

PROGRAM REVIEW

February 7, 2011

UNIT Biology DEPARTMENT Biology COLLEGE College of Science & Math

GRADUATE X UNDERGRADUATE X

UNIT CONTACT PERSON _____

CHAIRPERSON SIGNATURE _____

DEAN SIGNATURE _____

EXECUTIVE SUMMARY UNDERGRADUATE

The Department of Biology provides a large, cost-efficient, high quality program that is essential to the mission of the University. Review and revision of programmatic needs and curricular structure has led to substantial growth in departmental majors, and a reduction in under-enrolled courses. Collectively, faculty are teaching at over 100 percent of predicted load based on a 12 contact-hours per semester, and yet maintain internationally-recognized research programs providing students high impact learning experiences in lab and field research.

- 607 majors – ranked 3rd in the University
- All primary aspirational goals have been met, with only the 6-year completion rate nearing the minimum we set.
- Revenue:Cost ratio is >1
- Per major SCH cost is 2nd lowest in CoSM, and total per SCH cost is 25th of 44 programs university-wide
- Total cost per SCH is 80% of the Delaware benchmark.
- Department teaches all but one course offering in University Studies Living Systems category
- Department offers service course to more than a dozen programs outside Biology, most predominantly Nursing with student credit hour generation growing in this area.
- Biology entering students GPAs and ACT scores are higher than the university average
- Biology has the highest number of students receiving merit-based scholarships in the institution.
- Biology majors achieve a 99.6 % pass rate on WP003.
- Primary concerns: Impact of proposed community college on lower division enrollment, impact of CAI on non-majors curricular structure, impact of state budget situation on ability to deliver quality instruction, and potential for 1/3 of department faculty to retire in the next 5 years.

EXECUTIVE SUMMARY GRADUATE

The graduate program for the Department of Biology supports the University mission through education, research and service. We operate efficiently by maximizing course diversity and enrollment, and by faculty teaching at maximum loads. We balance effective, up-to-date coursework with active research programs. Our students demonstrate the quality and productivity high numbers of publications and presentations that derive from their thesis research. Our well-trained students are able to obtain employment in their fields or successfully continue their graduate careers in doctoral programs.

- Second highest completor:major ratio in the university. We exceeded our aspirational goal by 10%.
- Faculty obtained \$182,667 in research grants.
- Graduate students published 16 articles in peer-reviewed journals.
- Graduate students delivered 37 oral and poster presentations at national and international meetings.
- Strong support for University Studies Living Systems and service courses through graduate teaching assistants.
- New graduate student GPA of 3.18 well above the minimum GPA requirement of 2.5 for the university and 2.75 for the department.

Program Review Final University Committee Chair Comments

I. SIZE, SCOPE, AND PRODUCTIVITY OF THE PROGRAM

Briefly describe the depth and breadth of your unit's offerings (Undergraduate).

The Biology Department has the third largest number of majors (3 year mean = 607) of any university unit. Our majors are divided among six degree options ranging from Biomedical Sciences to Wildlife Biology. Biology also offers several minors with an annual mean of 97 students. By carefully constructing a common core for our options and creating upper division courses that support multiple options, we provide in-depth coverage of a reasonably large swath of biology that would be spread over several sub-disciplinary departments at many universities. The Biology Department serves not only traditional majors, but also has a large commitment to courses serving nursing, allied health, science education, and environmental science programs. We also have a significant University Studies mission serving a large body of students taking the Living Systems requirement.

Briefly describe the depth and breadth of your unit's offerings (Graduate).

The Biology Department graduate program offers a diversity of courses to provide our students with the best available options to pursue their career goals; two graduate seminar courses are the only required courses taken by all of our graduate students. We provide educational diversity through careful course management by offering combined 400/600-level courses on an alternate-year schedule. This arrangement maximizes both course diversity and enrollment. We also provide quality training and mentorship in the disciplines that we can support with expertise, resources and infrastructure, especially field biology, organismal biology and ecology. Many of our students have the opportunity to perform collaborative research with state and federal agencies.

SIZE and SCOPE DATA UNDERGRADUATE

| Measure | Minimum | Aspirational Target | Year | | | | |
|--|---------|---------------------|------|------|------|---|---|
| | | | AY07 | AY08 | AY09 | 4 | 5 |
| Majors UNIT Total | 465 | 595 | 573 | 589 | 664 | | |
| Biology [BS/BS/BIOL] | | | 78 | 62 | 50 | | |
| Biology Education [BSE-HS/BSEHS/BIED] | | | 17 | 10 | 5 | | |
| Biology Education [PRE EDUC/BSE/BIED] | | | 8 | 10 | 18 | | |
| Biology Education: Unified Sci [BSE-HS/BSEHS/BUSE] | | | 4 | 5 | 4 | | |
| Biology Education: Unified Sci [PRE EDUC/BSE/BUSE] | | | 8 | 7 | 15 | | |
| Biology: Biomedical Sciences [BS/BS/BBMS] | | | 42 | 55 | 74 | | |
| Biology:Micro/Cell/Molec/Biote [BS/BS/BMCM] | | | 19 | 16 | 29 | | |
| Biology:Orgnsm/Ecol/Evol [BS/BS/BOEE] | | | 26 | 22 | 26 | | |
| Biology:Wildlife/Conservation [BS/BS/BWC] | | | 33 | 59 | 72 | | |
| Pre-Chiropractic [PREPROF/Pprof/PRCH] | | | 10 | 12 | 9 | | |
| Pre-Dentistry [PREPROF/Pprof/PRDN] | | | 36 | 28 | 28 | | |
| Pre-Medicine [PREPROF/Pprof/PRMD] | | | 141 | 163 | 182 | | |
| Pre-Occupational Therapy [PREPROF/Pprof/PROT] | | | 4 | 2 | 3 | | |
| Pre-Optometry [PREPROF/Pprof/PROP] | | | 16 | 17 | 21 | | |
| Pre-Physical Therapy [PREPROF/Pprof/PRPT] | | | 84 | 88 | 85 | | |
| Pre-Veterinary Medicine [PREPROF/Pprof/PRVT] | | | 47 | 33 | 43 | | |
| Minors UNIT Total | | | 87 | 94 | 109 | | |

| | | | | | | | |
|--|-----|-----|-------|-------|--------|--|--|
| Biology | | | 3 | 6 | 16 | | |
| Botany Minor | | | 0 | 1 | 1 | | |
| Microbiology minor | | | 4 | 5 | 5 | | |
| Science Concentration-21 hour | | | 38 | 45 | 48 | | |
| Science Concentration-30 hour | | | 4 | 2 | 1 | | |
| Science Specialization | | | 30 | 30 | 32 | | |
| Zoology | | | 4 | 5 | 6 | | |
| Zoology minor | | | 4 | 0 | 0 | | |
| Completers UNIT Total | 49 | 55 | 51 | 52 | 49 | | |
| Biology [BS/BS/BIOL] | | | 29 | 25 | 7 | | |
| Biology Education [BSE-HS/BSEHS/BIED] | | | 5 | 5 | 1 | | |
| Biology Education: Unified Sci [BSE-HS/BSEHS/BUSE] | | | 1 | 2 | 3 | | |
| Biology: Biomedical Sciences [BS/BS/BBMS] | | | 5 | 5 | 22 | | |
| Biology:Micro/Cell/Molec/Biote [BS/BS/BMCM] | | | 1 | 4 | 3 | | |
| Biology:Orgnsm/Ecol/Evol [BS/BS/BOEE] | | | 3 | 6 | 4 | | |
| Biology:Wildlife/Conservation [BS/BS/BWC] | | | 7 | 5 | 9 | | |
| % Completion Rate 6 YR | 38 | 48 | 50 | 52 | 46 | | |
| Unit - % Retention FS YR 1 -- F YR 2 | 75 | 75 | 56 | 52 | 50 | | |
| Unit - % Retention FS YR 3 -- F YR 4 | 63 | 78 | 75 | 73 | 77 | | |
| UNIV - % Retention FS YR 1 -- F YR 2 | | | 71 | 67 | 68 | | |
| UNIV - % Retention FS YR 3 -- F YR 4 | | | 86 | 87 | 84 | | |
| SCH On Campus FS | | | 8,109 | 8,062 | 9,423 | | |
| SCH Off Campus FS | | | 1,699 | 1,768 | 2,038 | | |
| SCH Total FS | | | 9,808 | 9,830 | 11,461 | | |
| SCH Summer On and Off Campus | | | 696 | 648 | 747 | | |
| SCHR (SCH ratios) On Campus Fall/Spring | 0 | 272 | 251 | 286 | 361 | | |
| SCHR (SCH ratios) Off Campus Fall/Spring | 212 | 265 | 206 | 229 | 243 | | |
| SCHR (SCH ratios) Total | 212 | 0 | 241 | 274 | 333 | | |
| Delaware SCHR | | | 258 | 234 | | | |
| % of Sections with Enrollment < 10 (GR < 8) | 10 | 5 | 20 | 18 | 9 | | |

Area of Concern for Size and Scope Data (Undergraduate)

The one area of concern is that our six year completion is at the lower limit of the target we set. Some of this is a result of the distribution of majors at the freshman and sophomore level that leans heavily toward pre-professionals, many of whom leave the major early in their academic career. This is not unexpected, and is typical for pre-medicine, in particular. Achieving a better balance between pre-professionals and students pursuing biology degrees to become biologists might increase our completion rate.

If a competing community college comes to the Cape Girardeau area, it could affect our enrollment in our lower- level service and University Studies courses.

SIZE and SCOPE DATA GRADUATE

| Measure | Minimum | Aspirational Target | Year | | | | |
|---|---------|---------------------|------|------|------|---|---|
| | | | AY07 | AY08 | AY09 | 4 | 5 |
| Majors UNIT Total | 30 | 44 | 39 | 40 | 32 | | |
| Biology [MNS/MNS/BIOL] | | | 21 | 40 | 32 | | |
| Biology-CIP2 [MNS/MNS/BIOM] | | | 18 | 0 | 0 | | |
| Completers UNIT Total | 6 | 10 | 6 | 14 | 13 | | |
| Biology [MNS/MNS/BIOL] | | | 6 | 14 | 13 | | |
| UNIV - % Retention FS YR 1 -- F YR 2 | | | 0 | 0 | 0 | | |
| UNIV - % Retention FS YR3 -- F YR 4 | | | 0 | 0 | 0 | | |
| SCH On Campus FS | | | 263 | 252 | 202 | | |
| SCH Off Campus FS | | | 0 | 0 | 0 | | |
| SCH Total FS | | | 263 | 252 | 202 | | |
| SCH Summer On and Off Campus | | | 28 | 24 | 12 | | |
| SCHR (SCH ratios) On Campus Fall/Spring | | | 112 | 84 | 85 | | |
| SCHR (SCH ratios) Off Campus Fall/Spring | | | 0 | 0 | 0 | | |
| SCHR (SCH ratios) Total | 186 | 265 | 112 | 84 | 85 | | |
| Delaware SCHR | | | 226 | 234 | | | |
| % of Sections with Enrollment < 10 (GR < 8) | 10 | 5 | 57 | 67 | 33 | | |

Area of Concern for Size and Scope Data (Graduate)

Our concern is consistent recruitment of students. The number of majors in the Biology Department is irregular across semesters. The average number of majors in the Biology department (37) is only 84% of our aspirational target (44). We perceive a need to increase student recruitment to meet the teaching demands of our undergraduate laboratory courses (see next section), as well as to meet research requirements for promotion and tenure. Recruitment is hindered to some extent because many of our faculty have release time for administrative assignments, which reduces the amount of time available to devote to graduate student mentorship.

One result was marked as a red flag. Our graduate average SCHR of 93.7 is apparently only 35.3% of our aspirational target. However, we did not set an aspirational target for the graduate program. The SCHR was instead calculated with the default undergraduate SCHR aspirational target of 265. We did not set an aspirational target specifically for the graduate program because our graduate students enroll in combined 400/600-level courses that are also taken by undergraduate students. Overall, our SCHR is above target. Thus, this apparent red flag is a false alarm.

TEACHING PERSONNEL DATA UNDERGRADUATE

| | Minimum | Aspirational Target | AY07 | AY08 | AY09 | Year 4 | Year 5 |
|---|---------|---------------------|-------|-------|-------|--------|--------|
| Unit Full Time Faculty Number | 17.00 | 22.00 | 17.00 | 18.00 | 19.00 | | |
| Unit Full Time Faculty Adjusted for Release | 16.12 | 17.00 | 15.50 | 16.75 | 16.75 | | |
| Unit Full Time Faculty UG FTE | | | 27.01 | 28.47 | 28.80 | | |
| Unit Regional Campus Faculty Number | | | | | 2.00 | | |
| Other Teaching Personnel UG Number | 2.00 | 2.00 | 27.00 | 32.00 | 32.00 | | |

| | | | | | | | |
|-----------------------------------|------|------|-------|------|------|--|--|
| Other Teaching Personnel UG PTFTE | 1.50 | 1.50 | 13.60 | 7.47 | 5.65 | | |
|-----------------------------------|------|------|-------|------|------|--|--|

Area of Concern for Teaching Personnel Data (Undergraduate)

There are three areas of concern. First, about a third of the faculty members in our department are likely to retire in the next 5 years. This will create considerable turnover in our department and, based on recent history, there will be pressure to replace at least some of these positions with RNTT or part-time positions. While that may be economically expedient, it has the potential to severely erode the quality of instruction we provide at the upper division. A number of the potential retirees are in biology subdisciplines where it is difficult to have others take on the teaching responsibilities due to the specialized training required to teach the normal course content. This means that retiring faculty will have to be replaced by Ph.D-level individuals to maintain the integrity of important programs.

