Cankdeska Cikana Community College

Natural Resource Management Program Review

May 4, 2018

I. Program description and relationship to the Cankdeska Cikana Community College mission. (See also Appendix A).

The Associate of Science in Natural Resource Management at Cankdeska Cikana Community College facilitates acquisition of scientific scholarship and hands-on experience in the natural resources field to assist students in realizing their career goals and achieve independence. Students learn Natural Resource Management policies and techniques, identification of important and culturally relevant species, and how our natural environment works through the connections of land, water, sky, and the people and animals inhabiting these spaces. As a result, students become effective members of our global society and are able to communicate intelligently on a myriad of topics. The Natural Resource Management Program seeks to develop future fish and wildlife biologists, climatologists, agriculturalists, environmental policy makers, and much more. This is a diverse field with wide applications in nearly any setting. To aid in the development of these future careers, the Natural Resource Management Program (Program) may be transferred in its entirety to a four-year program of study.

Reflection

Strengths:

- Two instructors with Master's degrees in complementary aspects of Natural Resource Management (land and water) who have both public and private sector work experience.
- Natural Resource positions are prevalent, with applications to nearly any sector of business or government work.
- Supplemental resources available for the Program due to the college's designation as a Land Grant institution.

Concerns:

- Low enrollment.

Recommendations

- Collaborate with the outreach coordinator regarding possible business student recruitment strategies.

II. Program background information, enrollment and breadth (See also Appendix B).

Current staff include:

- Ms. Heidi Ziegenmeyer, Director/Instructor, April 2018-Present
- Mr. Douglas Cudworth, Assistant Director/Instructor, July 2013-Present

There has been an exceptionally high rate of turnover in the Natural Resource Management Program, particularly in the role of Director/Instructor. There have been 5 Directors in the past 9 years, including the current director. Both the Director and Assistant Director serve as full-time Instructors, teaching 12-15 credits per semester.

For a list of all Natural Resource Management course offerings, please refer to Appendix B. In summary, the coursework offered provides both an overview of general environmental principles as well as opportunities to delve more in-depth and begin to determine a specialization in the discipline. These specializations include weather, water resources, plants, wildlife, soil science, geospatial technology, or special independent project of the students' choice. The hope is that the coursework will provide a solid foundation for transfer to a 4-year institution and increased specialization in the field of interest.

Enrollment in the Natural Resource Management Program is low relative to enrollment at the college. It does not seem to vary with enrollment at the college, but instead is dependent upon some other unknown variable(s). The ratio of Program graduates relative to college graduates is also very low due to the low enrollment numbers overall. The class sizes are very small, so students benefit from individual attention and their unique interests in the environmental field are nurtured by instructors and staff.

Reflection

Strengths

- Variety of courses that give both overview and specialization opportunities.
- Personal instruction due to faculty to student ratios.

Concerns

- High Director turnover rate.
- Lack of enrollment in the program.

Recommendations

III. Program Quality and Assessment (See also Appendix C).

The Program possesses high-quality facilities, equipment, and technology to maintain the effectiveness of its courses and programs. The Program has two spacious classrooms. One can accommodate 30 students and the other classroom functions as a laboratory classroom where students can explore Program topics hands-on. Each classroom has Smartboard technology and computer monitor projection capability. The Program has its own library containing pertinent reference books for instructor and student use.

The Program delivers instruction in ways that best suit the materials and student needs. For example, those working on geospatial technology have access to that technology in the classroom during lectures. Students studying ecology or wildlife identification work in the laboratory classroom where samples can be handled, microscopes can be used to view specimens, and excursions to do field work are a regular occurrence. Evidence that the coursework meets students learning needs is found in a recent graduate; the Program graduate is currently enrolled at a four-year institution and completing coursework with A and B level work. As more students enroll in the Program there will be more evidence of student success.

Program faculty utilize Essential Studies Outcomes such as critical thinking skills, communication skills, technological literacy functions, and personal attribute criteria for evaluating students. Faculty also uses test scores and class projects as direct and indirect means of student evaluation. This data is accumulated and emailed directly to the Assessment Team. Faculty also review this information to identify areas to improve for the next semester. Please refer to Appendix C to review recent Assessment data.

Reflection

Strengths

- Computer workspaces and laboratory classrooms.
- Variety of instructional delivery methods utilized as appropriate for course material.
- Proximity to appropriate ecosystems to facilitate study of Program topics.

Concerns

- Small sample size to determine Program success when transitioning to four-year institutions or careers.
- Possible need for improved teacher training to update faculty on latest educational techniques.

