Science 2008-09 Initiative: Biology Curriculum Development: Sustainability-theme and Large Online Survey Class

Summary:

This initiative develops curriculum for a new General Biology 103 class with a sustainability theme; and revises curriculum to convert the telecourse, BI 101J, Gen Bio, Unseen Life on Earth, into an online class that meets the Quality Matters standards and enrolls up to 50 students. The online class is supported by an online teaching assistant and increases accessibility for students. The large enrollment increases FTE efficiently. Funds are requested separately to support online teaching assistants.

Description:

Sustainability course

The biology discipline offers general biology courses with emphases in areas of interest to students. A new BI 103 course, tentatively named BI 103 (letter) General Biology, Sustaining a Biodiverse Environment, is likely to appeal to students and aligns with the college's new core value of sustainability. While covering the traditional BI 103 topics of evolution and ecology, these would be presented in the framework of sustaining a viable global ecosystem.
The following is a draft outline of possible topics:

1. Evolution and ecological catastrophes
2. Evolution and changing environments
3. Adaptation and changing environments-global warming
4. Ecosystems and biodiversity
5. Human reliance on ecosystems
6. Exotic species
7. Population growth, carrying capacity, limiting factors
8. Population dynamics
9. Fragmentation and population sinks
10. Island biogeography and fragmentation
11. Pollution-stressors, bioaccumulation, point and non-point sources
12. Pollution-eutrophication (algal and bacterial blooms)
13. Human impacts on salmon life histories
14. Sustainable resource use, over-fishing and fish reserves
15. Deforestation, desertification, loss of biodiversity
16. Critical analysis of competing environmental claims
17. Government, science and environmental policy

Large Online Class for General Biology Sequence

The Biology discipline proposes developing a General Biology online sequence, so that students can complete General Biology requirements through distance learning. As

described in detail in our Unit Plan for FY09, the Science Division is piloting a large enrollment online survey class successfully this year, with Stan Swank's Biology 102I class. We already have a BI 103L, Gen Bio: Evolution and Diversity offered two terms per year in an online format for 30 students per term. We are proposing that BI 101J, Gen Bio: Unseen Life on Earth, could be developed as a fully online course. Currently the course is taught as a Moodle-supported telecourse and offered three times yearly. We are proposing curriculum development funds to revise the course to meet the Quality Matters online course standards adopted by Lane. To support the proposed large enrollment capacity of 50 students, we are requesting funding in a separate initiative for online TAs for both large online classes, for a total of six sections in FY09.

Strategic Direction

- Achieve and sustain fiscal stability.
- Build organizational capacity and systems to support student success and effective operations.
- Commit to a culture of assessment of programs, services and learning.
- Create a diverse and inclusive learning college: develop institutional capacity to respond effectively and respectfully to students, staff, and community members of all cultures, languages, classes, races, genders, ethnic backgrounds, religions, sexual orientations, and abilities.
- Create, enhance, and maintain inviting and welcoming facilities that are safe, accessible, functional, well-equipped, aesthetically appealing and environmentally sound.
- Foster the personal, professional, and intellectual growth of learners by providing exemplary and innovative teaching and learning experiences and student support services.
- Position Lane as a vital community partner by empowering a learning workforce in a changing economy.
- Promote professional growth and provide increased development opportunities for staff both within and outside the College.

Learning Plan Goals

- Address the need for direct student support from faculty and staff as a crucial element of the learning environment
- Curriculum enhancement.
- Enhance student success and retention

Student Affairs Plan Goals

- Create innovative, flexible, and collaborative programs that are responsive to the needs of students and employers and facilitate a smooth transition from college to the workplace.

- Develop and promote a seamless transition for students from Lane to four-year institutions of higher education, maximizing their chances for success and enhancing their personal, social, and academic growth.
- Ensure success-oriented systems and experiences.

