

Eastern Wyoming College

Instructional Program Review 2012 - 2013

Program: Science Department

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EASTERN WYOMING COLLEGE Science Department Program Review

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Part I: Statistical Data from the past three years:

Science Degree Statistics (Biol, Env. Sci, and Wildlife A.S.)	2009-2010	2010-2011	2011-2012	5-Year Average
# Students Majors	8	10	3	8
# Passed Graduates	3	0	0	1

Annual FTE Enrollment (Science Courses)	2009-2010	2010-2011	2011-2012	5-Year Average
Annualized FTE Enrollment	102.0	94.2	103.3	98.1
Annualized FTE Faculty	6.8	6.5	6.2	6.7
Biology	62.9	62.1	66.3	60.9
Botany	0.5	0	0	0.2
Chemistry	24.3	11.3	15.5	17.9
Geology	2.7	3.2	3.2	4.0
Molecular Biology	0.8	1.5	1.5	1.6
Physics	0	1.8	2.3	1.3
Zoology	10.9	14.3	14.5	12.1

FTE = Full-time equivalent

Modes of Delivery:

online compressed video face-to-face

Student Access Points:

Our students are largely first semester traditional students, but include non-traditional and transfer students as well.

Part II Narrative Analysis

Description of Community Need/ State and National Trends:

The major role of the Science Department is to provide science instruction for students who plan careers in health care fields, agriculture, science education, engineering, veterinary medicine, and animal science. Science department courses also serve to meet the “lab science” science requirement for graduation from EWC and four-year transfer institutions. Science department courses represent 9.0% of EWC’s 5-Year Average Annual FTE enrollment.

The Science Department offers three degree programs -- A.S. Degrees in Biology, Environmental Science, and Wildlife and Fisheries Biology and Management. Enrollment in these degree programs is quite low. Because of these low enrollments, several of the sophomore level Wildlife and Environmental Science courses have not been offered in the past few years, or have only been offered as Independent Study courses.

Activities in Support of Student Recruitment and Retention

Science Department faculty members are concerned about low enrollment in sophomore level science courses such as Organic Chemistry and Physics. Because many students come to EWC under-prepared for taking college level math and science courses, they often cannot take the freshmen level courses until their second year (after having fulfilled the math pre-requisites on the science course).

It is hoped that efforts could be focused on recruiting Science Majors who are academically prepared to take college level math and science courses (i.e. those with higher ACT scores) as freshmen. These efforts could be aided by offering scholarships early in the Spring to academically well-qualified Science Majors as they are making decisions about which college to attend.

Though Science Division scholarships are primarily awarded to incoming freshmen, each year a few are awarded to returning students to encourage retention of those students who have been very successful in their freshman science and math coursework. EWC also awards several NASA Space Grant scholarships to help retain Science Majors.

After a two-year hiatus, EWC's Undergraduate Research Program is being revived through funding from a Wyoming INBRE grant from the NIH. The course work associated with this program will give students the opportunity to participate in a research project. It is hoped that the addition of this undergraduate research opportunity will make EWC's science areas of study and degree programs more appealing to students.

Science faculty members are frequently involved in college-wide activities such as College-for-a-Day, science fairs, and as guest speakers or presenters for various groups. In addition, they contribute to the community by their involvement in various organizations, churches, and other community activities.

Assessment of Student Learning:

There have been no degrees conferred in Biology, Environmental Science, and Wildlife and Fisheries Biology the past two years, so a formal outcomes assessment student learning of graduates has not been conducted recently. Assessment of Student Learning in Science courses is conducted through Classroom Assessment Tools (CATs), Course Assessments, student grades, and as part of the Outcomes Assessment of our Pre-Professional graduates.

Strengths of the Program and Faculty:

EWC's Science classes are typically small, allowing for one-on-one instruction. Labs are taught by the lecture instructors (rather than teaching assistants), so lab instruction is of high quality and reinforces lecture topics.

EWC Science Department began offering BIOL 2020 (Gen Bio 2) online in Spring 2012, and will be offering MOLB 2210 (Pathogenic Microbiology) online in Fall 2013 to allow students in our Outreach sites to take additional science courses previously not available to

them. Additionally, faculty members have been meeting annually with High School instructors who offer EWC science courses as concurrent enrollment classes (in Biology and Chemistry) to help ensure that those courses are equivalent to the on-campus experience.