Recommendations

- Instructors should collaborate more closely with each other and ask for assistance from the Assessment team.
- Explore opportunities for faculty development.

IV. Program cost effectiveness and ability to meet occupational needs (See also Appendix D)

According to the Bureau of Labor Statistics, careers in environmental science are expected to change as fast as average or much faster than average from 2016-2026, dependent upon the specialty. Careers in geology and petrochemicals are projected to increase faster than those in conservation, agriculture, urban planning, or wildlife though job numbers are still expected to increase in those fields. These positions typically require a bachelor's degree, though some fields can be entered with associate's degrees and others require a master's degree. Careers in agriculture, fishing, or forestry that do not require any degrees are expected to decline at a faster than average rate. The college is not located in a densely populated area, so students may have to move away to pursue careers in their desired specialties, depending on their interests and the availability of related jobs.

The presented revenue and program budget indicate that the Program is healthy and has a positive general outlook. The revenue brought in that is based on Indian Student Count is not high due to the low numbers of enrollment, but the Program is also funded by a federal Tribal Equity grant. The grant funding is not completely secure, but it is expected to maintain the program for the foreseeable future.

Reflection

Strengths

- Job outlook is positive for those currently studying environmental sciences.
- The Program has adequate funding despite low student enrollment.

Concerns

- The number of jobs available for environmental science fields in the surrounding area is relatively low, though there are opportunities for motivated individuals to start their own businesses in related fields.
- Low enrollment is not ideal and efforts should be made to increase enrollment to keep pace with the level of federal grant money.

Recommendations

V. Ability to positively impact CCCC's relationships, partnerships, and alliances.

The Program contributes to other college programs through significant involvement with outreach and education as part of the Land Grant status of the college. For example, the Health and Nutrition Program provides essential instruction to students and the surrounding community concerning the best methods of dietary habits and food preparation. The Gardening and Landscaping Program provides educational opportunities for community children, services to community families and elders, and supplemental food to the campus cafeteria and community programs that support low-income or other individuals in need.

Faculty make themselves very available to students to provide tutoring or support in whatever way is needed. Faculty have the resources to attend professional development training or to pursue additional coursework to support their instruction at the college.

Reflection

Strengths

- Faculty availability for students.
- Support for faculty to continue their professional development.

Concerns

- Partnerships with the community and within the college are perhaps not fully explored.

Recommendations

- Continue to expand the influence of the Program through outreach and education, which will hopefully also attract more students.

VI. Program Analysis and Reflection Narrative

- The Program has no advisory team but the Academic Dean reviews the course content, design, and delivery each academic year.
- Program students were awarded 1st and 2nd place finishes in the Cankdeska Cikana Community College Wolves Points contest. These students had the most hours of volunteer time participating in campus activities.
- Two program students each completed an environmental research project, which they displayed on a poster in November of 2017 and presented their results at a First American Land Grant Consortium conference for tribal colleges at Arlington, Virginia.
- The population served by the Program has not changed recently. There is a current trend toward the practical application of skills as opposed to academic research. Gearing the program toward marketable skills of this nature would be beneficial to students.
- An obstacle for the program is the high turnover rate of Program Directors. Consistent leadership has been lacking within the Program. There are many avenues to explore as far as teaching, learning experiences, outreach, research, and education. However, without leadership and direction, the Program has not built itself into what it could be. The goal is to tum the Program into a powerhouse of opportunity for students who wish to advance to four-year institutions or to provide hands-on job experience for those who have other pursuits in mind. This is possible due to the support provided by the Land Grant aspect of the Program.

Appendix A—The Cankdeska Cikana Community College institutional table for the Program of Study showing courses offered and sequence.

2 -YEAR COMPLETION		
Fall Term 1		
ENGL 100	First Year Learning Experience	3 credit hours
ENG 110	Composition I	3 credit hours
COMM 110	Fundamentals of Public Speaking	3 credit hours
DS 110	Dakota Thought, Philosophy, and Culture	3 credit hours
NAT 102	Introduction to Natural Resources	3 credit hours
		15 credit hours
Spring Term 2		
ENGL120	Composition II	3 credit hours
ENGL 161	Dakota Language I	3 credit hours
CHEM 115	Introductory Chemistry	4 credit hours
GEOL 105	Physical Geology	4 credit hours
NAT 105	Wildlife Identification	3 credit hours
		17 credit hours
Fall Term 3		
BIOL 124	Environmental Science	4 credit hours
MATH 210	Elementary Statistics	3 credits hours
ENS 202	Environmental Issues	2 credit hour
BIOL 230	Ecology (Nature Study)	4 credit hours
NAT 215	Native Plant ID and Uses	3 credit hours
ENS 210	Soil Science	4 credit hours
		20 credit hours
Spring Term 4		
ENS 240	Ethnobotany	3 credit hours
HPER 217	Personal and Community Health	2 credit hours
GEOG 270	Weather and Water Resources	3 credit hours
GEOG 115	Intro to Geospatial Technology	3 credits hours
ENS 299	Topics in Agriculture/Natural Resources	3 credit hours
		14 credit hours
	TOTAL DEGREE REQUIREMENTS	63 credits

