3**
 630-453 ANIMAL HISTOLOGY - **a. 2, 3, b. 1, 3, c. 2**
 630-454 VERTEBRATE FIELD BIOLOGY - **a. 2, 3, b. 1, 2, 3, c. 1, 2**
 630-457 GENERAL ECOLOGY - **a. 1, 2, 3, b. 1, 2, 3, c. 1, 2, 3**
 630-463 MOLECULAR BIOLOGY - **a. 2, 3, b. 1, 2, 3, c. 1, 2**
 630-467 CONSERVATION BIOLOGY - **a. 1, 2, 3, b. 1, 2, 3, c. 3**
 630-493 INTERNSHIP IN BIOLOGY **b. 4, c. 2**

Appendix B1

- 630-490/690 BIOLOGY WORKSHOP - **varies with particular offering**
 630-491/691 TRAVEL STUDY - **varies with particular offering**
 630-492/692 LABORATORY TEACHING EXPERIENCE - **varies with particular offering, same for graduate level**
 630-494/694 SEMINAR - **varies with particular offering**
 630-496/696 SPECIAL STUDIES - **varies with particular offering**
 630-498 INDEPENDENT STUDY – **a. 2, 3, b. 1, 4, c. 1, 2, 3**

Appendix F1

Name	Appt.	No.	Title
Rick Adams	Assoc Prof.	120	Biological Foundations
		142	Biology II: Animal Focus
		340	Comparative Anatomy
		423	Mammalogy
		454	Vertebrate Field Biology
(Aquatic Biologist -pending)	Assist Prof	120	Biological Foundations
		214	Ecology and Society
		257	Introduction to Ecology
		370	Aquatic Biology
George Clokey	0.5 Lecturer	120	Biological Foundations
		142	Biology II: Animal Focus
		200	Writing in Biology
		253	Introduction to Cell Biology
		491	Travel Study
Bruce Eshelman	Assist.Prof.	120	Biological Foundations
		214	Ecology and Society
		257	Introduction to Ecology
		303	Planning and Presenting Biological Research
		491	Travel Study
Sibdas Ghosh	Assoc Prof	120	Biological Foundations
		141	Biology I: Plant Focus
		317	Plant Physiology
(Invertebrate Zoologist pending)	Assist Prof	120	Biological Foundations
		142	Biology II: Animal Focus
		375	Invertebrate Zoology
Jeffrey McKinnon	Assist Prof	120	Biological Foundations
		142	Biology II: Animal Focus
		446	Organic Evolution
		493	Internship (coordinator)
Peter Mesner	Assist Prof	253	Introduction to Cell Biology
		254	Biotechnology Laboratory Methods
		361	Human Anatomy and Physiology I
		444	Cell Biology
(Molecular Biologist pending)	Assist Prof	120	Biological Foundations
		251	Introduction to Genetics
		463	Molecular Biology
Reginald Nash	0.5 Lecturer	120	Biological Foundations
		142	Biology II: Animal Focus
		214	Ecology and Society
		375	Invertebrate Zoology
Neil Sawyer	Assist Prof	120	Biological Foundations
		141	Biology I: Plant Focus

		351	Plant Kingdom
		353	Plant Taxonomy
Stephen Solheim	Assoc Prof	120	Biological Foundations
		214	Ecology and Society
		257	Introduction to Ecology
		354	Field Botany
		457	General Ecology
		467	Conservation Biology
Lance Urven	Assoc Prof	120	Biological Foundations
		247	Bioethics
		251	Introduction to Genetics
		253	Introduction to Cell Biology
		341	Animal Development
		453	Animal Histology
Daryle Waechter-Brulla	Assoc Prof	120	Biological Foundations
		251	Introduction to Genetics
		310	Biology of Aging
		311	Microbiology
		463	Molecular Biology
Lauren Wentz	Assoc Prof	120	Biological Foundations
		200	Writing in Biology
		422	Ornithology
		430	Animal Behavior
		491	Travel Study
Michael Woller	Assoc Prof	110	Biology of the Brain
		120	Biological Foundations
		345	Animal Physiology
		362	Human Anatomy and Physiology II
		415	Endocrinology

Appendix F2: Registration for Undergraduate Research

Semester	# Students
2007	15
2001	9
1997	11
1991	10
1987	10
1981	20
1977	12
1971	12
1967	9
1961	14
1957	7

Appendix F3:
Professional Publications and Participation in Professional Meetings