College Council Priorities

- 1.b. Enrollment Management: Recruitment and Retention
- 1.c. Enrollment Management: Workforce Development
- 1.e. Enrollment Management: Increase Credit Enrollment Level
- 3. Efficiencies
- 4.1 Responding to unit plans/council plans: Innovation
- 4.2 Responding to unit plans/council plans: Curriculum Development
- 4.3 Responding to unit plans/council plans: Enhancing Classrooms
- 5.2 Instructional Redesign: Leveraging Technology

Questions and Answers

How is the initiative linked to the Unit Plans most recently submitted?

1. *How does it continue the achievement of those goals?*
2. *If this is a continuation of an initiative started last year, make sure that relationship is clear.*

How is this initiative linked to the efficiencies and productivities plans you had last year?

1. *How does it continue the achievement of these plans?*
2. *If this is a continuation of an efficiency or productivity plan started last year, make sure that relationship is clear.*

The Science Division proposed a sustainability emphasis initiative in its FY08 Unit Plan. This successful project developed a sustainability course of studies in Science and laid the groundwork for developing new courses, such as the one proposed here. The sustainability emphasis course in Biology continues the achievement of our goals around teaching and learning for the college's sustainability value.

This year's Unit Plan proposed developing a General Biology online sequence using online TA's to support large enrollments, increasing opportunities for students to complete General Biology requirements through distance learning. Online classes are becoming increasingly popular with two-year college student nationally. The Science division has increased its distance learning offerings (including hybrid courses, online, and telecourses) from 17 sections in FY05 to 21 sections in FY07. This year we are increasing the capacity of BI 102I, Human Biology from 35 to 50 students per term with the addition of a teaching assistant to help with technical support and content tutoring

during the term. F07 enrollment is 49 students equating to 6.34 FTE. This compares to FTE of 4.53 for enrolling 35 students. We plan to run BI 102I in the large section format for the remainder of FY08. At a very conservative estimate of 80% capacity for the year, we project a gain of 5.30 FTE compared to the course FTE for FY07, producing a net income (tuition and State reimbursement) of $3,814 per FTE. For FY09, running two large enrollment DL classes with at least 80% capacity, we project in increase of 10.48 FTE over FY07. These are significant FTE increases with minimal costs.

From evaluation data for Fall 07, 95% of the students would not have been able to take a Biology course that term if not for this online course. All respondents (100%) stated they would recommend this online course to other students. Additionally, 100% (33/33) of the students strongly agreed or agreed that the level of online support for this course was higher when compared to other online courses they had taken.

Students indicated they enjoyed the course and the format, were supported in their efforts by the TA and the instructor, and indicated a strong positive experience overall with the course. The attrition for the course actually decreased from 12% to 8% this term, while enrolling almost twice as many students. While the TA was very helpful in managing the course, Swank reported that his workload as instructor was not reduced. He continued, as in past years, to read all the postings, coordinate the quizzes and grading, and respond to postings and questions. He recommends continuing the large enrollment sections with help from the online TA because the position brought an additional resource for the students, and was a real value for their learning. The online course helps meet the needs of many non-traditional students. The full report is available upon request.

In our Unit Plan document, we proposed adapting Joe Russin's hybrid course, BI 101F, Gen Bio: Survey of Biology, into a fully online course. Since the Plan was submitted, we have decided that BI 101F is not well-suited to a fully online format; instead, we are proposing adapting a current telecourse, BI 101J, Gen Bio, Unseen Life on Earth, to be a large enrollment online class.

Describe the resources needed:

New Course Development: BI 103 (letter) General Biology, Sustaining a Biodiverse Environment

Request: Curriculum Development 100 hours

Course Revision: BI 101J, Gen Bio, Unseen Life on Earth

Request: Curriculum Development 70 hours

What specific measurable program outcomes do you expect to achieve with this initiative? The outcomes should be specific enough to be measurable. Also, outline the method that will be used to determine the results.

Development of these two courses will:

- Increase access to 100-level Biology courses by providing a compelling emphasis in sustainability themes; and providing a large enrollment online course serving non-traditional students.
- Increase the number and quality of online classes offered by the Science Division.
- Increase FTE in Science courses.
- Result in learning outcomes consistent with Lane's core abilities and values.