Appendix B-Program Background Information, Enrollment, and Breadth

Faculty Program Staff and Credit Hour Loads

Name	Title/Position	FT/PT/ TEMP	Credit Load/ Semester
Heidi Ziegenmeyer	Director/Instructor	FT	11-14
Douglas Cudworth	Assistant Director/Instructor	FT	12-14

Enrollment and Graduation Data

Semester	NRM Enrollment	Total Enrollment
Fall 2012	6	247
Spring 2013	3	237
Summer 2013	5	84
Fall 2013	7	251
Spring 2014	8	196
Summer 2014	4	86
Fall 2014	5	189
Spring 2015	6	186
Summer 2015	2	61
Fall 2015	4	212
Spring 2016	3	177
Summer 2016	1	54
Fall 2016	5	180
Spring 2017	7	178
Summer 2017	0	28

Appendix C – Program Quality and Assessment

Data from Fall 2017 Assessment

Program Statement: The Natural Resource Management Program is designed to provide the students hands on learning experience to managing environmental parameters and graduate with a well-rounded knowledge of how ecosystems function. The primary aim of this program is to prepare the students for technician positions with the completion of the Associates Degree and to be able to further their career choices at a 4 year institution.

Program Outcomes

1. The student will demonstrate basic resource management principles
2. The student will identify wildlife species, plant species, and current environmental issues.
3. The student will demonstrate technical literacy in ecology.
4. The student will illustrate how altered environments may be re-naturalized.

Essential Studies Outcomes

1. Critical Thinking
2. Communication
3. Technological Literacy
4. Personal Attributes

Course Outcomes—Students will learn (how to):

1. Use scientific language
2. Use field guides and other identification resources
3. Develop observational skills to identify plant species
4. General ecological concepts
5. Ecological relationships between organisms and the environment
6. Environmental Policies and Acts
7. History of Natural Resource Management and TEK involvement
8. Natural resource management techniques
9. Develop introductory understanding of earth materials and earth processes.
10. Increase knowledge of geological sciences.
11. Improve the ability of the students to form ideas, concepts, and proposals on future water and soil issues.
12. Provide students with information to be used both personal and professionally

D-Direct I-Indirect List activity(ies) used to measure student success	Goal	Findings - Results (N = # students met/# total) (Avg. = average grade) Range = lowest to highest grade recorded)	Analysis (Contributing factors - Internal and External -resulting in not meeting goal)	Recommendations	Identify Course Outcome(s) being demonstrated	Identify Program Outcome(s) being demonstrated	Identify Essential Studies Outcome(s) being demonstrated
D – final exam I – plant press project/game	> 85%	N = 4 Avg. = 89.5% Range = 87-96	Students are able to identify plants by common name and use field guides to find the plant.	More stress should be on the scientific names and Dakota names	1,2,3	2,3,4	1,3
D – Final Exam I – student survey	> 85%	N = 2 Avg. =94.3% Range =88-100	Students were able to explain ecological principles in various forms (graphs, diagrams, and paragraph) and demonstrated an understanding during discussions	No recommendations at this time	4,5	1,2,3,4	1,2,4
D – final exam I – student survey	> 85%	N = 1 Avg. = 85.6% Range =85.6	Student is able to explain natural resources management principles and demonstrate how some of the principles are used.	No recommendations at this time.	6,7,8	1,4	1,2,4
D – final exam I – student survey	> 85%	N = 3 Avg. = 29.3% Range = 0-88	One student was able to explain geological processes through diagrams and paragraphs. Two students did not complete all assignments or the final.	There are no recommendations at this time.	9,10,11,12	1,2,3,4	1,2,3,4