In addition, the CUPA salaries in these subdisciplines are high, so hiring quality faculty may not result in the cost savings often associated with retirements. Second, many of our current faculty members have release time for administrative assignments. Currently this release, including that for the chairperson, exceeds 2 full-time positions and the instructional release time is not routinely replaced. This has put a strain on our resources and limits our ability to support greater numbers of students. Third, the current uncertainty of the impending statewide budget crisis, the Curriculum Alignment Initiative (CAI), and the proposed community college in Cape Girardeau, places us in a difficult position with respect to understanding what the staffing patterns are going to be.

| TEACHING PERSONNEL DATA GRADUATE | | | | | | | |
|---|---------|---------------------|------|------|------|--------|--------|
| | Minimum | Aspirational Target | AY07 | AY08 | AY09 | Year 4 | Year 5 |
| Unit Full Time Faculty Number | | | 0.00 | 0.00 | 0.00 | | |
| Unit Full Time Faculty Adjusted for Release | | | 0.00 | 0.00 | 0.00 | | |
| Unit Full Time Faculty GR FTE | | | 2.31 | 3.01 | 2.37 | | |
| Unit Regional Campus Faculty Number | | | | | 0.00 | | |
| Other Teaching Personnel GR Number | | | 1.00 | 0.00 | 0.00 | | |
| Other Teaching Personnel GR PTFTE | | | 0.03 | 0.00 | 0.00 | | |

Area of Concern for Teaching Personnel Data (Graduate)

We are concerned about the potential loss of tenured faculty. In 5-7 years, roughly one-third of tenured Biology faculty is eligible to retire. If budget constraints preclude the hiring of replacement tenure-track faculty, we may lose the expertise necessary to provide educational and research diversity to our students. RNTTs could provide classroom expertise but their duties do not extend to developing and maintaining research programs, or to advising graduate students. Loss of tenured faculty would reduce our ability to sustain a healthy and diverse graduate research program, and could result in reduced recruitment of new students, hindering our ability to meet teaching assistantship demands.

We rely on graduate assistants to teach required undergraduate laboratories. The number of students seeking a graduate assistantship varies across semesters, and we have some semesters with fewer applicants than open assistantships. If reduced recruitment for 2-3 semesters results in the permanent loss of assistantships, our ability to teach required undergraduate laboratories would be hindered.

Another concern is the amount of time available to graduate advisors to properly train their students in all aspects of scholarly research, a significant component of the biological sciences. Graduate students need to be trained in experimental design, in data analysis and interpretation, and in preparing their theses for scientific publication and presentation. This training requires that advisors devote a sizeable amount of time to each student under their guidance, but we do not receive relief from our 24 CH annual teaching loads to devote to graduate student training outside of the classroom.

COMPARISONS UNDERGRADUATE

| | AY07 | | AY08 | | AY09 | | Year 4 | | Year 5 | |
|---|--------|--------|--------|--------|--------|--------|--------|------|--------|------|
| | COLL | UNIV | COLL | UNIV | COLL | UNIV | COLL | UNIV | COLL | UNIV |
| % Completion Rate 6 YR | 50.94 | 50.77 | 49.74 | 50.82 | 43.70 | 47.04 | | | | |
| Unit - % Retention FS YR 1 -- F YR 2 | 46.37 | 62.68 | 45.72 | 63.69 | 57.56 | 66.03 | | | | |
| Unit - % Retention FS YR 3 -- F YR 4 | 74.73 | 82.78 | 76.79 | 83.34 | 70.52 | 82.34 | | | | |
| UNIV - % Retention FS YR 1 -- F YR 2 | 64.73 | 62.81 | 64.95 | 63.69 | 73.06 | 66.13 | | | | |
| UNIV - % Retention FS YR 3 -- F YR 4 | 83.33 | 83.02 | 85.63 | 83.73 | 82.08 | 82.40 | | | | |
| SCHR (SCH ratios) On Campus Fall/Spring | 269.00 | 262.00 | 275.00 | 261.00 | 273.00 | 248.00 | | | | |
| SCHR (SCH ratios) Off Campus Fall/Spring | 215.00 | 227.00 | 183.00 | 290.00 | 203.00 | 213.00 | | | | |
| SCHR (SCH ratios) Total | 258.00 | 242.00 | 279.00 | 265.00 | 253.00 | 242.00 | | | | |
| % of Sections with Enrollment < 10 (GR < 8) | 19.22 | 17.54 | 18.56 | 17.42 | 16.85 | 22.70 | | | | |

COMPARISONS GRADUATE

| | AY07 | | AY08 | | AY09 | | Year 4 | | Year 5 | |
|---|--------|--------|--------|--------|--------|--------|--------|------|--------|------|
| | COLL | UNIV | COLL | UNIV | COLL | UNIV | COLL | UNIV | COLL | UNIV |
| UNIV - % Retention FS YR 1 -- F YR 2 | 64.73 | 62.81 | 64.95 | 63.69 | 73.06 | 66.13 | | | | |
| UNIV - % Retention FS YR 3 -- F YR 4 | 83.33 | 83.02 | 85.63 | 83.73 | 82.08 | 82.40 | | | | |
| SCHR (SCH ratios) On Campus Fall/Spring | 269.00 | 262.00 | 275.00 | 261.00 | 273.00 | 248.00 | | | | |
| SCHR (SCH ratios) Off Campus Fall/Spring | 215.00 | 227.00 | 183.00 | 290.00 | 203.00 | 213.00 | | | | |
| SCHR (SCH ratios) Total | 258.00 | 242.00 | 279.00 | 265.00 | 253.00 | 242.00 | | | | |
| % of Sections with Enrollment < 10 (GR < 8) | 19.22 | 17.54 | 18.56 | 17.42 | 16.85 | 22.70 | | | | |

SIZE and SCOPE DATA SUMMARY UNDERGRADUATE

| Measure | Mean | 5 year Outcome | % of Aspiration Target | Trend |
|--|-------|----------------|------------------------|-----------|
| Majors UNIT Total | 608.7 | Aspiration | 102.29 | Improving |
| Biology [BS/BS/BIOL] | 63.3 | | | Declining |
| Biology Education [BSE-HS/BSEHS/BIED] | 10.7 | | | Declining |
| Biology Education [PRE EDUC/BSE/BIED] | 12.0 | | | Improving |
| Biology Education: Unified Sci [BSE-HS/BSEHS/BUSE] | 4.3 | | | Irregular |
| Biology Education: Unified Sci [PRE EDUC/BSE/BUSE] | 10.0 | | | Irregular |
| Biology: Biomedical Sciences [BS/BS/BBMS] | 57.0 | | | Improving |
| Biology:Micro/Cell/Molec/Biote [BS/BS/BMCM] | 21.3 | | | Irregular |
| Biology:Orgnsm/Ecol/Evol [BS/BS/BOEE] | 24.7 | | | Irregular |
| Biology:Wildlife/Conservation [BS/BS/BWC] | 54.7 | | | Improving |
| Pre-Chiropractic [PREPROF/Pprof/PRCH] | 10.3 | | | Irregular |
| Pre-Dentistry [PREPROF/Pprof/PRDN] | 30.7 | | | Irregular |

| | | | | |
|--|----------|-------------------|--------|-----------|
| Pre-Medicine [PREPROF/P/PROF/PRMD] | 162.0 | | | Improving |
| Pre-Occupational Therapy [PREPROF/P/PROF/PROT] | 3.0 | | | Irregular |
| Pre-Optometry [PREPROF/P/PROF/PROP] | 18.0 | | | Improving |
| Pre-Physical Therapy [PREPROF/P/PROF/PRPT] | 85.7 | | | Irregular |
| Pre-Veterinary Medicine [PREPROF/P/PROF/PRVT] | 41.0 | | | Irregular |
| Minors UNIT Total | 96.7 | | | Improving |
| Biology | 8.3 | | | Improving |
| Botany Minor | 0.7 | | | Irregular |
| Microbiology minor | 4.7 | | | Irregular |
| Science Concentration-21 hour | 43.7 | | | Improving |
| Science Concentration-30 hour | 2.3 | | | Declining |
| Science Specialization | 30.7 | | | Improving |
| Zoology | 5.0 | | | Improving |
| Zoology minor | 1.3 | | | Irregular |
| Completers UNIT Total | 50.7 | Needs Improvement | 92.1 | Irregular |
| Biology [BS/BS/BIOL] | 20.3 | | | Declining |
| Biology Education [BSE-HS/BSEHS/BIED] | 3.7 | | | Declining |
| Biology Education: Unified Sci [BSE-HS/BSEHS/BUSE] | 2.0 | | | Improving |
| Biology: Biomedical Sciences [BS/BS/BBMS] | 10.7 | | | Improving |
| Biology:Micro/Cell/Molec/Biote [BS/BS/BMCM] | 2.7 | | | Irregular |
| Biology:Orgnsm/Ecol/Evol [BS/BS/BOEE] | 4.3 | | | Irregular |
| Biology:Wildlife/Conservation [BS/BS/BWC] | 7.0 | | | Irregular |
| % Completion Rate 6 YR | 49.3 | Aspiration | 102.77 | Irregular |
| Unit - % Retention FS YR 1 -- F YR 2 | 52.7 | Red Flag | 70.21 | Declining |
| Unit - % Retention FS YR 3 -- F YR 4 | 75.0 | Needs Improvement | 96.15 | Irregular |
| UNIV - % Retention FS YR 1 -- F YR 2 | 68.7 | | | Irregular |
| UNIV - % Retention FS YR 3 -- F YR 4 | 85.7 | | | Irregular |
| SCH On Campus FS | 8,531.3 | | | Irregular |
| SCH Off Campus FS | 1,835.0 | | | Improving |
| SCH Total FS | 10,366.3 | | | Improving |
| SCH Summer On and Off Campus | 697.0 | | | Irregular |
| SCHR (SCH ratios) On Campus Fall/Spring | 299.3 | Aspiration | 110.04 | Improving |
| SCHR (SCH ratios) Off Campus Fall/Spring | 226.0 | Needs Improvement | 85.28 | Improving |
| SCHR (SCH ratios) Total | 282.7 | Aspiration | 0 | Improving |
| % of Sections with Enrollment < 10 (GR < 8) | 15.7 | Aspiration | 313.2 | Declining |

SIZE and SCOPE DATA SUMMARY GRADUATE

| Measure | Mean | 5 year Outcome | % of Aspiration Target | Trend |
|-------------------|------|-------------------|------------------------|-----------|
| Majors UNIT Total | 37.0 | Needs Improvement | 84.09 | Irregular |

| | | | | |
|---|-------|------------|--------|-----------|
| Biology [MNS/MNS/BIOL] | 31.0 | | | Irregular |
| Biology-CIP2 [MNS/MNS/BIOM] | 6.0 | | | Irregular |
| Completers UNIT Total | 11.0 | Aspiration | 110 | Irregular |
| Biology [MNS/MNS/BIOL] | 11.0 | | | Irregular |
| UNIV - % Retention FS YR 1 -- F YR 2 | 0.0 | | | Static |
| UNIV - % Retention FS YR3 -- F YR 4 | 0.0 | | | Static |
| SCH On Campus FS | 239.0 | | | Declining |
| SCH Off Campus FS | 0.0 | | | Static |
| SCH Total FS | 239.0 | | | Declining |
| SCH Summer On and Off Campus | 21.3 | | | Declining |
| SCHR (SCH ratios) On Campus Fall/Spring | 93.7 | | | Irregular |
| SCHR (SCH ratios) Off Campus Fall/Spring | 0.0 | | | Static |
| SCHR (SCH ratios) Total | 93.7 | Red Flag | 35.34 | Irregular |
| % of Sections with Enrollment < 10 (GR < 8) | 52.3 | Aspiration | 1046.6 | Irregular |

UNDERGRADUATE

Brief Conclusion from Data

The Biology Departmental unit has consistently achieved a minimum of 96% of its target for number of majors and exceeded it in 2009. There are three areas within the unit: education, traditional biology and pre-health professions. The number of education majors has fluctuated but increased 13.5% from 2007 to 2009. The number of traditional biology and pre-health majors has increased steadily, growing by 26.8% and 9.7% respectively. The number of minors has also consistently increased. However the number of completers has hovered near the minimum of our aspirational target. Yet Biology's six-year completion rate, and its unit to university and unit to unit first and fourth year retention rates, remained above target. These mirror or exceed the College and University levels except for a slightly lower first year unit to unit retention. The latter could reflect the high number of incoming pre-health professionals who rapidly change majors.

Student Credit Hours have continued to increase, gaining 17% from 2007 to 2009. For the last two years, Biology's SCH Ratio production on campus (where the unit has more control over offerings) has been above the target. Off-campus SCHR has reached 85% of target, on average, but exceeded the minimum every year. Total SCHR exceeded the Delaware benchmark by 17% in AY08. Due to the implementation of more on-demand courses and careful monitoring class enrollments the unit has decreased the number of low enrollment sections by over 50%.