Author	academic year	publication	presentation/abstract	attend only: no data
Adams	99-00	3	1	
	98-99	1	1	
	97-98	1	2	
	96-97	3	1	
	95-96		1	
Barreto	95-96		1	
Clokey	99-00		1	
	97-98		1	
	95-96	1		
Caporale	98-99	1	1	
	97-98		1	
	96-97	2	1	
Downing	97-98		1	
	96-97		2	
Eshelman	99-00	1		
	98-99		1	
	96-97		2	
Ghosh	99-00		3	
	98-99	1	3	
	97-98	3	2	
	96-97	4	2	
	95-96		1	
Golembiewski	99-00	1		
	96-97	1		
McKinnon	99-00		3	
	98-99		1	
Mesner	99-00	1		
Sawyer	99-00	3		
Solheim	97-98		2	
Urven	99-00		1	
	98-99		2	
	96-97	1	1	
Waechter-Brulla	99-00	2	2	
	96-97		1	
	95-96		4	
Wentz	98-99		1	
Woller	99-00	1	8	
	98-99	2	1	
	97-98		2	
	96-97		1	

Appendix F4: Grant Activity

1995-1996	Source	funded	unfunded
Downing	NSF	\$39,612	
Downing	NSF		\$1,131,000
Ghosh	NSF	\$36,000	
Ghosh	Wisc Space Grant	\$6,000	
Ghosh	Wisc Space Grant	\$2,000	
Downing	UWW Faculty Development	\$5,500	
Waechter-Brulla	UWW Faculty Development	\$8,400	
total		\$97,512	\$1,131,000

1996-1997	Source	funded	unfunded
Adams	NSF		\$215,612
Caporale and Ghosh	UWW Faculty Development	\$18,400	
Downing	UWS Lab Mod	\$81,000	
Downing and Waechter-Brulla	UWW Faculty Development	\$5,500	
Ghosh	Wisc Space Grant	\$450	
Ghosh	USDA		\$49,941
Ghosh	UWS Applied Research		\$49,400
Ghosh	Lindbergh Grants		\$10,572
Urven	UWW Match for WECB	\$24,500	
Urven	Wisc Educ Communications	\$10,000	
Urven and Woller	NSF		\$74,883
Woller	USDA		\$6,790
total		\$105,350	\$325,525

**Appendix F4:
Grant Activity**

1997-1998	Source	funded	unfunded
Adams	Boulder County Open Space	\$6,600	
Adams	NSF		\$192,819
Caporale	UWW Research	\$4,200	
Caporale	NIH		\$75,000
Caporale and Eshelman	UWS Curricular Sharing Initiative	\$199,712	
Clokey	UWW Staff Research	\$2,800	
Downing	NSF		\$311,166
Downing and Ghosh	Chancellor's Excellence Fund	\$9,900	
Downing and Ghosh	Institution Wide Instructional Reform		\$196,986
Eshelman	UWW Research	\$5,378	
Ghosh	Council for Undergraduate Research	\$10,714	
Ghosh and Downing	UWS Central Investment Grant		\$443,791
McKinnon	UWW Research	\$4,907	
Solheim	Faculty Development	\$3,092	
Waechter-Brulla and Eshelman	Faculty Development	\$9,100	
Woller	Barnstead Corporation	\$4,500	
Woller	NSF		\$220,386
Woller	NSF		\$24,540
Woller and McKinnon	UWW Multimedia Technology	\$2,140	
total		\$247,303	\$1,219,762