Department Priority:

2

Unit Resources:

Science faculty from all disciplines will engage in stakeholder meetings to review course development and revisions. Biology faculty will provide time and effort to assist the course developers as needed. Funding will be sought to support the online TAs for the large enrollment DL classes.

Carl Perkins Funding Request

Curriculum Development Funding Request

1. List the following information

- *Course Numbers (titles if not currently offered)*
- *Instructor Name(s) who will work on the curriculum development*
- *Whether each of the courses is in, or has been through, the curriculum approval process*

A. BI 103 (letter) General Biology, Sustaining a Biodiverse Environment

- Bert Pooth
- New course development; not yet approved

B. BI 101J, Gen Bio, Unseen Life on Earth

- Faculty developer to be named
- Course approved as a telecourse; will be resubmitted after revisions

2. List each course number (or title) and the materials to be created for each class

- *Instructional goals, objectives, syllabi and outlines*
- *Lab instruction packets*
- *Practice, quiz, presentation &/or demonstration materials*
- *Other (specify)*

A. BI 103 (letter) General Biology, Sustaining a Biodiverse Environment

- Instructional goals, objectives, syllabi and outlines
- Lab instruction packets: Approximately 10 labs
- Practice, quiz, presentation &/or demonstration materials: 20 â?? 30 powerpoint presentations, 5 quizzes, 3 exams, 3 exam review sheets
- Other (specify): Appropriate field trips: Fern Ridge, Raptor Center, Moodle website, GIS modules

B. BI 101J, Gen Bio, Unseen Life on Earth

- Review of Quality Matters standards at the beginning of the curriculum development process; and again at the end for quality checking
- Instructional goals, objectives, syllabi and outlines
- Lab instruction packets: Approximately 10 labs supported by online activities and using lab kits students can purchase or borrow
- Online presentations, discussions, and group interactions
- Other (specify): Assessment methods appropriate for Quality Matters standards for DL classes

3. List each course number (or title) and give your timeline for beginning and completing each course curriculum development.

A. BI 103 (letter) General Biology, Sustaining a Biodiverse Environment

- Development will be done during Summer 2008. Completed by end of summer; curriculum committee review by end of Fall term 08; course will be offered in Spring 09.

B. BI 101J, Gen Bio, Unseen Life on Earth

- Development will be done during Summer and Fall 2008; curriculum committee reveiw by end of Fall term 08; course will be taught in Winter and Spring 09.

4. What are up to 3 departmental instructional goals that are met through the development of curriculum in each class?

A. BI 103 (letter) General Biology, Sustaining a Biodiverse Environment

- Goal #8: Meet existing demand for classes.
    - Add classes strategically
- Goal #9: Expand learning opportunities.
- PLUS
    - Incorporate sustainability into curriculum (core value)
    - Critical thinking (core ability)
    - Apply scientific understanding to life (science learning oucome)

B. BI 101J, Gen Bio, Unseen Life on Earth

- Goal #5: Enable all Science staff and students to optimize use of technology to support student learning (including but not limited to computer technology)
- Goal #8: Meet existing demand for classes
- Goal #9: Expand learning opportunities.
- PLUS
    - Critical thinking (core ability)
    - Apply scientific understanding to life (science learning oucome)

5. List each course number (or title) and give the value of the development of curriculum in each course to other faculty members.

A. BI 103 (letter) General Biology, Sustaining a Biodiverse Environment

- Other faculty benefit in that students take their understanding of sustainability from a biological perspective into other classes. Course development will increase the Pooth's understanding of sustainability and this will allow him to be a resource for other faculty. Pooth plans to incorporate GIS modules into the course. Other faculty will benefit by using the modules as models for their own courses. In addition, the data needed will be added to our general bank of data, available for other GIS activities.