Although the number of full-time faculty has increased from 17 in AY07 to 19 in AY09 these additions were to teach off-campus courses and were accompanied by a major decrease in Part-Time FTE (240%). Due to alternate sanctioned University release assignments, Biology's on-campus faculty, adjusted for release time, has continued to decline from 15.5 to 14.75. This is a meaningful decrease given that faculty in the department are collectively at 101% of load and produce 300 SCH off- load.

Additional Data or Comments

None

Plan to Address

Currently the department is running at maximum faculty utilization. We will continue to monitor the most profound changes that might lead to decreased demand for

departmental offerings. In addition, there are several avenues our department can pursue to enhance the number of students our department serves. First, we plan to explore the development of a pre-Physicians Assistant program that should attract a number of pre-professional students. Second, we hope to find ways to attract more students from two-year institutions to balance the loss of students in the lower-level classes. This would include development of more articulation agreements and better marketing to that prospective student population. Third, we hope to find a means to obtain additional biology-focused scholarships that could help attract students to Southeast.

Brief Follow Up on Outcomes of Plans to Address from Last Review

In the previous review we were concerned that our number of majors had shrunk to an average of 242 plus 128 pre-professionals. We noted at that time we were considering a new curriculum proposal, as well as additional recruiting measures. The combined number of majors ranked us 3rd in the institution at that time. Clearly, the curriculum and recruiting steps we have taken (although they may not explain the entire situation) have succeeded. Our number of majors has nearly doubled in the last 5 years, and although we continue to rank 3rd in the university, the distance between us and the next highest major has shrunk. More to the point, the growth of our program has continued along with and supported the growth of the institution as a whole.

Program Review Final University Committee Chair Comments

GRADUATE

Brief Conclusion from Data

The Biology Department ranks 12th in average number of majors of the 25 units with a graduate program but we rank 6th for average number of completers, indicating that a large proportion of our students successfully complete their graduate program. In fact, when the proportion of completers versus majors is compared among the 19 units that average at least 10 graduate students, our department ties with Nursing at 30%, second only to Communication Disorders (40%). We have exceeded our aspirational completer target for the past two academic years.

The Biology Department appears to have an above average percentage of courses with low enrollment but this is because we offer only three graduate-only courses. One course is offered only once per year to maintain enrollment of 8 or more students. Two seminar courses are offered each semester. The first seminar course is required of all first-semester students, and the second course is required of all last-semester students. Enrollment in the seminar courses depends solely on the number of new and graduating students. The two seminar courses are taught together so they were treated in the data as a single course and enrollment for each course was pooled. In AY2009, total student enrollment in the two seminar courses for one semester was less than 8, so one of three graduate courses (33%) did not meet enrollment. For AY2008, both seminar courses for both semesters had low enrollment so two of the three graduate courses (67%) did not meet enrollment. Our graduate students enroll primarily in 400/600-level courses which do not have low enrollment issues.

Additional Data or Comments

A serious concern is the dwindling resources necessary to provide quality graduate research opportunities. Quality research requires field and laboratory equipment, and access to the scientific literature through library and online journal access. Decreases in both equipment and library budgets hinder our ability to provide quality education and research training to our students.

Plan to Address

Most of the issues raised, such as budget and resource constraints, are beyond departmental control. The Biology Department is taking steps to actively recruit new students. We have developed a large recruitment poster that can be mailed to other institutions. Smaller versions of the poster can be individually customized for display at professional meetings. Such meetings are a vehicle for faculty to present their research results and also provide an opportunity to directly interact with

potential students. Many faculty also present their research through invited seminars at other universities, which provides further opportunities for student recruitment. Importantly, the ability to maintain active research programs is itself a recruitment tool. New students typically seek faculty with active research programs because students perceive their own likelihood of completing and publishing successful thesis research. Thus, increased recruitment is vital for the Biology Department to maintain an active graduate program but also to fill necessary teaching assistantship positions. But, we also feel that to successfully recruit students and maintain our research program requires appropriate faculty, budget and time resources.

Brief Follow Up on Outcomes of Plans to Address from Last Review

We took steps to reduce the number of low enrollment sections. We restructured our curriculum in 2004 and 2005 to reduce the number of upper-level courses. This change, coupled with combined 400/600-level courses, has resulted in our courses reaching maximum enrollment capacity. Other courses with a history of low enrollment continue to be offered on-demand or off-load.

Recruitment efforts had been temporarily suspended following instructions from a former Dean of the School of Graduate Studies due to a proposal to develop a marketing plan. This plan never materialized. As noted above, we have developed a new set of recruitment posters to send to other institutions and for display and professional meetings. This new recruitment poster current awaits only university approval for printed media.

We identified retention as an area of concern. Our graduation rate was ranked 9th of 26 graduate programs. We currently rank 6th for the number of students completing their degree, and 2nd (tied with Nursing) when the number of graduating students is considered as a proportion of total graduate majors.

We previously expressed concern about the replacement of tenure-track positions with RNTT. We remain concerned about this issue, especially in light of the future uncertainty about state budgets, the proposed community college, and the proposed curriculum alignment initiative. Throughout this review, we highlight the importance of tenure-track faculty and active research programs to the success of our undergraduate and graduate students, as well as to the health and success of our department as a whole.

Program Review Final University Committee Chair Comments

II. REVENUE AND OTHER RESOURCES GENERATED BY THE PROGRAM

| REVENUE DATA UNDERGRADUATE | | | | | |
|-----------------------------------|--------------|--------------|--------------|--------|--------|
| Measure | AY07 | AY08 | AY09 | Year 4 | Year 5 |
| All Courses - SCH Revenue | | | | | |
| On Campus FS | 1,607,029.86 | 1,743,544.21 | 2,185,033.14 | | |
| Off Campus FS | 250,937.46 | 279,101.28 | 352,182.04 | | |
| Summer On and Off Campus | 126,027.08 | 131,591.61 | 162,167.80 | | |
| Subtotal Revenue SCH | 1,983,994.40 | 2,154,237.10 | 2,699,382.98 | | |
| All Courses - Fees Revenue | | | | | |
| On Campus FS | 12,930.00 | 11,180.00 | 16,080.00 | | |
| Off Campus FS | 2,860.00 | 2,680.00 | 3,060.00 | | |
| Summer On and Off Campus | 1,030.00 | 1,170.00 | 1,300.00 | | |
| Subtotal Revenue FeeS | 16,820.00 | 15,030.00 | 20,440.00 | | |
| All Courses - Total SCH and Fees | 2,000,814.40 | 2,169,267.10 | 2,719,822.98 | | |
| Univ Studies Crses - SCH Revenue | | | | | |
| On Campus FS | 704,194.68 | 699,042.00 | 767,846.58 | | |
| Off Campus FS | 70,329.00 | 59,412.06 | 86,634.78 | | |
| Summer On and Off Campus | 35,318.07 | 38,819.49 | 44,912.52 | | |
| Subtotal Revenue SCH | 809,841.75 | 797,273.55 | 899,393.88 | | |
| Univ Studies Crses - Fees Revenue | | | | | |
| On Campus FS | 1,860.00 | 1,890.00 | 2,060.00 | | |
| Off Campus FS | 840.00 | 670.00 | 820.00 | | |
| Summer On and Off Campus | 140.00 | 90.00 | 160.00 | | |
| Subtotal Revenue FeeS | 2,840.00 | 2,650.00 | 3,040.00 | | |
| Univ Studies - Total SCH and Fees | 812,681.75 | 799,923.55 | 902,433.88 | | |
| SER/BC/ROM Crses - SCH Revenue | | | | | |
| On Campus FS | 733,112.40 | 800,631.36 | 1,162,844.92 | | |
| Off Campus FS | 180,608.46 | 219,689.22 | 265,547.26 | | |
| Summer On and Off Campus | 62,687.20 | 68,985.92 | 82,503.28 | | |
| Subtotal Revenue SCH | 976,408.06 | 1,089,306.50 | 1,510,895.46 | | |
| SER/BC/ROM Crses - Fees Revenue | | | | | |
| On Campus FS | 9,930.00 | 8,180.00 | 12,600.00 | | |
| Off Campus FS | 2,020.00 | 2,010.00 | 2,240.00 | | |
| Summer On and Off Campus | 860.00 | 1,070.00 | 1,110.00 | | |
| Subtotal Revenue Fees | 12,810.00 | 11,260.00 | 15,950.00 | | |
| SER/BC/ROM - Total SCH and Fees | 989,218.06 | 1,100,566.50 | 1,526,845.46 | | |
| Major Courses - SCH Revenue | | | | | |

| | | | | | |
|------------------------------------|------------|------------|------------|--|--|
| On Campus FS | 169,722.78 | 243,870.85 | 254,341.64 | | |
| Off Campus FS | 0.00 | 0.00 | 0.00 | | |
| Summer On and Off Campus | 28,021.81 | 23,786.20 | 34,752.00 | | |
| Subtotal Revenue SCH | 197,744.59 | 267,657.05 | 289,093.64 | | |
| Major Courses - Fees Revenue | | | | | |
| On Campus FS | 1,140.00 | 1,110.00 | 1,420.00 | | |
| Off Campus FS | 0.00 | 0.00 | 0.00 | | |
| Summer On and Off Campus | 30.00 | 10.00 | 30.00 | | |
| Subtotal Revenue FeeS | 1,170.00 | 1,120.00 | 1,450.00 | | |
| Major Courses - Total SCH and Fees | 198,914.59 | 268,777.05 | 290,543.64 | | |
| Unit Revenue External Grants | 117,865.00 | 44,200.00 | 20,602.00 | | |

REVENUE DATA GRADUATE

| Measure | AY07 | AY08 | AY09 | Year 4 | Year 5 |
|------------------------------------|-----------|-----------|-----------|--------|--------|
| All Courses - SCH Revenue | | | | | |
| On Campus FS | 63,162.08 | 62,574.12 | 52,964.40 | | |
| Off Campus FS | 0.00 | 0.00 | 0.00 | | |
| Summer On and Off Campus | 6,724.48 | 5,959.44 | 3,146.40 | | |
| Subtotal Revenue SCH | 69,886.56 | 68,533.56 | 56,110.80 | | |
| All Courses - Fees Revenue | | | | | |
| On Campus FS | 90.00 | 320.00 | 260.00 | | |
| Off Campus FS | 0.00 | 0.00 | 0.00 | | |
| Summer On and Off Campus | 30.00 | 10.00 | 0.00 | | |
| Subtotal Revenue FeeS | 120.00 | 330.00 | 260.00 | | |
| All Courses - Total SCH and Fees | 70,006.56 | 68,863.56 | 56,370.80 | | |
| Major Courses - SCH Revenue | | | | | |
| On Campus FS | 63,162.08 | 62,574.12 | 52,964.40 | | |
| Off Campus FS | 0.00 | 0.00 | 0.00 | | |
| Summer On and Off Campus | 6,724.48 | 5,959.44 | 3,146.40 | | |
| Subtotal Revenue SCH | 69,886.56 | 68,533.56 | 56,110.80 | | |
| Major Courses - Fees Revenue | | | | | |
| On Campus FS | 90.00 | 320.00 | 260.00 | | |
| Off Campus FS | 0.00 | 0.00 | 0.00 | | |
| Summer On and Off Campus | 30.00 | 10.00 | 0.00 | | |
| Subtotal Revenue FeeS | 120.00 | 330.00 | 260.00 | | |
| Major Courses - Total SCH and Fees | 70,006.56 | 68,863.56 | 56,370.80 | | |
| Unit Revenue External Grants | 0.00 | 0.00 | 0.00 | | |

SUMMARY UNDERGRADUATE

| Measure | Mean | Trend |
|-----------------------------------|--------------|-----------|
| All Courses - SCH Revenue | | |
| On Campus FS | 1,845,202.40 | Improving |
| Off Campus FS | 294,073.59 | Improving |
| Summer On and Off Campus | 139,928.83 | Improving |
| Subtotal Revenue SCH | 2,279,204.83 | Improving |
| All Courses - Fees Revenue | | |
| On Campus FS | 13,396.67 | Irregular |
| Off Campus FS | 2,866.67 | Irregular |
| Summer On and Off Campus | 1,166.67 | Improving |
| Subtotal Revenue FeeS | 17,430.00 | Irregular |
| All Courses - Total SCH and Fees | 2,296,634.83 | Improving |
| Univ Studies Crses - SCH Revenue | | |
| On Campus FS | 723,694.42 | Irregular |
| Off Campus FS | 72,125.28 | Irregular |
| Summer On and Off Campus | 39,683.36 | Improving |
| Subtotal Revenue SCH | 835,503.06 | Irregular |
| Univ Studies Crses - Fees Revenue | | |
| On Campus FS | 1,936.67 | Improving |
| Off Campus FS | 776.67 | Irregular |
| Summer On and Off Campus | 130.00 | Irregular |
| Subtotal Revenue FeeS | 2,843.33 | Irregular |
| Univ Studies - Total SCH and Fees | 838,346.39 | Irregular |
| SER/BC/ROM Crses - SCH Revenue | | |
| On Campus FS | 898,862.89 | Improving |
| Off Campus FS | 221,948.31 | Improving |
| Summer On and Off Campus | 71,392.13 | Improving |
| Subtotal Revenue SCH | 1,192,203.34 | Improving |
| SER/BC/ROM Crses - Fees Revenue | | |
| On Campus FS | 10,236.67 | Irregular |
| Off Campus FS | 2,090.00 | Irregular |
| Summer On and Off Campus | 1,013.33 | Improving |
| Subtotal Revenue Fees | 13,340.00 | Irregular |
| SER/BC/ROM - Total SCH and Fees | 1,205,543.34 | Improving |
| Major Courses - SCH Revenue | | |
| On Campus FS | 222,645.09 | Improving |
| Off Campus FS | 0.00 | Static |
| Summer On and Off Campus | 28,853.34 | Irregular |

| | | |
|------------------------------------|------------|-----------|
| Subtotal Revenue SCH | 251,498.43 | Improving |
| Major Courses - Fees Revenue | | |
| On Campus FS | 1,223.33 | Irregular |
| Off Campus FS | 0.00 | Static |
| Summer On and Off Campus | 23.33 | Irregular |
| Subtotal Revenue FeeS | 1,246.67 | Irregular |
| Major Courses - Total SCH and Fees | 252,745.09 | Improving |
| Unit Revenue External Grants | 60,889.00 | Declining |