The Science Department has highly qualified and hard working faculty members who work well together. The science faculty members regularly attend state articulation conferences in Biology, Physics and Chemistry, and continue to incorporate new technologies in their laboratories as budgets allow. The remodeling of the Science Wing classrooms and laboratories in 2011 significantly upgraded our facilities, and have made the lab spaces more functional.

Part III Recommendations

Faculty Recommendations:

EWC needs to continue to offer a wide range of courses for students in science majors to facilitate our students' entry to, and success in, transfer and professional programs. Also, to best serve our students, the faculty needs to continue professional development activities, and maintain articulation with other college science programs.

Laboratory supply budgets need to increase annually to keep up with rising costs of materials and shipping.

Recruitment of quality "math & science ready" students continues to be an important goal. Additional numbers of academically well prepared science students at EWC would benefit the college in a variety of ways. Their increased numbers would improve enrollment in our second year science and math courses. Since many of these students are high-achieving students, they often serve as our tutors in the Learning Skills Lab, and their presence in EWC's General Education classes raises the overall quality of classroom interaction.

There is concern about the low student enrollment in the Biology, Environmental Science, and Wildlife and Fisheries Biology and Management degree programs. It is believed that students interested in these degrees more commonly choose to attend colleges which offer a broader range of courses in those areas, and it is unlikely that we could offer enough additional courses to entice more students to pursue those degrees here.

Division Chair Recommendations:

1. The quality and variety of course offerings for students majoring in the sciences needs to continue. While several courses have been dropped from the catalog, others have been added which have better addressed the needs of students transferring to the University of Wyoming and Chadron State College. Faculty need to continue to attend annual conferences, workshops, articulation meetings and continue to participate in the INBRE program.
2. Budget allocations for supplies and equipment need to be increased to reflect their increased cost and continual need to replace items as they become outdated or diminish through attrition.

3. Enrollment in Biology, Environmental Science, and Wildlife and Fisheries Biology and Management degree programs remains low. However, small increases in enrollment over the past year have been encouraging. National trends indicate an increasing need for workers trained in the Environmental Sciences, Natural Resources Conservation, and related fields. Efforts to recruit students who demonstrate a high aptitude in science and mathematics needs to be increased by offering scholarships or other forms of incentive. Science Faculty should continue to collaborate to offer a high quality and variety of courses but could perhaps consider reducing the number of programs from three to one.

Vice President's Recommendations:

The Science faculty members are dedicated and highly qualified. Indeed, Eastern Wyoming College is fortunate to have this caliber of full-time faculty members. In addition, many of our high school partners are able to offer one or more science classes via concurrent enrollment. The full-time faculty members have been collaborating closely with these adjunct faculty members to ensure the quality and common course objectives of the science courses. Overall, the science courses contribute about one-tenth of all FTE delivered by Eastern Wyoming College. Most of these courses are clustered under Biology, Chemistry, and Zoology.

The extensive science hallway remodel of a couple of years ago has improved our on-campus classrooms and laboratories. This was greatly appreciated by faculty members and students as the rooms had been out-of-date and sorely in need of renovation. The newly planned branch campus building in Douglas will also provide a modern and efficient science classroom/laboratory space.

I agree with the faculty and division chair recommendations and provide the following:

1. Continue to work closely with recruiters and others to attract more students into science areas. Students who enter with math and science readiness are more likely to finish the degrees and to participate in the sophomore level courses that our instructors are qualified to deliver. Whereas our freshman-level courses are typically full, the sophomore-level courses are often lightly enrolled and are often cancelled or turned into independent study courses depending on the situation.
2. Encourage students to participate in science activities (both curricular and non-curricular) such as the research methods class or the INBRE project which is now headed by Chris Wenzel.
3. Review and revise as necessary the distance learning rotation schedule to help ensure outreach students are able to enroll in the necessary laboratory science courses needed to complete their degrees. Overall, this group has been very responsive in supporting this direction.
4. Enrollments as majors for these areas are typically quite low. Consider combining the degree tracks into one "meta" science program which could encourage students to finish degrees with us, as well as provide some flexibility for more science exploration in the freshman/sophomore years of college. Review the credits and curriculum of the programs to whittle down the hours to around 60 credits for these areas—as in keeping with the national and statewide trends to try to keep associate degrees to 60 credit hours and baccalaureate degrees to 120 credit hours.