

**BACHELORS OF SCIENCE IN NATURAL SCIENCE
(CONSERVATION BIOLOGY EMPHASIS)**

Program Information

Organization: Oglala Lakota College

Instructional Level: 13-16

Indirect Measures:

1. Advance to a graduate program
2. Entry into the STEM workforce

Direct Measures:

1. Portfolio of work deemed *Satisfactory* or better on Departmental rubrics
2. Graduate Record Exam

Potential employment:

1. Conservation Biologist (M.S. required)
2. Wildlife Biologist (M.S. required)
3. Ecologist (M.S. required)
4. Biological Resources Technician
5. Environmental Technician
6. Wildlife Technician

Entry Requirements: Students have enrolled in Intermediate Algebra.

Program Outcomes

1. Students can express natural phenomena and relationships quantitatively:

1.1 Introduced: Phys 113 Survey of Physics

1.2 Reinforced: Math 123 Introduction to Statistics

1.3 Mastered: Math 163 Trigonometry, Math 483 Multivariate Statistics

a. Direct Measures

a.1 embedded assessment in final exams

b. Criteria

b.1 demonstrate the use and application of formulas to express physical, biological, ecological, and spatial phenomena and relationships.

b.2 demonstrate the ability to use algebraic expressions to solve for unknown variables in real-world situations.

b.3 demonstrate the ability to infer population parameters using

applicable sampling techniques and descriptive statistics.

b.4 demonstrate the ability to use multivariate statistics to explore relationships within and among variations in population parameters, and generate new hypotheses based on statistical analyses.

2. Students can relate the biosphere and ecosphere through the field and laboratory:

2.1 Introduced: 151/153 Biology I, 161/163 Biology II

2.2 Reinforced: Chem 231/233 Chemistry I, Chem 241/243 Chemistry II

2.3 Mastered: Bio 303 Field Ecology

a. Direct Measures

a.1 field and laboratory notebooks

b. Criteria

b.1 demonstrate the ability to take and maintain notes describing activities in the field and laboratory, including archival procedures where applicable.

b.2 demonstrate the ability to conduct prescribed field and laboratory exercises in a classroom setting.

b.3 demonstrate the ability to conduct original field and laboratory exercises in a research setting.

b.4 demonstrate the ability to independently research and apply standard operating procedures applicable to field and laboratory practices in conservation biology.

3. Students can characterize ecosystem health based on physical, chemical, and biological factors.

3.1 Introduced: Geol 143 Physical Geology

3.2 Reinforced: Bio 223 Ecology

3.3 Mastered: Biol 453 Advanced Ecology, Biol 463 Evolution

a. Direct Measures

a.1 semester projects

b. Criteria

b.1 demonstrate detailed knowledge of biological principles, processes, and theories.

b.2 demonstrate detailed knowledge of how physical, chemical, and biological factors influence biological habitats.

b.3 demonstrate detailed knowledge of ecological principles, processes, and theories.

b.4 demonstrate an understanding of the emergent ecological

properties of populations and communities and their role in the evolution and survival of species.

4. Students can manipulate geospatial and remotely sensed data, manage GIS projects, and independently create projects using an ArcInfo GIS platform:

4.1 Introduced: GIS 213 Introduction to GIS

4.2 Reinforced: GIS 313 Applications of GIS

4.3 Mastered: NSci 493 Senior Research

a. Direct Measures

a.1 semester projects

b. Criteria

b.1 demonstrate detailed understanding of the theory, acquisition, use, and limitations of remotely sensed data.

b.2 demonstrate detailed knowledge and understanding of the use and application of basic ArcInfo GIS platform functions and capacities.

b.3 demonstrate detailed knowledge and understanding of the use of metadata.

b.4 demonstrate the ability to gather geospatial data from the field and from existing databases.

b.5 demonstrate the ability to use original geospatial data, or existing geospatial data in an original way, in semester projects and original research.

5. Students can describe the flora and fauna of the Black Hills and Badlands in South Dakota:

5.1 Introduced: Rang 103 Botany of the Northern Plains

5.2 Reinforced: Bio 413 Mammalogy

5.3 Mastered: Bio 463 Conservation Biology

a. Direct Measures

a.1 semester projects

b. Criteria

b.2 demonstrate broad knowledge of biological description, taxonomy, and classification, and how functional morphology demonstrates evolutionary and ecological history.

b.2 name and describe the flora of the Black Hills, badlands, and prairie areas of western South Dakota in English vernacular, Lakota, and scientific language, where applicable.

b.3 name and describe the vertebrate fauna of the Black Hills, badlands, and prairie areas of western South Dakota in English

vernacular, Lakota, and scientific language, where applicable.

b.4 demonstrate a detailed and thorough knowledge and use of the scientific literature pertaining to the flora and faunas of the northern Great Plains.

b.5 demonstrate a detailed understanding of the primary wildlife conservation and management issues pertaining to the flora and fauna of the northern Great Plains.

6. Students can conduct an independent research project in conservation biology:

6.1 Introduced: Sci 273 Scientific Literature & Writing

6.2 Reinforced: NSci 393 Research Methods

6.3 Mastered: NSci 493 Senior Research

a. Direct Measures

a.1 portfolio of original work

b. Criteria

b.1 demonstrate broad knowledge of fundamentals acquired through coursework, including general knowledge as well as developing skills in library research, interpreting data, synthesis, and scientific writing.

b.2 utilize the current primary scientific literature, including searching data bases, identifying appropriate sources, and reading and understanding papers.

b.3 use knowledge gained in classroom and during discussions to conceive and execute their own project.

b.4 communicate original scientific work to colleagues and mentors in oral and written form.

b.5 exhibit strong teamwork and problem solving skills.