SUMMARY GRADUATE

| Measure | Mean | Trend |
|------------------------------------|-----------|-----------|
| All Courses - SCH Revenue | | |
| On Campus FS | 59,566.87 | Declining |
| Off Campus FS | 0.00 | Static |
| Summer On and Off Campus | 5,276.77 | Declining |
| Subtotal Revenue SCH | 64,843.64 | Declining |
| All Courses - Fees Revenue | | |
| On Campus FS | 223.33 | Irregular |
| Off Campus FS | 0.00 | Static |
| Summer On and Off Campus | 13.33 | Declining |
| Subtotal Revenue FeeS | 236.67 | Irregular |
| All Courses - Total SCH and Fees | 65,080.31 | Declining |
| Major Courses - SCH Revenue | | |
| On Campus FS | 59,566.87 | Declining |
| Off Campus FS | 0.00 | Static |
| Summer On and Off Campus | 5,276.77 | Declining |
| Subtotal Revenue SCH | 64,843.64 | Declining |
| Major Courses - Fees Revenue | | |
| On Campus FS | 223.33 | Irregular |
| Off Campus FS | 0.00 | Static |
| Summer On and Off Campus | 13.33 | Declining |
| Subtotal Revenue FeeS | 236.67 | Irregular |
| Major Courses - Total SCH and Fees | 65,080.31 | Declining |
| Unit Revenue External Grants | 0.00 | Static |

UNDERGRADUATE

Brief Conclusion from Data

The revenue:cost ratio is greater than 1 for the Biology Department unit. Therefore the unit is generating revenue for the University. The Biology department had a 36% increase in SCH-derived revenue from AY07 to AY09. When compared to the other units in the college, biology has the 2nd highest revenue:cost ratio (mathematics was first) despite offering a considerable amount of costly laboratory instruction.

Additional Data or Comments

Currently lab fees are collected for only a fraction of our lab courses. Among those for which no fees are assessed are some of the most expensive on a per-student basis.

Plan to Address

The cost of laboratory and field instruction continues to rise. The department will lobby in the appropriate forums for review of the current special course fee structure. We will encourage uniform adoption of special course fees for all lab or field courses. In addition we will push for a discussion of the feasibility of having a differential fee structure where a higher fee can be charged for more expensive courses.

Brief Follow Up on Outcomes of Plans to Address from Last Review

No issues were identified in this area on the previous review.

Program Review Final University Committee Chair Comments

GRADUATE

Brief Conclusion from Data

Over the last three academic years, the Biology Department has received external research grants totaling \$182,667 in revenue, which directly supports research for undergraduate and graduate students. Graduate students enroll primarily in 400/600-level courses. Enrollment in these courses is driven mostly by undergraduate students, so graduate enrollment in these courses generates revenue with little cost. In addition, most of our graduate students enroll in 6 CH of thesis research and other non-load-bearing courses such as readings. These courses generate revenue but bear no cost as faculty do not receive compensation from the 24 CH annual teaching load for directing these non-load-bearing courses.

The revenue trend for AY2007-AY2009 is flagged as declining. Of the total revenue decrease during this period, 91.6% occurred between AY2008 and AY2009. This decrease is associated with a decline in the number of graduate majors from 40 to 32. During that academic year, we graduated many more students than we accepted. Revenue generation was relatively unchanged between AY2007 and AY2008. Currently, we are accepting more students than we have graduating so we expect that revenue generation should increase over the near-term.

Additional Data or Comments

Plan to Address

Obtaining grants is an essential component of the Biology Department's promotion and tenure process. Thus, we expect that our department will continue to be successful in revenue generation via grants, and will further encourage our faculty to seek additional sources of external funding.

The department will lobby in the appropriate forums for review of the current special course fee structure. We will encourage uniform adoption of special course fees for all lab or field courses. In addition we will push for a discussion of the feasibility of having a differential fee structure where a higher fee can be charged for more expensive courses.

Brief Follow Up on Outcomes of Plans to Address from Last Review

Program Review Final University Committee Chair Comments

III. COSTS AND OTHER EXPENSES ASSOCIATED WITH THE PROGRAM

| COSTS DATA UNDERGRADUATE | | | | | |
|---|--------------|--------------|--------------|--------|--------|
| | AY07 | AY08 | AY09 | Year 4 | Year 5 |
| Cost Per Major | 771.00 | 828.00 | 668.00 | | |
| Unit Costs per Major SCH - On campus FS | 247.00 | 238.00 | 189.00 | | |
| Unit Costs per Major SCH - Off campus FS | 60.00 | 93.00 | 57.00 | | |
| Unit Costs per Major SCH - Summer | 267.00 | 356.00 | 95.00 | | |
| Unit Costs per Major SCH - Overall | 223.00 | 232.00 | 172.00 | | |
| Unit Costs for Major Crses - On campus FS | 403,587.00 | 446,336.00 | 414,970.00 | | |
| Unit Costs for Major Crses - Off campus FS | 15,850.00 | 13,441.00 | 11,292.00 | | |
| Unit Costs for Major Crses - Summer | 22,161.00 | 28,106.00 | 16,967.00 | | |
| Unit Costs for Major Crses - Overall | 441,598.00 | 487,884.00 | 443,229.00 | | |
| Unit Costs per Univ Studies SCH - On campus FS | 150.00 | 155.00 | 138.00 | | |
| Unit Costs per Univ Studies SCH - Off campus FS | 143.00 | 170.00 | 125.00 | | |
| Unit Costs per Univ Studies SCH - Summer | 213.00 | 183.00 | 160.00 | | |
| Unit Costs per Univ Studies SCH - Overall | 151.00 | 158.00 | 137.00 | | |
| Unit Costs for Univ Studies Crses - On campus FS | 530,458.00 | 501,269.00 | 455,720.00 | | |
| Unit Costs for Univ Studies Crses - Off campus FS | 84,679.00 | 76,999.00 | 71,147.00 | | |
| Unit Costs for Univ Studies Crses - Summer | 38,261.00 | 31,216.00 | 30,256.00 | | |
| Unit Costs for Univ Studies Crses - Overall | 653,399.00 | 609,484.00 | 557,123.00 | | |
| Unit Costs per SER/BC/ROM SCH - On campus FS | 104.00 | 107.00 | 376.00 | | |
| Unit Costs per SER/BC/ROM SCH - Off campus FS | 145.00 | 165.00 | 149.00 | | |
| Unit Costs per SER/BC/ROM SCH - Summer | 128.00 | 153.00 | 1,534.00 | | |
| Unit Costs per SER/BC/ROM SCH - Overall | 115.00 | 126.00 | 116.00 | | |
| Unit Costs for SER/BC/ROM Crses - On campus FS | 291,547.00 | 299,198.00 | 412,856.00 | | |
| Unit Costs for SER/BC/ROM Crses - Off campus FS | 122,127.00 | 193,753.00 | 188,872.00 | | |
| Unit Costs for SER/BC/ROM Crses - Summer | 45,547.00 | 51,623.00 | 43,715.00 | | |
| Unit Costs for SER/BC/ROM Crses - Overall | 459,221.00 | 544,574.00 | 645,442.00 | | |
| Unit Costs per All SCH - On campus FS | 154.00 | 158.00 | 136.00 | | |
| Unit Costs per All SCH - Off campus FS | 131.00 | 161.00 | 133.00 | | |
| Unit Costs per All SCH - Summer | 171.00 | 189.00 | 122.00 | | |
| Unit Costs per All SCH - Overall | 151.00 | 160.00 | 135.00 | | |
| Unit Costs for All Crses - On campus FS | 1,225,592.00 | 1,246,803.00 | 1,283,546.00 | | |
| Unit Costs for All Crses - Off campus FS | 222,657.00 | 284,193.00 | 271,311.00 | | |
| Unit Costs for All Crses - Summer | 105,968.00 | 110,945.00 | 90,938.00 | | |
| Unit Costs for All Crses - Overall | 1,554,218.00 | 1,641,942.00 | 1,645,795.00 | | |

COSTS DATA GRADUATE

| | AY07 | AY08 | AY09 | Year 4 | Year 5 |
|---|------------|------------|------------|--------|--------|
| Cost Per Major | 2,785.00 | 3,612.00 | 3,839.00 | | |
| Unit Costs per Major SCH - On campus FS | 677.00 | 820.00 | 584.00 | | |
| Unit Costs per Major SCH - Off campus FS | 0.00 | 0.00 | 0.00 | | |
| Unit Costs per Major SCH - Summer | 1,446.00 | 287.00 | 409.00 | | |
| Unit Costs per Major SCH - Overall | 692.00 | 794.00 | 574.00 | | |
| Unit Costs for Major Crses - On campus FS | 104,287.00 | 141,898.00 | 117,933.00 | | |
| Unit Costs for Major Crses - Off campus FS | 0.00 | 0.00 | 0.00 | | |
| Unit Costs for Major Crses - Summer | 4,337.00 | 2,579.00 | 4,904.00 | | |
| Unit Costs for Major Crses - Overall | 108,624.00 | 144,476.00 | 122,837.00 | | |
| Unit Costs per Univ Studies SCH - On campus FS | 0.00 | 0.00 | 0.00 | | |
| Unit Costs per Univ Studies SCH - Off campus FS | 0.00 | 0.00 | 0.00 | | |
| Unit Costs per Univ Studies SCH - Summer | 0.00 | 0.00 | 0.00 | | |
| Unit Costs per Univ Studies SCH - Overall | 0.00 | 0.00 | 0.00 | | |
| Unit Costs for Univ Studies Crses - On campus FS | 0.00 | 0.00 | 0.00 | | |
| Unit Costs for Univ Studies Crses - Off campus FS | 0.00 | 0.00 | 0.00 | | |
| Unit Costs for Univ Studies Crses - Summer | 0.00 | 0.00 | 0.00 | | |
| Unit Costs for Univ Studies Crses - Overall | 0.00 | 0.00 | 0.00 | | |
| Unit Costs per SER/BC/ROM SCH - On campus FS | 0.00 | 0.00 | 0.00 | | |
| Unit Costs per SER/BC/ROM SCH - Off campus FS | 0.00 | 0.00 | 0.00 | | |
| Unit Costs per SER/BC/ROM SCH - Summer | 0.00 | 0.00 | 0.00 | | |
| Unit Costs per SER/BC/ROM SCH - Overall | 0.00 | 0.00 | 0.00 | | |
| Unit Costs for SER/BC/ROM Crses - On campus FS | 0.00 | 0.00 | 0.00 | | |
| Unit Costs for SER/BC/ROM Crses - Off campus FS | 0.00 | 0.00 | 0.00 | | |
| Unit Costs for SER/BC/ROM Crses - Summer | 0.00 | 0.00 | 0.00 | | |
| Unit Costs for SER/BC/ROM Crses - Overall | 0.00 | 0.00 | 0.00 | | |
| Unit Costs per All SCH - On campus FS | 694.00 | 820.00 | 584.00 | | |
| Unit Costs per All SCH - Off campus FS | 0.00 | 0.00 | 0.00 | | |
| Unit Costs per All SCH - Summer | 1,446.00 | 287.00 | 409.00 | | |
| Unit Costs per All SCH - Overall | 708.00 | 794.00 | 574.00 | | |
| Unit Costs for All Crses - On campus FS | 106,848.00 | 141,898.00 | 117,933.00 | | |
| Unit Costs for All Crses - Off campus FS | 0.00 | 0.00 | 0.00 | | |
| Unit Costs for All Crses - Summer | 4,337.00 | 2,579.00 | 4,904.00 | | |
| Unit Costs for All Crses - Overall | 111,185.00 | 144,476.00 | 122,837.00 | | |