Appendix F4: Grant Activity

1998-1999	Source	funded	unfunded
Adams	City of Boulder Grant	\$9,389	
Adams	National Geographic Society		\$700,000
Adams	NSF Ecology		\$174,835
Adams	Microcomputer grant	\$2,000	
Adams & U. Colorado	National Geographic Society		\$23,000
Adams, Ghosh, Ferris State	NSF REU		\$207,500
Adams, Ghosh, McKinnon	NSF CCLI		\$116,266
Caporale	PK-16 Initiative UW System	\$60,000	
Caporale	NIH AREA		\$75,000
Caporale	UWW Research Grant	\$3,000	
Caporale	Service learning mini-grant	\$500	
Caporale students	Undergrad Research X 3	\$750	
Clokey	UWW Foundation Grant	\$3,861	
Clokey and Albert (student)	BBB Undergraduate Grants	\$300	
Clokey students	Undergrad Research X 2	\$550	
Eshelman student	Undergrad Research	\$250	
Eshelman, et al.	UW-System UTIC	\$14,785	
Ghosh	NCUR 2002 Organizing Grant	\$50,000	
Ghosh	NSF		\$461,536
Ghosh	UW System Applied Research		\$49,721
Ghosh	Wisconsin Fertilizer Research		\$24,653
Ghosh	Undergrad Research X 3	\$750	
Ghosh and 3 students	WI Space Grant Scholarship	\$3,500	
Ghosh and Scola (student)	CUR Undergrad Research	\$3,000	
Ghosh, et al.	UWS Undergrad Initiatives	\$24,863	
Ghosh, et al.	Chancellor's Excellence Fund	\$16,966	
Ghosh, et al.	NSF CCLI		\$94,844
Ghosh, et al.	NSF CRUI		\$250,000
Ghosh, Solheim, Sawyer	NSF Major Research Instr.		\$296,684
Golembiewski	Microcomputer grant	\$2,000	
McKinnon	Canadian Intern. Development	\$5,000	
McKinnon & U Kentucky	NSF ROA	\$15,000	
McKinnon students	Undergrad Research X 2	\$500	
McKinnon.	UWW Research Grant	\$3,000	
Urven student	Undergrad Research	\$250	
Waechter-Brulla	Faculty Research Grant	\$4,645	
W-Brulla/Woller student	Undergrad Research	\$250	
Wentz	UWW Faculty Development	\$3,254	
Woller	UWW Faculty Development	\$3,000	
Woller & Tessmer (student)	BBB Undergraduate Grant	\$300	
Woller & UW-Milwaukee	NIH		\$879,239
Woller students	Undergrad Research X 2	\$500	
total		\$232,163	\$3,353,278

Appendix F4: Grant Activity

1999-2000		funded	unfunded
Adams	UWW Faculty Development	\$3,099	
Adams	Federal NSF - RUI		\$260,394
Bio	L&S CAP Funds, 99-00	\$16,100	
Bio	L&S CAP Funds, 98-99 2nd call	\$3,250	
Bio	L&S Lab Mod Continuing Costs	\$680	
Clokey	UWW Microcomputer Grant	\$1,900	
Eshelman	NSF-CCLI		\$55,000
Eshelman	Johnson Wax Foundation		\$12,000
Eshelman	Wisconsin Academy of Sciences		\$905
Eshelman	UWW Microcomputer Grant	\$1,900	
Eshelman, et al.	Lancey Foundation		\$35,000
Eshelman, et al.	Federal EPA		\$14,779
Ghosh	Federal NSF-RUI		\$480,000
Ghosh	UWS Applied Research Grant		\$46,945
Ghosh	UWW Strategic Initiatives	\$5,000	
Ghosh	UWW Microcomputer Grant	\$1,900	
Ghosh, et al.	Federal NSF-CCLI		\$274,497
Lee	UWW Academic Staff Development	\$1,037	
McKinnon	Federal NSF-RUI	\$262,742	
McKinnon	Federal NSF-REU	\$4,984	
McKinnon	UWS Teaching Improvement		\$11,776
Mesner	2000 UWW Faculty Develop.	\$4,100	
Penterman/Ghosh	Space Grant Consortium Undergrad	\$1,500	
Price/Ghosh	Space Grant Consortium Undergrad	\$1,000	
Rodrick	Wildlife Society	\$500	
Sawyer	2000 UWW Faculty Develop.	\$4,479	
Solheim	UWW Microcomputer Grant	\$1,900	
Urven, et al.	UWS Curriculum Reform	\$5,000	
Urven, et al.	2000 UWW Faculty Develop.	\$5,000	
Waechter-Brulla	UWW Research Grant	\$4,245	
Wentz	1999 UWW Faculty Develop.	\$700	
Wentz	Federal NSF-POWRE		\$32,193
Wentz	Eppley Foundation		\$25,000
Wentz	UWW Microcomputer Grant	\$1,900	
Wentz, et al.	Paradigm Custom Publishing	\$2,000	
Woller	UWW Lab Modernization	\$77,799	
Woller	1999 UWW Faculty Develop.	\$2,000	
Woller	UWW Microcomputer Grant	\$1,900	
Woller with UW-M	NIH - NIEHS		\$538,607
Woller, et al.	Federal NSF-CCLI	\$53,729	
total, 1999-2000		\$470,344	\$1,787,096

