

# Eastern Wyoming College

## **Instructional Program Review 2018-2019**

### **Program: Science Department**

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## EASTERN WYOMING COLLEGE Science Department Program Review

**Program Name: Science Department**

**Part I: Statistical Data from the past three years:**

Science <u>Degree</u> Statistics (Biology and Wildlife A.S.)	2015-2016	2016-2017	2017-2018	5-Year Average
# Students Majors	11	14	16	12
# Degrees Conferred	1	0	1	1

Science <u>Department</u> Statistics	2015-2016	2016-2017	2017-2018	5-Year Average
Annualized FTE Enrollment	82.6	83.5	80.8	86.4
Annualized FTE Faculty	7.5	6.3	6.0	7.0
Annualized FTE Enrollment by Science Department				
Biology	53.8	59.6	55.5	56.7
Chemistry	13.2	10.8	11.0	14.3
Geology	2.3	2.0	0.0	2.2
Molecular Biology	2.5	1.3	2.7	2.5
Physics	2.3	0.0	2.2	1.2
Zoology	8.5	9.7	9.5	9.3

FTE = Full-time equivalent

Modes of Delivery:

online

Zoom

face-to-face

Budgets:

*Biology*

Educational/Office Supplies, Printing/Copier, Telephone/Postage: \$6388; Travel: \$380

*Chemistry*

Educational/Office Supplies, Printing/Copier, Telephone/Postage: \$2955

*Physics*

Educational/Office Supplies, Printing/Copier, Telephone/Postage: \$400

*Microbiology*

Educational/Office Supplies, Printing/Copier, Telephone/Postage: \$1039

Student Access Points:

Our students are largely first semester traditional students, but include a few 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, veterinary medicine, natural resources fields, and ecology. Science department courses also serve to meet the Lab Science General Education requirement for graduation from EWC and four-year transfer institutions. Science department courses represent 7.4% of EWC's 5-Year Average Annual FTE enrollment.

The Science Department now offers two degree programs—A.S. Degrees in Biology and Wildlife and Fisheries Biology and Management. Enrollment in these degree programs is relatively low (5-year average is 12 majors). However, this number has increased by two over the past three years due in part to the implementation of the 2+2 articulation agreement with the University of Wyoming.

### **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.

EWC's Undergraduate Research Program was re-established in 2013 and is funded via a Wyoming INBRE grant from the NIH, and continues to serve an increasing number of students. The course work and student employment associated with this program provides 3-4 students a year the opportunity to participate in a significant biomedical research project. It is our hope that the availability of an undergraduate research opportunity will make EWC's science degree programs more appealing to students, hence, increasing our numbers.

### **Assessment of Student Learning:**

There have been two A.S. degrees conferred in Biology and/or Wildlife and Fisheries Biology in the past three years. Although this number is low, it is expected to continue to increase with the 2+2 articulation agreement which was implemented at the beginning of the 2015-16 academic year in collaboration with the University of Wyoming. Assessment of Student Learning in Science courses is conducted through Classroom Assessment Tools

(CATs), Course Assessments, student grades. Rubrics have served as part of the Outcomes Assessment of our Science graduates during the past three years, and we anticipate the development of a Capstone Course in the years to come.

### **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 offers BIOL 1000 (Principles of Biology) and BIOL 1010 (General Biology I) in online and Zoom formats to allow students in our Outreach sites to take science courses. Science courses (primarily BIOL 1000 and CHEM 1000) are offered through concurrent enrollment, and EWC faculty members have been meeting annually with the High School instructors who teach them to help ensure that these courses are equivalent to the on-campus experience.

The Science Department has highly qualified and hardworking faculty members who work well together. The science faculty members attend state articulation conferences in Biology, Physics and Chemistry when they are held, and continue to incorporate new technologies in their laboratories as budgets allow.

### **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, enhance our research facilities, and their presence in EWC's General Education classes raises the overall quality of classroom interaction.

Despite the current low student enrollment in the Biology and Wildlife and Fisheries Biology and Management degree programs, student numbers have increased over the past three years with the UW 2+2 articulation transfer agreement. Several Science degree-seeking students have recently visited our campus and expressed strong interest in the programs.

**Division Chair Recommendations:**

The faculty needs to continue to work with programs such as Nursing and Pre-professional to schedule and staff their necessary courses.

The faculty has been aggressive about obtaining grants for students. Faculty needs to continue to work with NASA and INBRE to allow students access to the funding and to research opportunities.

Staffing in Biology is a concern. While the budget may dictate that no new personnel are hired, critical decisions need to be made about the current faculty workload priorities with careful attention to student numbers.

Science Faculty work together well as a team, and should continue to collaborate to offer a high quality and variety of courses.

**Vice President's Recommendations:**

The Science Faculty and Department Head provide valid observations. They are cognizant of the challenge facing the Science Department at EWC including the academic preparedness of incoming students and stagnant or declining program numbers. I notice that several of their goals have been carried forward from their previous Program Review and support their continued efforts in those areas. As resources remain limited, it is important for the department to be reflective regarding the areas in which they can contribute to the successful accomplishment of those initiatives. Leveraging the ability of the faculty to collaborate with EWC's recruiters, College Relations, and Financial Aid departments on strategies to recruit high achieving students is recommended.

Science faculty have been increasingly active in the pursuit of grant funding to support their programs and students. This is an important contribution as budgetary resources remain limited. At the request of the department, the Chemistry budget was reviewed and increased to offset a combination of past cuts and increasing costs. The challenge of increasing costs of materials is a real issue in the department, and growing enrollment—while contributing to additional costs—needs to be a priority in order to maintain or grow the allocation of resources, both financial and personnel, to the Science Department. The faculty and workload issues noted by the Department Head are complicated by low enrollment in certain classes which further contributes to reduced workload.

In conclusion, the Science Department possesses an awareness of the challenges in their department and is encouraged to work with entities across campus to address them. As noted in their review, the Science faculty are skilled and dedicated professionals who enjoy positive collaborative relationships. They are highly motivated and seek opportunities for themselves and their students on the state and national level. These are strengths of their department that will contribute significantly to their success in meeting challenges they face.