COSTS COMPARISONS UNDERGRADUATE

| | AY07 | AY08 | AY09 | Year 4 | Year 5 |
|---------------------------------------|----------|----------|----------|--------|--------|
| College Cost per Major | 4,816.00 | 5,019.00 | 1,911.00 | | |
| University Cost per Major | 3,297.00 | 3,345.00 | 2,083.00 | | |
| Delaware Study Cost/SCH Unit | 183.00 | 195.00 | 0.00 | | |
| College Cost per Major SCHR | 282.00 | 322.00 | 325.00 | | |
| University Cost per Major SCHR | 204.00 | 214.00 | 231.00 | | |
| College Cost per Univ Studies SCHR | 142.00 | 116.00 | 107.00 | | |
| University Cost per Univ Studies SCHR | 153.00 | 108.00 | 106.00 | | |
| College Cost per SER/BC/ROM SCHR | 103.00 | 106.00 | 109.00 | | |
| University Cost per SER/BC/ROM SCHR | 121.00 | 130.00 | 117.00 | | |
| College Cost per all SCHR | 142.00 | 147.00 | 143.00 | | |
| University Cost per all SCHR | 153.00 | 155.00 | 161.00 | | |

COSTS COMPARISONS GRADUATE

| | AY07 | AY08 | AY09 | Year 4 | Year 5 |
|---------------------------------------|----------|----------|----------|--------|--------|
| College Cost per Major | 4,816.00 | 5,019.00 | 1,911.00 | | |
| University Cost per Major | 3,297.00 | 3,345.00 | 2,083.00 | | |
| Delaware Study Cost/SCH Unit | 183.00 | 195.00 | 0.00 | | |
| College Cost per Major SCHR | 282.00 | 322.00 | 325.00 | | |
| University Cost per Major SCHR | 204.00 | 214.00 | 231.00 | | |
| College Cost per Univ Studies SCHR | 142.00 | 116.00 | 107.00 | | |
| University Cost per Univ Studies SCHR | 153.00 | 108.00 | 106.00 | | |
| College Cost per SER/BC/ROM SCHR | 103.00 | 106.00 | 109.00 | | |
| University Cost per SER/BC/ROM SCHR | 121.00 | 130.00 | 117.00 | | |
| College Cost per all SCHR | 142.00 | 147.00 | 143.00 | | |
| University Cost per all SCHR | 153.00 | 155.00 | 161.00 | | |

SUMMARY UNDERGRADUATE

| | Mean | Trend |
|--|------------|-----------|
| Cost Per Major | 755.66 | Irregular |
| Unit Costs per Major SCH - On campus FS | 224.66 | Declining |
| Unit Costs per Major SCH - Off campus FS | 70.00 | Irregular |
| Unit Costs per Major SCH - Summer | 239.33 | Irregular |
| Unit Costs per Major SCH - Overall | 209.00 | Irregular |
| Unit Costs for Major Crses - On campus FS | 421,631.00 | Irregular |
| Unit Costs for Major Crses - Off campus FS | 13,527.66 | Declining |
| Unit Costs for Major Crses - Summer | 22,411.33 | Irregular |

| | | |
|---|--------------|-----------|
| Unit Costs for Major Crses - Overall | 457,570.33 | Irregular |
| Unit Costs per Univ Studies SCH - On campus FS | 147.66 | Irregular |
| Unit Costs per Univ Studies SCH - Off campus FS | 146.00 | Irregular |
| Unit Costs per Univ Studies SCH - Summer | 185.33 | Declining |
| Unit Costs per Univ Studies SCH - Overall | 148.66 | Irregular |
| Unit Costs for Univ Studies Crses - On campus FS | 495,815.66 | Declining |
| Unit Costs for Univ Studies Crses - Off campus FS | 77,608.33 | Declining |
| Unit Costs for Univ Studies Crses - Summer | 33,244.33 | Declining |
| Unit Costs for Univ Studies Crses - Overall | 606,668.66 | Declining |
| Unit Costs per SER/BC/ROM SCH - On campus FS | 195.66 | Improving |
| Unit Costs per SER/BC/ROM SCH - Off campus FS | 153.00 | Irregular |
| Unit Costs per SER/BC/ROM SCH - Summer | 605.00 | Improving |
| Unit Costs per SER/BC/ROM SCH - Overall | 119.00 | Irregular |
| Unit Costs for SER/BC/ROM Crses - On campus FS | 334,533.66 | Improving |
| Unit Costs for SER/BC/ROM Crses - Off campus FS | 168,250.66 | Irregular |
| Unit Costs for SER/BC/ROM Crses - Summer | 46,961.66 | Irregular |
| Unit Costs for SER/BC/ROM Crses - Overall | 549,745.66 | Improving |
| Unit Costs per All SCH - On campus FS | 149.33 | Irregular |
| Unit Costs per All SCH - Off campus FS | 141.66 | Irregular |
| Unit Costs per All SCH - Summer | 160.66 | Irregular |
| Unit Costs per All SCH - Overall | 148.66 | Irregular |
| Unit Costs for All Crses - On campus FS | 1,251,980.33 | Improving |
| Unit Costs for All Crses - Off campus FS | 259,387.00 | Irregular |
| Unit Costs for All Crses - Summer | 102,617.00 | Irregular |
| Unit Costs for All Crses - Overall | 1,613,985.00 | Improving |

SUMMARY GRADUATE

| | Mean | Trend |
|---|------------|-----------|
| Cost Per Major | 3,412.00 | Improving |
| Unit Costs per Major SCH - On campus FS | 693.66 | Irregular |
| Unit Costs per Major SCH - Off campus FS | 0.00 | Static |
| Unit Costs per Major SCH - Summer | 714.00 | Irregular |
| Unit Costs per Major SCH - Overall | 686.66 | Irregular |
| Unit Costs for Major Crses - On campus FS | 121,372.66 | Irregular |
| Unit Costs for Major Crses - Off campus FS | 0.00 | Static |
| Unit Costs for Major Crses - Summer | 3,940.00 | Irregular |
| Unit Costs for Major Crses - Overall | 125,312.33 | Irregular |
| Unit Costs per Univ Studies SCH - On campus FS | 0.00 | Static |
| Unit Costs per Univ Studies SCH - Off campus FS | 0.00 | Static |

| | | |
|---|------------|-----------|
| Unit Costs per Univ Studies SCH - Summer | 0.00 | Static |
| Unit Costs per Univ Studies SCH - Overall | 0.00 | Static |
| Unit Costs for Univ Studies Crses - On campus FS | 0.00 | Static |
| Unit Costs for Univ Studies Crses - Off campus FS | 0.00 | Static |
| Unit Costs for Univ Studies Crses - Summer | 0.00 | Static |
| Unit Costs for Univ Studies Crses - Overall | 0.00 | Static |
| Unit Costs per SER/BC/ROM SCH - On campus FS | 0.00 | Static |
| Unit Costs per SER/BC/ROM SCH - Off campus FS | 0.00 | Static |
| Unit Costs per SER/BC/ROM SCH - Summer | 0.00 | Static |
| Unit Costs per SER/BC/ROM SCH - Overall | 0.00 | Static |
| Unit Costs for SER/BC/ROM Crses - On campus FS | 0.00 | Static |
| Unit Costs for SER/BC/ROM Crses - Off campus FS | 0.00 | Static |
| Unit Costs for SER/BC/ROM Crses - Summer | 0.00 | Static |
| Unit Costs for SER/BC/ROM Crses - Overall | 0.00 | Static |
| Unit Costs per All SCH - On campus FS | 699.33 | Irregular |
| Unit Costs per All SCH - Off campus FS | 0.00 | Static |
| Unit Costs per All SCH - Summer | 714.00 | Irregular |
| Unit Costs per All SCH - Overall | 692.00 | Irregular |
| Unit Costs for All Crses - On campus FS | 122,226.33 | Irregular |
| Unit Costs for All Crses - Off campus FS | 0.00 | Static |
| Unit Costs for All Crses - Summer | 3,940.00 | Irregular |
| Unit Costs for All Crses - Overall | 126,166.00 | Irregular |

UNDERGRADUATE

Brief Conclusion from Data

There is no trend in cost numbers for Biology. In all areas, AY09 is the least expensive year, AY08 is the most expensive year, and AY07 is in the middle. The range is about 10% of the mean in all cases. This analysis therefore will address only the 3-year average. In the CoSM, the cost per major is about 25% of the next lowest program. This owes to a large majors population, a high number of credit hours in service and University Studies courses, and a highly efficient use of faculty and facilities. This brings our cost per Major Student Credit Hour in line with the university average. In addition, Biology faculty generate about 300 SCH per year in off-load majors' instruction for research, readings, and internships. This is equivalent to 4 classes of 25 students being taught without faculty compensation. Our cost per major is 4th lowest in the university, and despite being a laboratory intensive curriculum, the cost per major is less than 10% the cost per major of the most expensive undergraduate program, music. It is interesting that it costs more than twice as much to educate a Psychology major or an English major than it does a Biology major.

Within CoSM, biology is 2nd lowest to math in cost per SCH, cost per major SCH, and cost per SER/BC/ROM. Our cost per SCH in university studies is 2nd highest in the college as a result of small section size in these courses and the fact that senior faculty teach most of these sections. University wide, our average cost per SCH for all courses for AY07-AY09 ranked 25th out of 44 undergraduate programs and the average cost per SCH (\$149) is near the university average (\$145). In addition, Biology's cost per SCH for all undergraduate courses is about 80% of the Delaware benchmark for biology programs.

We see a couple of major cost issues on the horizon. Currently our senior faculty members are compensated below the CUPA mean. As these faculty members retire, their replacements are likely to be hired at salaries much closer to the CUPA mean. Since a major component of cost is faculty compensation, this may raise our future cost per Major SCH.

Maintaining currency of lab, field, and library resources for instruction consistent with our peer institutions will present a challenge as technology rapidly changes. To begin to address this issue, the department has been awarded a Title III grant. This will meet some short-term needs and enhance instruction in selected courses. Nonetheless, long term maintenance of facilities and equipment, along with increased costs to deliver the high-impact learning experiences promised in the grant will increase the cost of instruction.

Consistent with the University emphasis on experiential learning, Biology has a requirement for 2 CH of courses (research, internship, or field studies) for every biology major. Expensive materials and equipment for lab and field activities are required to deliver quality experiences. Faculty typically fund these activities out of personal research grants, and at present these courses collect no special course fees. The increasing size of our major and demand for these courses will increase cost in the future.

Additional Data or Comments

None

Plan to Address

It is an expectation that faculty will obtain research funding, and that the research will involve students. Student demand for research activities requires on-going grantsmanship by faculty. We will support a higher level of grantsmanship by maintaining teaching loads compatible with research student mentorship. We will also continue to support the maintenance and enhancement of the GRFC grants programs and the Office of Research and Grant Development.

The department will lobby in the appropriate forums for revision of the current special course fee structure to have those fees collected for courses related to student research.

Brief Follow Up on Outcomes of Plans to Address from Last Review

A major concern with respect to cost in the last review was low-enrollment courses. We had done some reduction of these at the time, and were awaiting the new curricular structure to complete that activity. We subsequently looked even harder at our upper division offerings, reduced course frequency, and placed some courses on demand. Nearly all of our classes now operate at the maximum enrollment that the facilities or pedagogy can accommodate.

Program Review Final University Committee Chair Comments

GRADUATE

Brief Conclusion from Data

The average revenue:cost ratio for the Biology graduate program is 0.53. There are at least three reasons for this low ratio. First, all but three courses taken by Biology graduate students are 400/600 or 500 level, enrolling both undergraduate and graduate students. The costs of these combined courses are divided evenly between undergraduate and graduate programs regardless of the actual enrollment balance between undergraduate and graduate students. Graduate students rarely, if ever, are 50% of enrollment in combined courses, and are frequently 1/3 or less of actual enrollment. As a consequence, a greater proportion of the costs is carried by

the graduate program despite enrollment being dominated by undergraduate students. This discrepancy is further exacerbated because many of our courses are field and laboratory courses which incur additional expenses compared to typical classroom courses.

Second, the graduate teaching assistants are a significant cost generator for the graduate program. However, all of our graduate assistants teach in credit-bearing laboratories, and each graduate assistant teaches the equivalent of a 1/2-time teaching load. Thus, cutting the graduate program would not save significant costs for the university because teaching assistantship costs are supported at the undergraduate level and part-time instructors would have to be hired to replace graduate teaching assistants.

Finally, all of our graduate students are required to take 6 credit hours in a complementary area outside of the Biology Department. This generates revenue for the other departments but not for the Biology Department.

Additional Data or Comments

Plan to Address

As noted for Part III (Revenue), the ability to install a differential special course fee structure would offset some of the costs associated with expensive field and laboratory courses.