B. BI 101J, Gen Bio, Unseen Life on Earth

- Course development will be guided by the Quality Matters standards adopted by Distance Learning. The developer's use of the standards will help other faculty to review and revise online portions of their classes to increase student engagement and success.

6. List each course number (or title) and say how many students will be served by the development of curriculum in each class.

A. BI 103 (letter) General Biology, Sustaining a Biodiverse Environment

- 28 per year (one section) directly, cross-disciplinary work may affect many others.

B. BI 101J, Gen Bio, Unseen Life on Earth

- 150 per year (three sections @ 50 students each)

7. List each course number (or title) and give the specific benefits to students that you expect from the development of curriculum in each class.

A. BI 103 (letter) General Biology, Sustaining a Biodiverse Environment

- Students benefit from emphasis courses because they allow students to fulfill science requirements with courses that relate scientific concepts to areas in which the students are interested. This improves learning in general, and this course will allow successful students to make more informed decisions about issues involving sustainable practices. The course allows students to learn general biology outcomes in the context of a timely and signficant issue they will face throughout their lifetimes.

B. BI 101J, Gen Bio, Unseen Life on Earth

- Students benefit from the online emphasis course by completing a science requirement through distance learning. The online aspects of the course will increase student learning and engagement with the formerly telecourse material. By designing the course for a large enrollment (50 students) we increase access to learning.

8. List each course number (or title) and give the specific benefits for diversity that you expect from the development of curriculum in each class.

A. BI 103 (letter) General Biology, Sustaining a Biodiverse Environment

- The course will include a number of topics that emphasize the value of diversity in the natural environment; and the geopolitics of population. Social equity and environmental issues are discussed in a global perspective. These topics lend themselves to expanding students' world views: Ecosystems and biodiversity; Human reliance on ecosystems; Exotic species; Population growth, carrying capacity, limiting factors; Population dynamics; Fragmentation and population sinks; and, Island biogeography and fragmentation.

B. BI 101J, Gen Bio, Unseen Life on Earth

- The online format reaches a wider population, including stay-at-home parents and working people who may be unable to attend during the day or regular class week.

9. List each course number (or title) and give the specific benefits to sustainability that you expect from the development of curriculum in each class.

A. BI 103 (letter) General Biology, Sustaining a Biodiverse Environment

- Students will gain scientific concepts and explore attitudes that contribute to sustaining a biodiverse world. A course emphasizing sustainability improves the chances that the future voters and leaders we are teaching will make sustainable choices. Also, the college will be better able to sustain itself when students can take a course that both satisfies a science requirement and examines issues important to students today.

B. BI 101J, Gen Bio, Unseen Life on Earth

- n/a

10. List each course number (or title) and give the specific effects on distributed learning that you expect from the development of curriculum in each class.

A. BI 103 (letter) General Biology, Sustaining a Biodiverse Environment

- Initial design will be for a typical LCC science class: integrated lab, discussion, computer work. The development of a Moodle site, and incorporation of GIS and other computer-centered activities will enhance the possibility of moving it partially or wholly online in the future.

B. BI 101J, Gen Bio, Unseen Life on Earth

- This course is being developed as a large enrollment online class, increasing the Science Division's ability to offer students a full sequence of Survey of Biology in an online format.

Hours requested for Curriculum Development funding:

Please enter the amount of one of the following:

- *100 hours maximum for new development.*
- *70 hours maximum for course revision*
- *50 hours for 3-4 credit conversion*
- *other (use if multiple courses addressed in one initiative*

Do not enter any characters other than numbers and a decimal.

How many hours are you requesting? If there are multiple courses addressed in the initiative, please list each course number (or title) and give the number of hours requested for each course.

Can this initiative be partially funded?

Yes

Partially funded curriculum development HOURS requested:

100

Explanation of effect of partial funding:

Only one of the two courses would be developed. The sustainability themed Biology survey course contributes to the Division's commitment to providing sustainability curricula and directly supports the college's values. We would place the distance learning development on hold for another year.

Technology Fee Funding Request