Initiative Report for Science 2009-10

Retention and Success: Preparatory Chemistry course development

Summary:

This initiative is requesting curriculum development funding to develop a preparatory chemistry class to be offered first in the classroom and then online.

Description

Funding will allow full time and part time chemistry faculty who teach CH 221 and CH 104 to work together during the summer to revise proposed course outcomes and topics for preparatory chemistry and to develop course materials. Funding will also support development of materials for an online version of this class after it has been taught at least once in the classroom. This class will benefit students by providing efficient and effective advance preparation for studies in general chemistry. In F08, nearly 144 students registered for CH 221. Of those students, 22% took CH 104 specifically to prepare for CH 221. Of the 72 students registered in CH 104 during F08, 38% are taking CH 104 specifically to prepare for CH 221. CH 104 was designed to meet a lab science general education requirement, not be a preparation class for general chemistry. Additionally, 75% of CH 221 students surveyed during fall term 2008 indicated they had taken or wished they had taken a previous chemistry class before general chemistry. The proposed 3 credit with no lab class will better serve students and will also provide greater flexibility in scheduling for students and staff.

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.

How is the initiative linked to Unit Plan recently submitted? By developing a preparatory chemistry class to be taught in the classroom initially and later online, we will be working toward our most recent unit plan objectives of: 2) Increase retention among science majors, especially biology/pre-med/pre-pharm students

4) increasing online learning options for students

7) developing additional curricular enhancements

How does it continue the achievement of those goals?

2) We created chemistry problem solving (CHPS), a supplemental studies class for CH 221. The CHPS class assists students while they are in CH 221, but we need something to increase their chances of success before they get to CH 221. Increasing student success will lead to increased retention. The proposed preparatory chemistry class will be designed specifically for students with little or no previous chemistry experience, many of which typically do not succeed in general chemistry. Offering the course multiple terms will also make progress on the goal of offering multiple tracks for majors in all areas of science and will increase FTE.

4) During the initial classroom offering of the preparatory chemistry class, materials will be developed to offer the class online. Because this class has no lab we will be able to offer it exclusively in the online format, meeting a goal of the science division and the college.

7) In developing the preparatory chemistry class, both full time and part time chemistry faculty will work to identify content areas needing support, write learning outcomes, and develop course materials. Some of this work has already begun. Faculty teaching CH 221 and CH 104 provided input on course topics and surveyed students in their classes to assess the need for this prep class. The course was approved by the Curriculum Approval Committee at their January meeting.

How is the initiative linked to the efficiencies and productivities plans from last year? An initiative from last year was Rapid Transfer, which aimed to more effectively use the curriculum we already have. Having students take CH 104 in preparation for CH 221 is an inefficient use of resources, hence this proposal to develop a more efficient preparatory class. Additionally, many potential students are required to take chemistry in order to transfer to a university. Increased success in chemistry will benefit students as they work to transfer to a four year school and will have a positive impact on enrollment retention and success in other science major classes, all part of the Rapid Transfer goal.

Describe the resources needed:

100 hours of Curriculum Development

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.

Specific outcomes are:

- 1. increased student success in CH 221 compared to current levels (completion and success data from IRAP).
- 2. high level of student satisfaction with the Prep course and their first term experience in CH 221 (survey data).
- 3. increased options for student success.
- 4. increased FTE in Chemistry discipline.

Department Priority:

3

Unit Resources:

Priority ranking for this initiative was determined by SAC members drawing numbers randomly. All the initiatives are valuable to the proposing disciplines and all have the support of the Division.

The following resources will be devoted to this project: faculty work time not offset by curriculum development hours to develop outcomes, topics, course materials; faculty involvement from all disciplines engaging in the stakeholder process; equipment; classrooms; demonstration materials already available within the department; support from the Physical Science Stockroom staff and Coordinator; and support from the Science Resource Center (SRC).

Funding Request: Carl Perkins

Funding Request: Curriculum Development

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

CH 150 Preparatory Chemistry

Brooke Taylor is submitting the request, with Gary Mort, Shelley Gaudia, and part-time faculty Londa Smith, Harry Rice, Harriet Behm, and Mary Coville. Stakeholders meeting was held December 3rd, and the course was approved at the January Curriculum meeting.

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)

CH 150 Preparatory Chemistry

Initial instructional goals and objectives have been developed as part of the curriculum approval process (required on forms). No lab packet is needed for this course. Practice, quizzes, exams, presentation and demonstration materials will be developed by a collaborative effort of faculty during summer. Online materials will be developed while the course is taught in the classroom.

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

CH 150 Preparatory Chemistry

The course goals and objectives were developed for the curriculum approval process and the course was approved at January curriculum meeting. During the summer course presentation and demonstration materials will be developed in collaboration with other chemistry faculty. If the funding is denied this work will be completed mainly by Brooke Taylor (with very little collaboration from other faculty). During FY10, we plan to offer a minimum of one section in the classroom and develop the online materials concurrently in order to offer an online version also during FY10. If funding is denied the timeline for offering the online course will be significantly delayed.

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

The goals for the Science Divisions plans for FY10 are

- 1. optimizing sustainable access for students and options for quality learning; and
- 2. optimizing the curricula and resources we already have (continuing from FY09).

This initiative meets these goals by increasing retention among science majors, increasing online learning options for students, and developing additional curricular enhancements.

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

CH 150 Preparatory Chemistry

Funding of this project will provide support for faculty to collaborate in the development of the course (3 full time faculty working with up to 4 part time faculty, thatâ??s almost the entire chemistry discipline). Collaboration will include the development of the new course as well as related courses, CH 104 and CH 221. Without the funding the development work will be completed by only one faculty member. Faculty will also benefit by having better prepared students in their general chemistry classes.

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

CH 150 Preparatory Chemistry

24 students per section, 2 sections per academic year initially with the potential to add sections if demand is high (increases FTE as an added benefit). This course does not duplicate anything the UO offers.

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.

CH 150 Preparatory Chemistry student benefits:

The course will be taken prior to students beginning the general chemistry sequence and is designed specifically to prepare students for CH 221 before they begin the sequence. Preparatory chemistry is an efficient option for students needing advance preparation because the course is specifically designed to prepare students for CH 221, 222 and 223 and will focus on fewer topics in more depth than CH 104. The proposed course is 3 credits instead of 5 credits so students will pay less tuition and will have greater schedule flexibility (3 hours versus 7 hours on campus). The course also has the potential to be offered in an online format to reach a wider population. The new course will develop a community among students because they will know each other when they take CH 221 and will use the same text as CH 221, saving the students money. Students will also be aware of resources available to help them succeed before entering the 221 sequence.

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.

CH 150 Preparatory Chemistry Materials will be developed suitable to all learning styles.

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.

CH 150 Preparatory Chemistry

CH 221 full time faculty are working to green the general chemistry labs as part of the Meyer Fund for a Sustainable Environment grant. Increased success and retention in CH 221 will provide a larger number of students the opportunity to learn about sustainability in a chemistry context. Green chemistry (sustainable) examples will be used when appropriate, for example the energy content of fuels will be analyzed when discussing the heat involved in chemical reactions.

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.

CH 150 Preparatory Chemistry

Initial design will be for a typical classroom with in-class activities, practice, and

demonstrations. Online activities will be developed for use on Moodle during the initial course offering so the course can be offered in an online format later in FY10.

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.

100

Can this initiative be partially funded?

Yes

Partially funded curriculum development HOURS requested:

70

Explanation of effect of partial funding:

The project will suffer. With partial funding summer collaboration with part-time faculty will be unlikely and/or high quality online materials for the course will not be developed.

Funding Request: Technology Fee