Brief Follow Up on Outcomes of Plans to Address from Last Review

Program Review Final University Committee Chair Comments

IV. CONTRIBUTION TO UNIVERSITY STUDIES AND COURSES SERVING OTHER PROGRAMS

| UNIT SCH FROM UNIVERSITY STUDIES AND COURSES SERVING OTHER PROGRAMS | | | | | |
|---|-------|-------|-------|--------|--------|
| | AY07 | AY08 | AY09 | Year 4 | Year 5 |
| University Studies: On Campus FS | 3,543 | 3,225 | 3,306 | | |
| University Studies: Off Campus FS | 591 | 453 | 570 | | |
| University Studies: Summer | 180 | 171 | 189 | | |
| University Studies: Total | 4,314 | 3,849 | 4,065 | | |
| Services: On Campus FS | 1,922 | 1,903 | 2,824 | | |
| Services: Off Campus FS | 756 | 1,027 | 1,072 | | |
| Services: Summer | 314 | 307 | 351 | | |
| Services: Total | 2,992 | 3,237 | 4,247 | | |
| ROM: On Campus FS | 1,785 | 1,805 | 2,194 | | |
| ROM: Off Campus FS | 352 | 288 | 396 | | |
| ROM: Summer | 54 | 60 | 57 | | |
| ROM: Total | 2,191 | 2,153 | 2,647 | | |
| Business Core: On Campus FS | 0 | 0 | 0 | | |
| Business Core: Off Campus FS | 0 | 0 | 0 | | |
| Business Core: Summer | 0 | 0 | 0 | | |
| Business Core: Total | 0 | 0 | 0 | | |

| UNIT SCH SUMMARY | | |
|-----------------------------------|---------|-----------|
| Measure | Mean | Trend |
| University Studies: On Campus FS | 3,358.0 | Irregular |
| University Studies: Off Campus FS | 538.0 | Irregular |
| University Studies: Summer | 180.0 | Irregular |
| University Studies: Total | 4,076.0 | Irregular |
| Services: On Campus FS | 2,216.3 | Irregular |
| Services: Off Campus FS | 951.7 | Improving |
| Services: Summer | 324.0 | Irregular |
| Services: Total | 3,492.0 | Improving |
| ROM: On Campus FS | 1,928.0 | Improving |
| ROM: Off Campus FS | 345.3 | Irregular |
| ROM: Summer | 57.0 | Irregular |
| ROM: Total | 2,330.3 | Irregular |
| Business Core: On Campus FS | 0.0 | Static |
| Business Core: Off Campus FS | 0.0 | Static |

| | | |
|-----------------------|-----|--------|
| Business Core: Summer | 0.0 | Static |
| Business Core: Total | 0.0 | Static |

UNDERGRADUATE

Brief Conclusion from Data

Our department offers all but one course in the Living Systems portion of the University Studies curriculum. In AY07 we saw a higher than normal Fall/Spring enrollment in University Studies courses. During this time we were instituting a curricular change which required more students than normal to take their first biology course in the new curriculum (BI151) which created an enrollment bubble in University Studies courses. While AY2008 numbers were down due to the bubble, enrollment in University Studies Living Systems courses seems to have stabilized.

Departmental courses support more than a dozen majors university-wide. The largest number of students are in the nursing program. The Department saw an increase in Fall/Spring service course enrollment numbers from AY08 to AY09. This was primarily a result of Anatomy and Physiology I & II (BS113 & BS114) moving from three to four credit hours. This change was instituted to better serve our nursing student population, and to better align these courses with A&P courses at most other institutions. Again, it now appears that enrollment in the service courses has stabilized.

Additional Data or Comments

None

Plan to Address

Given the current staffing, there is no room for growth in the number of University Studies or service courses we could offer, nor will it allow increasing the number of sections of existing courses. This means that if majors that use biology service courses continue to grow, we may not be able to support them without additional faculty, or with much larger section sizes (although these are limited by lab space). If the CAI limits the courses which are appropriate for Living Systems credit to only those taught in Biology, it would result in a much increased demand for our courses. Similar to the situation with service courses, in this latter case we would have to have an increase in faculty or larger section sizes to address the issue. If a community college opens in the area, it will disproportionately affect the service and lower level university studies courses.

We will continue to monitor the most profound changes that might lead to decreased demand for departmental offerings.

Brief Follow Up on Outcomes of Plans to Address from Last Review

There were no issues identified with respect to this section in the previous review.

Program Review Final University Committee Chair Comments

V. EXTERNAL DEMAND

| EXTERNAL DEMAND DATA UNDERGRADUATE | | | | | | | | | | |
|------------------------------------|------|-----|------|-------|------|-----|--------|-----|--------|-----|
| | AY07 | | AY08 | | AY09 | | Year 4 | | Year 5 | |
| ACT DATA | | | | | | | | | | |
| | N | ACT | N | ACT | N | ACT | N | ACT | N | ACT |
| No. Identifying Planned Major | | | | | | | | | | |
| UNIT Totals | | | 5198 | 22.01 | | | | | | |
| BIOCHEMISTRY&BIOPHYSICS [833] | | | 101 | 26.30 | | | | | | |
| BIOLOGY [834] | | | 397 | 24.50 | | | | | | |
| BOTANY [835] | | | 3 | 21.00 | | | | | | |
| CHIROPRACTIC [741] | | | 48 | 20.40 | | | | | | |
| DENTAL ASSISTING [742] | | | 19 | 16.90 | | | | | | |
| DENTAL HYGIENE [743] | | | 114 | 18.90 | | | | | | |
| DENTAL LAB/TECHNOLOGY [744] | | | 1 | 18.00 | | | | | | |
| DENTISTRY [745] | | | 163 | 22.40 | | | | | | |
| ECOLOGY/ENVSTUDIES [838] | | | 30 | 25.30 | | | | | | |
| FISH GAME WILDLIFE MGMT [418] | | | 93 | 19.60 | | | | | | |
| FORESTRY&RELATEDSCI [420] | | | 17 | 19.40 | | | | | | |
| HEALTH SCI & ALLIED GEN [740] | | | 1926 | 20.80 | | | | | | |
| MEDICINE [751] | | | 892 | 23.90 | | | | | | |
| MICROBIOLOGY [840] | | | 28 | 24.80 | | | | | | |
| NATURAL RESOURCES MGMT [422] | | | 12 | 19.00 | | | | | | |
| NUCLEAR MEDICINE TECH [753] | | | 14 | 19.90 | | | | | | |
| OCCUPATLSFTY&HLTHTECH [678] | | | 2 | 21.00 | | | | | | |
| OCCUPATNL THERAPY/ASSIST [756] | | | 58 | 19.60 | | | | | | |
| OCEANOGRAPHY [841] | | | 23 | 21.40 | | | | | | |
| OPTOMETRY [757] | | | 32 | 21.60 | | | | | | |
| PHYSICAL THERAPY/ASSIST [760] | | | 529 | 20.70 | | | | | | |
| PHYSICIAN ASSISTING [759] | | | 19 | 20.50 | | | | | | |
| SCIENCES(BIO&PHYS) GEN [830] | | | 386 | 23.30 | | | | | | |
| VETERINARY MEDICINE [766] | | | 198 | 22.60 | | | | | | |
| ZOOLOGY [843] | | | 93 | 23.60 | | | | | | |
| No. of ACT Scores to Southeast | | | | | | | | | | |
| UNIT Totals | | | 479 | 20.97 | | | | | | |
| BIOCHEMISTRY&BIOPHYSICS [833] | | | 5 | 22.00 | | | | | | |
| BIOLOGY [834] | | | 33 | 22.50 | | | | | | |
| BOTANY [835] | | | 0 | 0.00 | | | | | | |

| | | | | | | | | | |
|----------------------------------|--|--|-----|-------|--|--|--|--|--|
| CHIROPRACTIC [741] | | | 6 | 19.20 | | | | | |
| DENTAL ASSISTING [742] | | | 1 | 22.00 | | | | | |
| DENTAL HYGIENE [743] | | | 8 | 20.30 | | | | | |
| DENTAL LAB/TECHNOLOGY [744] | | | 0 | 0.00 | | | | | |
| DENTISTRY [745] | | | 13 | 21.80 | | | | | |
| ECOLOGY/ENVSTUDIES [838] | | | 3 | 25.30 | | | | | |
| FISH GAME WILDLIFE MGMT [418] | | | 14 | 18.50 | | | | | |
| FORESTRY&RELATEDSCI [420] | | | 1 | 22.00 | | | | | |
| HEALTH SCI & ALLIED GEN [740] | | | 183 | 20.00 | | | | | |
| MEDICINE [751] | | | 57 | 22.70 | | | | | |
| MICROBIOLOGY [840] | | | 4 | 25.00 | | | | | |
| NATURAL RESOURCES MGMT [422] | | | 0 | 0.00 | | | | | |
| NUCLEAR MEDICINE TECH [753] | | | 4 | 20.30 | | | | | |
| OCCUPATLSFTY&HLTHTECH [678] | | | 0 | 0.00 | | | | | |
| OCCUPATNL THERAPY/ASSIST [756] | | | 6 | 18.80 | | | | | |
| OCEANOGRAPHY [841] | | | 1 | 18.00 | | | | | |
| OPTOMETRY [757] | | | 1 | 22.00 | | | | | |
| PHYSICAL THERAPY/ASSIST [760] | | | 74 | 20.50 | | | | | |
| PHYSICIAN ASSISTING [759] | | | 0 | 0.00 | | | | | |
| SCIENCES(BIO&PHYS) GEN [830] | | | 43 | 22.00 | | | | | |
| VETERINARY MEDICINE [766] | | | 15 | 22.60 | | | | | |
| ZOOLOGY [843] | | | 7 | 23.40 | | | | | |
| Yield: No. Enrolled at Southeast | | | | | | | | | |
| UNIT Totals | | | 155 | 22.40 | | | | | |
| BIOCHEMISTRY&BIOPHYSICS [833] | | | 1 | 26.00 | | | | | |
| BIOLOGY [834] | | | 8 | 24.90 | | | | | |
| BOTANY [835] | | | 0 | 0.00 | | | | | |
| CHIROPRACTIC [741] | | | 4 | 21.30 | | | | | |
| DENTAL ASSISTING [742] | | | 0 | 0.00 | | | | | |
| DENTAL HYGIENE [743] | | | 2 | 20.50 | | | | | |
| DENTAL LAB/TECHNOLOGY [744] | | | 0 | 0.00 | | | | | |
| DENTISTRY [745] | | | 4 | 23.50 | | | | | |
| ECOLOGY/ENVSTUDIES [838] | | | 0 | 0.00 | | | | | |
| FISH GAME WILDLIFE MGMT [418] | | | 3 | 18.30 | | | | | |
| FORESTRY&RELATEDSCI [420] | | | 0 | 0.00 | | | | | |
| HEALTH SCI & ALLIED GEN [740] | | | 65 | 21.60 | | | | | |
| MEDICINE [751] | | | 21 | 23.80 | | | | | |
| MICROBIOLOGY [840] | | | 1 | 30.00 | | | | | |
| NATURAL RESOURCES MGMT [422] | | | 0 | 0.00 | | | | | |
| NUCLEAR MEDICINE TECH [753] | | | 1 | 22.00 | | | | | |

| | | | | | | | | | |
|--------------------------------|--|--|----|-------|--|--|--|--|--|
| OCCUPATLSFTY&HLTHTECH [678] | | | 0 | 0.00 | | | | | |
| OCCUPATNL THERAPY/ASSIST [756] | | | 0 | 0.00 | | | | | |
| OCEANOGRAPHY [841] | | | 1 | 18.00 | | | | | |
| OPTOMETRY [757] | | | 1 | 23.00 | | | | | |
| PHYSICAL THERAPY/ASSIST [760] | | | 15 | 21.30 | | | | | |
| PHYSICIAN ASSISTING [759] | | | 0 | 0.00 | | | | | |
| SCIENCES(BIO&PHYS) GEN [830] | | | 18 | 23.10 | | | | | |
| VETERINARY MEDICINE [766] | | | 2 | 23.50 | | | | | |
| ZOOLOGY [843] | | | 8 | 24.00 | | | | | |

| SUMMARY UNDERGRADUATE | | |
|----------------------------------|------|-------|
| | Mean | Trend |
| Yield: No. Enrolled at Southeast | | |
| UNIT Totals | 22.4 | |
| BIOCHEMISTRY&BIOPHYSICS [833] | 26.0 | |
| BIOLOGY [834] | 24.9 | |
| BOTANY [835] | 0.0 | |
| CHIROPRACTIC [741] | 21.3 | |
| DENTAL ASSISTING [742] | 0.0 | |
| DENTAL HYGIENE [743] | 20.5 | |
| DENTAL LAB/TECHNOLOGY [744] | 0.0 | |
| DENTISTRY [745] | 23.5 | |
| ECOLOGY/ENVSTUDIES [838] | 0.0 | |
| FISH GAME WILDLIFE MGMT [418] | 18.3 | |
| FORESTRY&RELATEDSCI [420] | 0.0 | |
| HEALTH SCI & ALLIED GEN [740] | 21.6 | |
| MEDICINE [751] | 23.8 | |
| MICROBIOLOGY [840] | 30.0 | |
| NATURAL RESOURCES MGMT [422] | 0.0 | |
| NUCLEAR MEDICINE TECH [753] | 22.0 | |
| OCCUPATLSFTY&HLTHTECH [678] | 0.0 | |
| OCCUPATNL THERAPY/ASSIST [756] | 0.0 | |
| OCEANOGRAPHY [841] | 18.0 | |
| OPTOMETRY [757] | 23.0 | |
| PHYSICAL THERAPY/ASSIST [760] | 21.3 | |
| PHYSICIAN ASSISTING [759] | 0.0 | |
| SCIENCES(BIO&PHYS) GEN [830] | 23.1 | |
| VETERINARY MEDICINE [766] | 23.5 | |
| ZOOLOGY [843] | 24.0 | |

Additional Data Available at http://www.missourieconomy.org/occupations/occ_proj.stm

UNDERGRADUATE

Brief Conclusion from Data

We expect the demand for biology courses and major options to remain high for courses related to health care. The department of nursing depends on service courses in Anatomy and Physiology and in Microbiology for their curriculum. Currently the Anatomy and Physiology courses generate more student credit hours than any other courses we offer. Other health-related fields, including communications disorders, pre-pharmacy, and medical technology also require courses from Biology. Because the ACT data we have indicate a high interest in these fields, the demand for courses supporting these fields will remain high. Biology also provides the principal major leading to professional school in medicine, dentistry, optometry, and chiropractic medicine. The ACT data indicate that these are among the most-desired majors in the sciences, so demand for the major's coursework supporting them will remain strong. In Biology, the pre-professional cadre of students represents the single largest population of majors indicating that the ACT data do predict ultimate demand for the major in this case. There can be little doubt that in the area of health-related majors that demand will only increase in the coming years.

