Institutional Effectiveness

2019-2020

Program:Biology MS

College and Department:College of Arts & Sciences-Department of Biology

Contact:Christopher Brown

Mission:

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membership, special field trips that are not class related, involvement in research activities of other graduate students, and attendance at scientific meetings.

SLO 3: All Master of Science candidates in the Department of Biology will acquire abilities to use scientific reasoning as codified by the structured process commonly known as the scientific method.

All Master of Science candidates in the Department of Biology will acquire abilities to use scientific reasoning as codified by the structured process commonly known as the scientific method. This outcome will be demonstrated through their research, written thesis, and oral comprehensive examinations.

research track. The departmental chair monitors the number of faculty promoted and the number of faculty agreeing to the research track on an annual basis.

SLO 1: Demonstrate a command of general biology concepts and principles

1. Comprehensive Oral Exams:

Comprehensive Oral Exams are conducted at end of each graduate student's degree program. These exams are Tf 0.004 Tc -0s.eyh te s ai-5.5 ( )id.2 (u)2.3 (al b)2.6 (r)1ad.2 (u)2.3 (al 7.9 (e)7. ( )10.

research are included to ensure that each student understands the implications of their research and the scientific method.

Results:

PG 1: Increase graduate student enrollment

The Department of Biology has monitored enrollment trends for several years and used these trends to develop strategies to meet this goal [Program Goal 1 (Table 1)]. In 2019, enrollment surpassed all recent years with 24 M.S. students, due primarily to an increase in externally funding grants, enabling faculty to bring in more students on research assistantships. Retention of M.S. students has been approximately 100% since 2005, with all but two students graduating.

Table 1. Number of graduate students (M.S.) enrolled as Biology majors by year.

Fall	Number of Graduate Students
2015	21
2016	16
2017	20
2018	19
2019	24

PG 2: Increase diversity

Efforts to increase diversity have met with mixed results (Table 2). Very few minorities have enrolled in our graduate program; four were enrolled in 2017, with this percentage being the highest in recent history. During all but the most recent two years, at least 50% of our M.S. students have been female.

Since the majority of our graduate students conduct natural resource research, NAUFWP data for 2010-2011 indicate that females represent approximately 44% of graduate students enrolled in natural resource majors.

Table 3. Number of faculty promoted to the rank of Associate Professor and Professor.

Fall	Associate Professor	Professor
2015	0	0
2016	0	0
2017	1	0
2018	2	0
2019	0	0

To date three members of the faculty have selected the research option over the past 5 years. The majority of faculty members selected the standard option, and one of the senior most faculty members (who retired after Fall 2019) selected the teaching option. However, the number of faculty members actively engaged in research with graduate students has been consistently at or above 80% (Table 4).

Table 4. Number of graduate faculty members actively engaged in research with graduate students.

Fall	Number of Faculty Conducting Research with Graduate Students	Percent of Departmental Faculty
2015	14	

SLO 3: Use scientific reasoning

Comprehensive Oral Exams. All students successfully passed their oral exams during the first attempt, and many demonstrated a mastery of the subject matter of which they were tested (Table 6).

PG 3: Increase faculty involvement in research

No changes to the program goal will be made as there is still room for improvement. New hires, due to retirements, are expected to increase the number of faculty members involved in research and active with graduate students.

Newly hired faculty members are encouraged to develop their research and graduate programs upon arrival. With the implementation of the differential teaching load, faculty members are annually encouraged to select either the standard or research option when discussing agreements of responsibility with the chairperson.

SLO 1: Demonstrate a command of general biology concepts and principles

No changes to the current learning objective will be made. A program review was approved for the M.S. program during the 2015-2016 academic year. One of the suggestions that is related to this outcome was to quantify the results beyond pass and fail. Following a faculty decision as to how this suggestion is to be addressed, we will modify the student learning outcome accordingly. However, there has been no strong desire to move to a letter graded system among the graduate faculty.

We have been very pleased with the performance of our graduate students in these areas on comprehensive oral examinations. The departmental Graduate Policies Committee will continually monitor results of comprehensive oral exams to ensure that this outcome continues to be met. Faculty

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Appendix 1: Curriculum Map

Curriculum support for learning outcomes of the graduate program in the Department of Biology. Some courses included on this list have been taught irregularly over the past 10 years. Several courses are dual-listed under both BIOL (Biology) and WFS (Wildlife and Fisheries Sciences); these are listed here under BIOL only.

		Learning Outcomes		
Course No.	Title	Demonstrate Knowledge	Extra-curricular Activities	Scientific Method
BIOL 5000	Parasitology	X		
BIOL 5040				

BIOL 5750	Medical Microbiology	X

WFS 5640	Waterfowl Ecology & Mgmt.	X		X
WFS 5660	Wild Bird Ecology	X		
WFS 5670	Wild Mammal Ecology	X		
WFS 5700	Habitat Management			X
WFS 5710	Fisheries Management			X
WFS 5711	Fisheries Management			X
WFS 5730	Conservation Biology		X	X
WFS 5740	Wildlife Principles	X		X
WFS 5760	Fish Culture		X	
WFS 5770	Nongame Species Mgmt.	X	X	
WFS 5870	GIS for Wildlife & Fisheries	X		