Appendix F5: Faculty Service

Rick Adams		Reviewer for Journal of Mammalogy
		Reviewer for Behavioral Ecology
		Reviewer for Acta Chiropterologica
		Reviewer for Great Basin Naturalist
		Reviewer for Condor
	1996	President of Organizing Committee: Four Corners Regional Bat Conference, Durango, Colorado
	1990-Present	Founder and President. The Colorado Bat Society: a nonprofit corporation dedicated to fostering educational information and the conservation of bat species in Colorado.,.
	1997-Present	UWW_University Graduate Council Committee
	1998-Present	College of Letters and Sciences Honors Committee
	1999-present	Department Personnel Committee
	1998	College of Letters and Sciences Salary Committee
	1998	College of Letters and Sciences Audit & Review Committee
	1997	College of Letters and Sciences Award for Excel. in Res. Committee
	1997	University Audit and Review Committee
	1997	Dept. Bio. Sci._Merit Review Committee
	1997	Dept. Bio. Sci._Merit Form Revision Committee
1997	Scout Night: Biology Education for Boy Scouts_Upham Hall	
1996	College of Letters and Sciences Award for Excel. in Res. Committee	
1996	College of Letters and Sciences Audit and Review Committee	
1996	Biological Sciences Search and Screen Committee	
1996	Judge: Oral Presentations for Wisconsin Colleges Undergrad. Res. Day	
1996	Scout Night: Biology Education for Boy Scouts (Lakeview Elementary)	
George Clokey	1992-1999	Outreach Specialist, Instructor, Teacher Enhancement Program, Department of Medical Genetics, UW-Madison
	1999-present	Organizer, 16th Annual High School Biology and Science Teachers Conf.,
	1998-present:	Departmental Scholarship and Awards Committee
	1997-present:	Assistant Advisor to Biology Honors Society
	1996-present:	Judge, Fort Atkinson Science Fair
	1996-present	Liaison for Lake Mills School District to Fort Atkinson Science Fair
Bruce Eshelman	1996	Committee on Education and Graduate Students American Society of Mammalogists
	1996 - 1999	Associate Editor for Mammals - The Great Basin Naturalist.
		Reviewer for <i>Ecology</i> ; <i>Journal of Mammalogy</i> ; <i>Southwestern Naturalist</i> ; <i>American Midland Naturalist</i> ; <i>Great Basin Naturalist</i>
	1996-1999	Committee on Education and Graduate Students for the American Society of Mammalogists
	1997-present	UWS Pigeon Lake Representative
	1998-2000	Department Undergraduate Research Committee
	1999-2000	UWW Greek Awards Committee
	1996-2000	Department Grade Appeals Committee

Appendix F5: Faculty Service

	1996-present	Science computer lab Windows systems supervisor
	1999-2000	BioWeb Grant Committee presentation
	1999-2000	Department Lecturer Search Committee
	1999-2000	Lincoln School Arboretum Committee
	1998-present	Institutional Animal Care and Use Committee
	1999-present	Marine and Freshwater Biology Emphasis Development Committee (chair)
	1999-present	UWW Instructional Technology User Group Advisory Committee
	1997-1998	UWS conference for web-based instruction
	2000-2001	Biological Sciences Search and Screen Committee, Molecular biologist
	2000-2001	Biological Sciences Search and Screen Committee, Aquatic biologist
	2000-2001	Biological Sciences Search and Screen Committee, Invertebrate Zoologist
	1999-2000	Biological Sciences Search and Screen Committee, Aquatic invertebrate Zoologist
	1999-2000	<i>Science and Technology in Society</i> workshop
	1997, 98, 99	Cub Scout Science Night presenter
	1997	UWW representative to Project Kaleidoscope conference
	1996-1997	Biological Sciences Search and Screen Committee, Evolutionary Biologist
Sibdas Ghosh	2000	College of Letters & Sciences Service Award, UW-W
	1997	UW-W Research Award
	1997	College of Letters & Sciences Research Award, UW-W.
	1996 - 1997	Outstanding Achievement in Special Initiatives in the National Space Grant College and Fellowship Program: Wisconsin Space Grant Consortium.
	1995 - 1996	Outstanding Achievement in Higher Education in the National Space Grant College and Fellowship Program): Wisconsin Space Grant Consortium, Wisconsin.
	1995 - 1996	Outstanding Achievement in Aerospace Outreach in the National Space Grant College and Fellowship Program: Wisconsin Space Grant Consortium, Wisconsin.
	1998-1999	Host Upper Midwest Honors Council Conference at UW-Whitewater
	1997-1998	Host CUR Research-Link 2000
	1996-1997	Organized Wisconsin Space Grant Consortium (WSGC) workshop
	1995-1996	Organized workshop to Outreach K12 students in space related sciences
	1995-1996	Received \$25,000 from General Electric to Enhance Minority in Sciences
	1998 - Present	Represent UW-Whitewater at National Conference on Undergraduate Research Board of Governors Meeting