Outside of the health fields, the ACT data indicate strong demand for programs in Wildlife Biology and related field biology programs. Wildlife Biology in particular is growing in terms of student numbers in our department indicating that demand is translating into majors.

The ACT data are, unfortunately, divided into subgroups based on an archaic view of the biological disciplines. There are no selections for genetics or cell biology, for example, nor are there selections for organismal biology and marine biology. Therefore it is virtually impossible to use the ACT data to gauge the interest of students in several of our major options. Nonetheless, the overall demand for programs in biology remains strong and is expected to remain strong in the future.

Additional Data or Comments

None

Plan to Address

The high demand for biology courses and majors indicates there is no issue regarding current or future enrollment in departmental courses. The potential for expanded offerings related to health sciences exists, particularly for programs such as Physician Assistant.

Brief Follow Up on Outcomes of Plans to Address from Last Review

In our last review we proposed a greater recruitment effort aimed at pre-professionals. That happened both on an informal basis, and with the development of the Biomedical Scholars Program. The latter is both a recruitment and advising tool. Our increased number of pre-professional and Biomedical Sciences option majors indicate that this has succeeded.

Program Review Final University Committee Chair Comments

VI. QUALITY OF PROGRAM INPUTS

| UNDERGRADUATE | | | | | |
|-----------------------------|--------|--------|--------|--------|--------|
| Measure | AY07 | AY08 | AY09 | Year 4 | Year 5 |
| ACT | 23.04 | 23.88 | 24.01 | | |
| Selected Merit Scholarships | 33.00 | 52.00 | 56.00 | | |
| High School GPA | 3.50 | 3.53 | 3.68 | | |
| CBASE Composite | 315.80 | 288.50 | 322.50 | | |
| CBASE English | 289.40 | 279.50 | 299.50 | | |
| CBASE Math | 332.60 | 329.50 | 356.25 | | |
| CBASE Science | 348.00 | 301.00 | 334.75 | | |
| CBASE Social Studies | 299.00 | 282.50 | 298.75 | | |
| CBASE Writing | 274.60 | 299.50 | 328.75 | | |

| GRADUATE | | | | | |
|----------------------|------|------|------|--------|--------|
| Measure | AY07 | AY08 | AY09 | Year 4 | Year 5 |
| GMAT Total | 0.00 | 0.00 | 0.00 | | |
| GMAT Total Converted | 0.00 | 0.00 | 0.00 | | |

| COMPARISONS UNDERGRADUATE | | | | | | | | | | | | | | | |
|---------------------------|--------|--------|-------|--------|--------|-------|--------|--------|-------|--------|------|-----|--------|------|-----|
| | AY07 | | | AY08 | | | AY09 | | | Year 4 | | | Year 5 | | |
| | COLL | UNIV | NAT | COLL | UNIV | NAT | COLL | UNIV | NAT | COLL | UNIV | NAT | COLL | UNIV | NAT |
| ACT | 23.53 | 22.24 | 21.10 | 24.08 | 22.38 | 21.20 | 24.49 | 22.59 | 21.10 | | | | | | |
| High School GPA | 3.47 | 3.31 | | 3.52 | 3.29 | | 3.68 | 3.40 | | | | | | | |
| CBASE Composite | 311.33 | 283.42 | | 299.00 | 289.02 | | 348.00 | 304.82 | | | | | | | |
| CBASE English | 283.08 | 287.05 | | 283.40 | 294.61 | | 316.30 | 298.45 | | | | | | | |
| CBASE Math | 349.50 | 309.80 | | 363.40 | 316.58 | | 389.70 | 329.57 | | | | | | | |
| CBASE Science | 333.08 | 298.96 | | 294.60 | 303.65 | | 358.40 | 305.89 | | | | | | | |
| CBASE Social Studies | 282.67 | 268.80 | | 272.00 | 269.96 | | 326.70 | 292.36 | | | | | | | |
| CBASE Writing | 302.00 | 295.93 | | 307.80 | 302.15 | | 329.90 | 303.43 | | | | | | | |

| COMPARISONS GRADUATE | | | | | | | | | | | | | | | |
|----------------------|------|------|-----|------|------|-----|------|------|-----|--------|------|-----|--------|------|-----|
| | AY07 | | | AY08 | | | AY09 | | | Year 4 | | | Year 5 | | |
| | COLL | UNIV | NAT | COLL | UNIV | NAT | COLL | UNIV | NAT | COLL | UNIV | NAT | COLL | UNIV | NAT |
| GMAT Total | 0.00 | 0.00 | | 0.00 | 0.00 | | 0.00 | 0.00 | | | | | | | |
| GMAT Total Converted | 0.00 | 0.00 | | 0.00 | 0.00 | | 0.00 | 0.00 | | | | | | | |

SUMMARY UNDERGRADUATE

| Measure | Mean | Trend |
|-----------------|--------|-----------|
| ACT | 23.66 | Improving |
| High School GPA | 3.53 | Improving |
| CBASE Composite | 313.27 | Irregular |

SUMMARY GRADUATE

| Measure | Mean | Trend |
|----------------------|------|--------|
| GMAT Total | 0.00 | Static |
| GMAT Total Converted | 0.00 | Static |

UNDERGRADUATE

Brief Conclusion from Data

The Department of Biology is satisfied with the profile of our incoming students. The mean GPAs of incoming students have increased yearly from AY07 to AY09. They have been consistent with the College means and slightly above the University means. Likewise the mean ACT composite scores have increased slightly from AY07 to AY09. They are also consistent with the College means and above the University means. The three-year mean lies between the 69th and 75th percentile of the national comparison group.

Unified science and categorical biology education students must have and maintain a GPA of at least 2.50 in their major and overall to remain in the teacher education program. In addition, they take the College Basic skills test (CBase) as part of the entrance, and must earn a minimum of 265 on all parts if their ACT is less than 22 or 235 on all parts if their ACT is greater than 22. The average over several years for biology majors is 377.2, which far exceeds the minimum required.

The number of merit-based scholarships has grown dramatically from AY07 to AY09. Biology has more students with merit-based scholarships than any other unit and almost twice as many students with merit scholarships as the second-ranked unit in the University.

Additional Data or Comments

None

Plan to Address

None

Brief Follow Up on Outcomes of Plans to Address from Last Review

There were no issues associated with this in our previous review.

Program Review Final University Committee Chair Comments

GRADUATE

Brief Conclusion from Data

We currently require graduate applicants to take the General Test of the General Record Examination (GRE), which is administered by Educational Testing Services (ETS). We do not require the Subject Test. The GRE has three components: verbal, quantitative, and analytical. For new Biology graduate students accepted between AY2005-2010, the average verbal score is 435, the average quantitative score is 523, and the average analytical Score is 4.0. According to ETS data from 2005-2008, the national average scores were 457 (verbal), 586 (quantitative) and 3.9 (analytical). Thus, our students rank slightly below average for the verbal and quantitative sections, but slightly above for the analytical portion.

The average undergraduate GPA of accepted graduate students is 3.183, well above the 2.5 university minimum requirement and the 2.75 Biology Department minimum.

Additional Data or Comments

The Biology Department application process requires that applicants have arranged for a faculty member to serve as the applicant's graduate advisor. This requirement ensures that applicants have had direct discussions with potential faculty advisors to discuss specific thesis research projects. This process also provides an opportunity for faculty to assess applicant quality and knowledge about the relevant biological discipline being considered for the graduate project. We feel this process is the best method to ensure completion of a successful program and graduate project for the incoming student.

Plan to Address

We are currently assessing whether to continue to require applicants to submit GRE scores. This exam bears a significant cost to the applicant (\$150) but seems to bear little relationship to actual student quality or student success. Instead, our faculty relies on direct student interaction during the recruitment process, which we feel provides the best opportunity for us to assess the probability of student success. The quality of program outputs (see below) suggests that we are accepting new students with good potential to successfully complete a meaningful thesis program.

Brief Follow Up on Outcomes of Plans to Address from Last Review

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VII. QUALITY OF PROGRAM OUTPUTS

| WP003 UNDERGRADUATE | | | | | | | | | | |
|---------------------------|------|--------|------|--------|------|-------|--------|---|--------|---|
| | AY07 | | AY08 | | AY09 | | Year 4 | | Year 5 | |
| | N | % | N | % | N | % | N | % | N | % |
| >= 9.5 (superior) | 7 | 10.44 | 12 | 15.18 | 24 | 27.90 | | | | |
| 8.0 - 9.0 (proficiency) | 50 | 74.62 | 52 | 65.82 | 54 | 62.79 | | | | |
| 7.0 - 7.5 (marginal pass) | 9 | 13.43 | 15 | 18.98 | 8 | 9.30 | | | | |
| < 7.0 (fail) | 1 | 1.49 | 0 | 0.00 | 0 | 0.00 | | | | |
| Unit First Time Pass Rate | 67 | 100.00 | 79 | 100.00 | 85 | 98.83 | | | | |
| Unit Mean | 67 | 8.35 | 79 | 8.48 | 86 | 8.79 | | | | |

| WP003 COMPARISONS UNDERGRADUATE | | | | | |
|---------------------------------|--------|-------|-------|--------|--------|
| | AY07 | AY08 | AY09 | Year 4 | Year 5 |
| College Mean | 8.26 | 8.40 | 8.67 | | |
| College Pass Rate | 100.00 | 99.31 | 98.13 | | |
| University Mean | 8.25 | 8.34 | 8.35 | | |
| University Pass Rate | 97.99 | 98.74 | 98.23 | | |

| DISCIPLINE SPECIFIC UNDERGRADUATE | | | | | | |
|-----------------------------------|------------|--------|--------|--------|--------|--------|
| | | AY07 | AY08 | AY09 | Year 4 | Year 5 |
| Praxis Tests (Majors Only) | | | | | | |
| PX04: PRX Biology Ck 235-Total | Southeast | 161.90 | 160.00 | 160.00 | | |
| | Comparison | | | | | |
| Praxis Tests (All Majors) | | | | | | |
| PX04: PRX Biology Ck 235-Total | Southeast | 162.38 | 156.05 | 160.73 | | |
| | Comparison | | | | | |
| MFAT (Majors Only) | | | | | | |
| MF05: MFAT Biology II - Cell | Southeast | 46.97 | 44.75 | 48.25 | | |
| | Comparison | | | | | |
| MF06: MFAT Biology II - Mole | Southeast | 48.85 | 47.27 | 47.47 | | |
| | Comparison | | | | | |

| | | | | | | |
|-------------------------------|------------|--------|--------|--------|--|--|
| MF07: MFAT Biology II - Orgn | Southeast | 52.00 | 51.06 | 52.25 | | |
| | Comparison | | | | | |
| MF08: MFAT Biology II - Pop | Southeast | 51.44 | 51.41 | 53.27 | | |
| | Comparison | | | | | |
| MF09: MFAT Biology II - Total | Southeast | 149.48 | 146.52 | 150.33 | | |
| | Comparison | | | | | |
| MFAT (All Majors) | | | | | | |
| MF05: MFAT Biology II - Cell | Southeast | 47.63 | 44.67 | 48.05 | | |
| | Comparison | | | | | |
| MF06: MFAT Biology II - Mole | Southeast | 49.12 | 47.06 | 47.50 | | |
| | Comparison | | | | | |
| MF07: MFAT Biology II - Orgn | Southeast | 52.69 | 51.70 | 53.00 | | |
| | Comparison | | | | | |
| MF08: MFAT Biology II - Pop | Southeast | 52.00 | 52.13 | 54.24 | | |
| | Comparison | | | | | |
| MF09: MFAT Biology II - Total | Southeast | 150.14 | 145.93 | 150.88 | | |
| | Comparison | | | | | |

WP003 SUMMARY UNDERGRADUATE

| Method | Mean | Trend |
|------------|------|-----------|
| WP003 Mean | 8.56 | Improving |

DISCIPLINE SPECIFIC SUMMARY UNDERGRADUATE

| Method | Mean | Trend |
|--------------------------------|--------|-----------|
| Praxis Tests (Majors Only) | | |
| PX04: PRX Biology Ck 235-Total | 161.00 | Irregular |
| Praxis Tests (All Majors) | | |
| PX04: PRX Biology Ck 235-Total | 159.60 | Irregular |
| MFAT (Majors Only) | | |
| MF05: MFAT Biology II - Cell | 46.67 | Irregular |
| MF06: MFAT Biology II - Mole | 47.93 | Irregular |
| MF07: MFAT Biology II - Orgn | 51.79 | Irregular |
| MF08: MFAT Biology II - Pop | 52.01 | Irregular |
| MF09: MFAT Biology II - Total | 148.86 | Irregular |
| MFAT (All Majors) | | |
| MF05: MFAT Biology II - Cell | 46.83 | Irregular |
| MF06: MFAT Biology II - Mole | 48.01 | Irregular |

| | | |
|-------------------------------|--------|-----------|
| MF07: MFAT Biology II - Orgn | 52.47 | Irregular |
| MF08: MFAT Biology II - Pop | 52.68 | Improving |
| MF09: MFAT Biology II - Total | 149.08 | Irregular |

UNDERGRADUATE

Brief Conclusion from Data

The WP003 data show a high level of performance by students of the Biology Department. Over the three years of reported data, 85.6% of Biology students achieved proficiency or superior scores. Only one of 232 Biology students taking the writing test failed to pass on the first attempt (99.6% pass rate). The departmental mean score on WP003 exceeded the CoSM and University mean scores in all three years of reported data.