Appendix F5: Faculty Service

		Liaison for UW-Whitewater at the Council on Undergraduate Research
	1999- Present	Elected Biology CUR Councilor
	1999 – Present	Advisory Council of Wisconsin Space Grant Consortium
	1996- Present	Member, National Collegiate Honors Council
	1996 – Present	Research Tactical Advisory Panel, Wisconsin Space Grant Consortium
	1996	Moderator, Oral sessions at NCUR (National Conference on Undergraduate Research)
		Reviewed grants for National Science Foundation & Wisconsin Space Grant Consortium, USDA, CUR
		Reviewed papers for Crop Science, BioTechniques, Developmental Genetics, Indian Journal of Experimental Biology, American Journal of Botany, Physiologia Plantarum
	1999	Co-Organizer: Annual Upper Midwest Honors Council Conference UW-W.
	1997	Co-Organizer: CUR (Council on Undergraduate Research) Research Link 2000.
	1995	Co-Organizer: 5 th Wisconsin Space Grant Consortium.
	1998- 2000	Biological Sciences Scholarship Committee
	1999- present	Department Personnel Committee
	1998- 1999	Search and Screen Committee Plant Systematics Position
	1997	Departmental Grade Appeals Committee
	1995- 1996	Departmental Merit Form Task Force
	1995- 1996	Chair, Search and Screen Committee Quantitative Biologist Position
	1994- 1996	Department Curriculum Committee (
	1999- Present	Co-Chair, UPHAM Renovation Advisory Committee
	1999- 2000	McGraw Award Committee
	1998- 2000	College Award for Excellence in Teaching Committee, Chair 1998-1999
	1996- 1998	UWW Promotion & Tenure Appeals Committee
	1995- 1998	College Honors Committee
	1994- 1997	College Award for Excellence in Service, Chair 1995-1997.
	1999- 2000	Office of Planning and Review (OPR) Committee
	1995- Present	UWW Academic Development Committee
	1999	UW-Whitewater Research “Swat” Team
	1998- 1999	Search and Screen Committee for Chancellor, UW-W
	1997- 1998	Search and Screen Committee for Provost, UW-W
	1995- 1996	Undergraduate Education Committee UW-W

Appendix F5: Faculty Service

	1995-1998	Graduate Audit and Review Committee
	1998-Present	Strategic Budget and Planning Committee
	2000	Chancellor Inauguration Committee
	2000	UW-Whitewater Admission Swat Team
	1998-Present	Faculty Senate Executive Committee
	1996-Present	UW-W Faculty Senate
	1996-Present	UW-W Honors Council Meets on a regular basis
	1995 - Present	Advisor for Undeclared Students
	1995-Present	Advisory Committee for Affiliated Status in the Race and Ethnic Cultures Program
	1996-1997	Instructional Technology Working Group
	1997-1998	Search and Screen Committee for Provost
	1995 - Present	African American Educators Committee
	1995 - 1999	UW-W Undergraduate Research Council
	1999-2000	Sponsored Dr. Duane Jackson for L&S Lecture Series,
	1996	Sponsored Dr. William J. Hurkman for L&S Lecture Series
	1997-1998	Co-sponsored Professor Robert H. Fitts for L&S Lecture Series
		Assisted 3 rd graders at Lincoln Elementary School, with Toshiba/NSTA Exploravision Competition
		Lectured AP Biology Class at Milwaukee Public School
	1995-Present	Pr-college Camp
Terre Golembiewski	1999-present	City of Whitewater, Tree Commission member
	1998-present	UWW Continuing Education Services, Young Scholars Instructor
	1983-present	International Carnivorous Plant Society member
	1983-present	Botanical Club of Wisconsin member
	1991-1993	Environmental Federation at UW-Whitewater, staff advisor
	2000-2002	Academic Staff Rewards and Recognition Committee
	1999-2000	Academic Staff Awards Committee
	1998-2000	Academic Staff Review Committee
	1998	Advisory member of Biological Sciences Plant Systematist Search and Screen
Kevin Lee	1998-2000	UWW Women's Issues Committee
Jeffrey McKinnon		Reviewer for American Naturalist

Appendix F5: Faculty Service

		Reviewer for Animal Behaviour,
		Reviewer for Behaviour
		Reviewer for Journal of Evolutionary Biology
		Reviewer for Fishery Bulletin (U.S.)
		Reviewer for Proceedings Royal Society of London (B)
		Reviewer for NERC Grant (United Kingdom)
	1999	Local organizing committee, Joint Meeting of the SSE, ASN, SSB, Madison.
	1999, 2000	Principal organizer of UWW "Darwin Day,"
	2000	Chair, Honors committee, College of Letters and Sciences, UW-Whitewater.
	1998- 1999	Dept. Committee on reform of undergraduate research curriculum.
		Member of two search committees at UW-Whitewater.
	1999- 2001	Upham Hall Renovation Committee,
Peter Mesner	spring, 1999- present	Graduate Council
	2000- 2001	Biological Sciences Search and Screen Committee, Molecular biologist
	2000- 2001	Biological Sciences Search and Screen Committee, Aquatic biologist
	2000- 2001	Biological Sciences Search and Screen Committee, Invertebrate Zoologist
	1999- present	Six classroom presentations at local schools
Neil Sawyer	1999- 2000	Biological Sciences Search and Screen Committee
	1999- 2001	UWW Prairie Reconstruction Committee
	1999- 2000	Chair of Biological Sciences Scholarship Committee
Stephen Solheim	1995- present	Biological Sciences Library Representative
	1997- present	Department Personnel Committee
	1998- 1999	Department Grade Appeals Committee (Chair)
	1998- 1999	Letters and Sciences Promotions Committee
	2000- 2001	Letters and Sciences Curriculum Committee
	2000- 2001	University Curriculum Committee
	1998- 1999	Chair, Department Botanist Search Committee
	2000- 2001	Biological Sciences Search and Screen Committee, Molecular biologist
	2000- 2001	Biological Sciences Search and Screen Committee, Aquatic biologist
	2000- 2001	Biological Sciences Search and Screen Committee, Invertebrate Zoologist (Chair)
	1997	Dept. Bio. Sci._Merit Review Committee

Appendix F5: Faculty Service

	1997	Dept. Bio. Sci._Merit Form Revision Committee
	1995-1996	Search and Screen Committee Quantitative Biologist Position
Lance Urven	2000-2002	Faculty Senate
	1999-2000	UWW Thesis Competition Comm.
	1998-2000	UWW Curriculum Committee,
	1998-2001	L&S Administrative Council,
	1999-2000	L&S Promotions Committee,
	1997-present	Department Personnel Committee (Chair, 1998-present)
	1993-94, 1997-2000	L&S Curriculum Committee,
	1999	UWW Ad Hoc Gen Ed Review Group,
	1998-2001	Biol. Sciences Curriculum Facilitator
	1991-1998	Biol. Sciences Curriculum Comm., Chair, 1992-1998
	1993-1998	Inst. Animal Care & Use Comm., Chair, 1995- 1996
	1996-97	University Honors Council
	1993-94, 1994-95	Midwest Microscopy & Microanalysis Society, Biological Sciences Director
Daryle Waechter-Brulla	1999-2000	Wrote Radiation Safety web site, published at: http://www.uww.edu/adminaff/hotissues.htm
	1999-2000	Wrote campus' first Radiation Safety Manual; published at: http://www.uww.edu/Adminaff/radiation.htm
	2000	Attended "Select Agents" safety workshop
	1998	Attended OSHA "New Bloodborne Pathogen Compliance Directive" Radiation Safety Officer training course
	2000	UW-W Radiation Safety Training Session
	2000.	UW-W Laboratory Safety/Chemical Hygiene Training Session, presenter
	1993 to present	Annual Bloodborne Pathogens safety trainer, UW-W,.
	1998 to present	.UW-W Radiation Safety Officer.
	1998 to present	UW-W Campus Safety Teams: Hazardous Waste, Radiological/Biological Safety (HWRBS) Team chair,.
	1996-present	Department Personnel Committee
	2000-2001	Chair, Department Committee For Promotions To Full Professor
	1996	UW-W Safety Committee chair.
	1998	UW-W Office of Environmental Health, Risk Management, Safety and Loss Control, participant during Office and Planning Review (OPR)
	1998 to present	UW-W Campus Safety Teams: Hazardous Waste, Radiological/Biological Safety (HWRBS) Team
	1998 to present.	UW-W Campus Safety Teams: Emergency Response/Fire Drill Team member.