The strong performance of our students on the writing assessment test reflects the emphasis placed on writing assignments in Biology classes. These frequent, writing-intensive exercises are only practical in relatively small class sizes. An increase in class size would negatively affect the ability of faculty to provide detailed, constructive feedback to students on their writing skills.

The Praxis exam for B.S. Ed. students is on a pass/no pass basis. The mean scores on the Praxis exam by B.S. Ed. in Biology students were always above the pass score cut-off. Over the three years of data presented, the pass rate for B.S. Ed. in Biology students was 94%. The high rate of pass scores on the Praxis exam indicates that our B.S. Ed. students are performing well on teacher certification exams.

The Biology Department has struggled for years with the MFAT as an assessment tool. The difficulties have centered on the fact that our students, even our best students, do not take the test seriously and make little-to-no-effort to perform to the level of their abilities. We have experimented with various options intended to motivate students. These have included: making a class grade partially dependent upon MFAT performance, having a credit-no credit separate course required for graduation be based upon MFAT performance, and having the MFAT scores recorded on the students' transcripts. None of these efforts have succeeded to our satisfaction. We have found the MFAT to be an ineffective assessment instrument and have decided to remove use of the MFAT from our Plan for Assessment of Student Outcomes.

The Biology Department has undertaken internal development of a MFAT-like assessment tool to replace use of the MFAT. This locally-developed assessment instrument is based upon student learning outcome objectives for the Biology core courses completed by all majors in the department. The instrument is being used as an embedded assessment in Biology core courses. We began use of the instrument two years ago. The first cohort of Biology majors taking the instrument have not yet completed the core curriculum. Thus, we do not yet have a full data set for the first cohort to be evaluated using the new MFAT-like locally-developed assessment instrument.

Additional Data or Comments

None

Plan to Address

We are pleased with the WP003 outcome data. We hope that we can continue to offer relatively small, writing-intensive classes to Biology majors.

Similarly, we are pleased with the Praxis data. The high success rate of our students indicates sound preparation for entry into biology teaching careers.

The MFAT-like instrument developed by the Biology Department is explicitly based on student learning outcome objectives for the Biology core courses. When these data become available they will assist the department in identifying areas of instructional strengths and weaknesses. The department will act upon these data accordingly to maintain and enhance student learning outcomes.

Brief Follow Up on Outcomes of Plans to Address from Last Review

The only issue associated with this in our previous review was a problem with the MFAT as an assessment measure. The department has replaced the MFAT with an instrument based on learning outcomes objectives as described above.

Program Review Final University Committee Chair Comments

GRADUATE

Brief Conclusion from Data

Between AY2005-2008, the average GPA of graduating students was 3.811. We also assess each graduating student on the quality of their written thesis and oral defense. We evaluate the students on critical reading and thinking, quality and clarity of written and oral communication, experimental design, data analysis, and other basic scientific skills. Each category is ranked 0 (does not meet expectations), 1 (meets expectations), or 2 (exceeds expectations). For AY2007, the average scores were 1.26 and 1.17 for written and oral expectations, respectively. For AY2008, the average scores were 1.43 and 1.39 for written and oral expectations, respectively. For AY2009, the average scores were 1.55 and 1.63 for written and oral expectations, respectively. These results suggest increasing quality of our graduating students.

Between AY2003-2007, our students published a total of 16 scientific publications and delivered 37 presentations at professional meeting. Newer data are not yet compiled.

Additional Data or Comments

Plan to Address

These data suggest that we are producing quality graduate students that are contributing productively to the scientific body of knowledge. We will continue to uphold high standards for quality graduate research so that thesis research can readily be published in peer-reviewed journals and presented at professional meetings. As noted under Plans to Address in Part I (Size, Scope, Productivity), publications and presentations are valuable recruitment tools. Just as importantly, publications and presentations also demonstrate graduate student quality, increasing the ability of our graduates to obtain employment or increasing their chances of admission into high-quality doctoral programs.

Brief Follow Up on Outcomes of Plans to Address from Last Review

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VIII. CURRENCY OF CURRICULUM

UNDERGRADUATE

What steps have you taken to ensure that your programs and courses are up-to-date and effective?

The Biology Department's promotion and tenure documents require a description of how the faculty member keeps course content current and evidence to support the statement. Faculty members are given credit in the promotion and tenure documents for specific course updates. Faculty members also generally submit student evaluations with their promotion packets which indicate teaching effectiveness. Faculty members are also required to discuss how student comments are used to improve courses.

The department's standing curriculum committee performs on-going review of the core curriculum, as well as considering changes to existing courses, or proposals for new courses. In addition, ad hoc groups of faculty teaching related courses also bring forward changes at the program level. Recently this has included changes to curricula in plant biology, and changes to anatomy and physiology service courses.

The Biology Department initiated a new major's core curriculum in AY2004, along with focused options to provide students both a broad exposure to biological principles and science process and an opportunity for in-depth study in a particular area. In addition, all majors must complete 2 credit hours of experiential learning in the form of internship, research, or field studies.

We have just received a Title III grant from NSF to renovate our teaching laboratories and update the courses that use those facilities. These improvements will improve the teaching and learning experience for many majors' and service courses.

In addition, a number of faculty have submitted and received Kent Library Endowment grants to increase the library's holdings in particular subject areas. These grants require that one justifies how students will benefit from the selected materials.

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GRADUATE

What steps have you taken to ensure that your programs and courses are up-to-date and effective?

The Biology Department's promotion and tenure documents require that all faculty members demonstrate with evidence how they keep course content current. Faculty are given credit in the promotion and tenure documents for specific course updates. Faculty generally submit student evaluations and other evidence of teaching effectiveness with their promotion packets, and provide a narrative that discusses how student comments are used to improve course content and delivery. Graduate faculty also keep course content and research programs current by attending professional meetings and through access to scholarly journals. New information from these resources can be incorporated immediately into course material to keep students abreast of the latest scientific findings across many disciplines.

We have just received a Title III grant from the National Science Foundation to renovate our teaching laboratories and update the courses that use those facilities. These improvements will allow us to incorporate new laboratory projects and other innovative teaching enhancements to improve the quality of our 400/600-level courses.

A number of graduate faculty have submitted and received Kent Library Endowment grants to strengthen the library's holdings for particular biological disciplines. These grants require that the applicants justify how students will benefit from the selected materials.

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IX. IMPACT, JUSTIFICATION, AND OVERALL ESSENTIALITY TO THE SOUTHEAST MISSION

UNDERGRADUATE

The Biology Department plays a significant role in the University. Life Sciences is essential to any liberal arts education. We have a large number of majors and contribute significant instructional resources to service courses and University Studies. In addition to training biologists, we provide training for future health care professionals through our service courses and our Biomedical Sciences option in the major. We also train teachers and wildlife biologists at the undergraduate and graduate level. Our faculty are active research scientists.

Much of the faculty research in the department has applied aspects that can and do serve the regional and statewide community. More importantly, our research programs provide a vehicle for high-impact learning experiences for students. Many of our students engage in research projects with a faculty mentor and the results of a number of the projects have been presented at national or international meetings and published in peer-reviewed journals. Our Biology students experience biology in the classroom and in real-life training, a combination that better prepares them for the future.

Finally, our department offers other services to the region including the use of biological expertise to answer public inquiries as simple as identification of an organism to complex issues of public health. Thus, all three components of teaching, research, and services offer much to the university and the region.

Simply put, the loss of Biology from the university would mean almost 700 fewer students in the institution, a loss of foundation courses for other high-demand majors, a loss of the primary provider of Living Systems courses, the loss of high-profile pre-professional majors which attract high quality students, and the loss of faculty who have an international presence in the field.

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GRADUATE

The graduate program of the Biology Department makes a significant contribution to the Southeast mission. Students enrolled in our graduate program are already demonstrating their commitment to life-long learning opportunities. Our graduate students have the opportunity to interact with state and federal agencies as part of their research program, and many of our graduates become employed by these same agencies. Our faculty are actively engaged in research. Many faculty have applied research programs that can and do serve the community. Our research programs provide a vehicle for high impact learning experiences for both undergraduate and graduate students. Many undergraduate students get the opportunity to interact with graduate students by assisting with field and laboratory work, or simply by other high-impact learning opportunities in the same laboratory as the graduate students. Because we offer combined 400/600-level courses, undergraduate and graduate students interact regularly. This interaction helps to foster the desire for life-long learning in our undergraduate students, some of whom become our future graduate students. Graduate students are also among our best recruitment assets, both for Southeast undergraduate students and for undergraduate students at other institutions. Our graduate students present their thesis research at national or international meetings and publish in peer-reviewed journals. The research performed by our graduate students and the interactions with researchers and students from other agencies and institutions better prepares our students for the future and provides them with better opportunities for employment or further graduate studies. As our students spread throughout the workforce, they become ambassadors for the Southeast experience.

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X. PLANNING FOR THE FUTURE

Given impending personnel and environmental changes, how do you envision the configuration of your unit in five years? What components would be phased out? What components would be reduced in size? What components will have grown? What new components will have been developed? What other units might be involved in the new components?

UNDERGRADUATE

It appears that the demand for courses within the biology major leading to preparation for professional school, graduate studies in microbiology and molecular biology, and direct employment in these fields will only continue to increase. In addition, the demand for courses in the area of Wildlife Biology and related fields is also expected to remain high for the next five years. Our current complement of faculty supports this demand fairly well. Currently, our course sections in all of the diverse areas of biology are either full or over-subscribed, so we see little reason to anticipate a phase-out of any components of the program based on student interest.

We have proposed elsewhere in this document that we will investigate developing a pre-Physician Assistant program. We think that this program can be carved out of courses we already offer, and will not require additional staff or a change in the current specialties of our faculty.

The department invests significant off-load time in directing high-impact learning opportunities including research, internship and field studies. Because of our firm belief that research, in particular, is critical to the development of good biologists and good medical professionals, we will do everything possible to maintain active faculty research programs so that we may provide these experiences.

The unknown factors in this discussion are the state budget situation, the proposed community college, and possible effects of the curriculum alignment initiative. Each of these brings its own challenge, such as forced reductions in staff due to budget limitations, a loss of students in University Studies or service courses to the community college, or a potential increase in student demand for University Studies courses in Biology, if current non-Biology Living Systems courses are determined to not meet the CAI standards. In the extreme situation of forced reduction in staff, the department may be forced to consider using a greater complement of RNTT or part-time faculty as opposed to tenure-track faculty, despite the accompanying loss of expertise for upper division courses.

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GRADUATE

We reiterate statements made in the undergraduate component of this Part. Our department has a good mix of faculty expertise that allows us to maximize course diversity and enrollment for undergraduate and graduate students. Our balance allows us to train graduate students for a variety of post-graduate career paths. Our research programs allow us to offer not only high-impact learning experiences to our undergraduate students but also to provide in-depth research experiences for our graduate students. We believe strongly that research is an essential component of the Biology program, and we must strive to maintain this research component to ensure the success of both undergraduate and graduate students in our program.

The uncertainty about state budgets, the proposed community college, and the curriculum alignment initiative extends to our graduate program. Most of our faculty who accept graduate students also teach service and university studies courses. Because our senior faculty also teach freshmen-level courses of small class size, we begin to cultivate a close relationship with undergraduate students from the beginning of their academic careers. This positive experience results in some

undergraduate students continuing in our graduate program. If our undergraduate student population is reduced because of the community college, our graduate recruitment from among this population could be reduced. We would then have to further enhance recruitment of students from other institutions to offset the loss of research potential and graduate teaching assistants.

If we are unable to replace some tenure-track positions following retirement, we will have to seek the best possible balance of teaching and research. Because of the uncertainty of state budgets, the community college and the CAI, we cannot readily anticipate which positions might be lost to attrition. Regardless, our department feels that we can not sacrifice the research component of our department because research is a cornerstone of all scientific disciplines, not just biology. Biology students without research experience are less desirable as employees or as applicants to doctoral programs.

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DEANS' COMMENTS

Final University Committee Chair Comments on Entire Document

Provost's Decision