Appendix F5: Faculty Service

	1994 to present.	UW-W Safety Committee member.
	1995-96	Chemistry Search and Screen Committee , Physical chemist
	various	Biology lecturer Search and Screen Committees
	1998-99	Biology Search and Screen Committee, Cell biologist
	1999-2000	Biology Search and Screen Committee, Molecular geneticist
	1999-2000	Biology Search and Screen Committee, Structural biologist
	2000-2001	Biology Search and Screen Committee Coordinator, Molecular biologist
	2000-2001	Biology Search and Screen Committee Coordinator, Aquatic ecologist
	2000-2001	Biology Search and Screen Committee Coordinator
	2000-2001	Contributor to Biological Foundations Electronic Laboratory project.
	Fall 2000	Authored guide to hiring, with 19 boilerplate files for letters, conversations, etc..
	1998	Facilities tour representative, FP&M inspection.
	1999	Contributor to Biological Foundations Laboratory Manual,
	1997-98	Department Grade Appeals committee.
	1996	Department Scholarship committee.
	2000-2001	College of Letters and Sciences Promotions Committee.
	1996-1997	College of Letters and Sciences Promotions Committee.
	1994 to 1999	<i>Science and Technology in Society</i> course coordinator.
	1999	Gave presentation to World of Ideas instructors..
	1996	Gave presentations on <i>STS</i> to Natural Science Faculty.
	1994-1999	Gave <i>STS</i> presentations to Core Course faculty at meetings held each semester.
	1996	Wrote and obtained \$38K from National Science Foundation to finance <i>STS</i> computer lab.
	1998-present.	UWW Radiation Safety Officer.
	1998-present.	Campus Safety Teams: Fire Drills <i>and</i> Hazardous Waste (HWRBS);
	1994-present	Campus Safety Committee,. Chair: 1996-present.
	1995-1998	Emergency Officer, for Building Supervisor.
	1993 to present	Annual UW-W Bloodborne Pathogens safety trainer.
	1998-1999	UWS Women and Science Advisory Board.
	1996	Co-convened (at national meeting of American Society for Microbiology
	2000	Presentation for Cub Scout Pack 134, Fort Atkinson.
	1998	Presented to students at Purdy, Barrie, and Rockwell Elementary Schools.
	1996	Led fossil hunt for summer reading program, Fort Atkinson library.
	1996	Co-led fossil hunt at Hausz Brothers Quarry for Whitewater Cub Scouts
	1997	Keynote speaker at Fort Atkinson Science Fair Award Ceremony,.
	1996	Judged essays for Fort Atkinson Science Fair, Inc. Essay Contest.
	2000	Co-presenter of ACT test prep session at Fort Atkinson High School.
	1996	UWW Biology Day presentation.

Appendix F5: Faculty Service

	1997	Presented weeklong session on forensic science for Elderhostel.
	1997	Presented two talks to Fairhaven Lecture Series.
Lauren Wentz	2000-2002	UWW Faculty Senate
	1997-present	Department Personnel Committee
	1995-present	Institutional Review Committee for Human Investigations (Chair)
	1995-present	Department Biological Foundations Coordinator
Michael Woller	95-97	Biology of Reproduction: on Public Affairs Committee
	1999	Review National Science Foundation Grants
		Reviewer for <i>Endocrinology</i>
		Reviewer for <i>Biology of Reproduction</i>
		Reviewer for <i>Science</i>
		Review for Oman Government Grant Application
	95-present	Animal Care (IACUC), chair, 96-present
	96-present	Master Advisor
	97-present	Advising Award Committee
	1998-1999	UWW Y2K Committee
	1999-2000	Research Development Strategies Team (Prior initiative)
	1999-2000	Biological Sciences search and screens
	2000-2001	Biological Sciences Search and Screen Committee, Molecular biologist
	2000-2001	Biological Sciences Search and Screen Committee, Aquatic biologist
	2000-2001	Biological Sciences Search and Screen Committee, Invertebrate Zoologist
	1999-2000	UWW Biological Sciences Darwin Day co-coordinator
	1997-present	Biology Honor Society advisor