Appendix D- Cost Effectiveness and Ability to Meet Occupational Needs

National Employment Projections, 2016 - 2026 Bureau of Labor Statistics	
Occupational Category	**Projected Increase**
Agricultural and Food Science Technicians	6%
Agricultural and Food Scientists	7%
Conservation Scientists and Foresters	6%
Environmental Science and Protection Technicians	12%
Environmental Scientists and Specialists	11%
Geological and Petroleum Technicians	16%
Geoscientists	14%
Hydrologists	10%
Urban and Regional Planners	13%
Zoologists and Wildlife Biologists	8%

Life, Physical, and Social Science Occupations. (2018, April 13). Retrieved May 4, 2018, from https://www.bls.gov/ooh/life-physical-and-social-science/home.htm

Indian Employment Projections, 2014 - 2024 U.S. Dept. of Labor	
Occupational Category	**Projected Increase**
Data Not Available	

Annual Revenue and Expenditures

Term	Enrollment	Tuition	ISC per FTE	SC Revenue	Total Revenue
Fall 2012	6	$9,000.00	$5,664.00	$16,992.00	$25,992.00
Spring 2013	4	$6,000.00	$5,664.00	$11,328.00	$17,328.00
Summer 2013	6	$4,500.00	$5,664.00	$16,992.00	$21,492.00
Fall 2013	7	$10,500.00	$5,850.00	$20,475.00	$30,975.00
Spring 2014	8	$12,000.00	$5,850.00	$23,400.00	$35,400.00
Summer 2014	4	$3,000.00	$5,850.00	$11,700.00	$14,700.00
Fall 2014	5	$7,500.00	$6,344.90	$15,862.25	$23,362.25
Spring 2015	6	$9,000.00	$6,344.90	$19,034.70	$28,034.70
Summer 2015	2	$1,500.00	$6,344.90	$6,344.90	$7,844.90
Fall 2015	4	$6,000.00	$6,717.82	$13,435.64	$19,435.64
Spring 2016	3	$4,500.00	$6,717.82	$10,076.73	$14,576.73
Summer 2016	1	$750.00	$6,717.82	$3,358.91	$4,108.91
Fall 2016	5	$7,500.00	$7,285.28	$18,213.20	$25,713.20
Spring 2017	7	$10,500.00	$7,285.28	$25,498.48	$35,998.48
Summer 2017	0	$0.00	$7,285.28	$0.00	$0.00

Current Five-Year Budget Funding Sources Included: Academics; Excluded: NIFA and TSIP Grants					
	2014-2015	2015-2016	2014-2015	2015-2016	2016-2017
Total Revenue:	**$64,812.00**	**$81,075.00**	**$59,241.85**	**$38,121.28**	**$61,711.68**
Salaries	$90,242.00	$84,764.00	$99,840.00	$96,454.00	$95,466.00
Fringe Benefits	$27,707.26	$25,429.20	$29,952.00	$33,758.90	$28,639.80
Supplies	$5,000.00	$5,000.00	$5,000.00	$5,000.00	$5,000.00
Other (GIS)	$2,500.00	$2,500.00	$2,500.00	$2,500.00	$0.00
Indirect	$20,755.66	$19,495.72	$22,963.20	$22,184.42	$21,957.18
Total Expenditures:	$146,204.92	$137,188.92	$160,255.20	$159,897.32	$151,062.98
Net Gain/Loss:	-$81,392.92	-$56,113.92	-$101,013.35	-$121,776.04	-$89,351.30

Program Evaluation and Review

Criteria	Program Exceeds Expectations	Program Meets Expectations	Program Needs Improvement	Program Does Not Meet Expectations
Sec II Enrollment	Increasing	Steady	Decreasing	Unsustainably Low
Sec III Quality of the Program as Determined from Assessment Information	The program's quality is substantial and notable.	The program's quality is substantial but could be strengthened through curricular and/or program enhancements, e.g. providing additional resources, adding or deleting courses	The program's quality could be strengthened through reconfiguration, e.g. substantial modification of the curriculum and the reorganization of faculty.	The program's quality and/or contribution to the institution is not substantial enough to justify its continuance
Sec IV Cost Effectiveness	Net Gain	Break Even	Net Loss	Unsustainable Losses
Sec IV Projected Occupational Need (Regional and State Level)	Large Need and Growth in This Area	Moderate Need	Minor or Low Need	No Clear Need for This Degree
Sec V Ability to positively impact CCCC's relationships, partnerships & alliances	Relationships are strong – benefits the overall mission of the college	Relationships, partnerships, and/or alliances could be developed to strengthen the program	Relationships, partnerships, and/or alliances need to be reconfigured in order to positively impact the college	Relationships, partnerships, and/or alliances are not positively impacting the college. The program's reduction or phase out would not adversely impact other programs.

The Curriculum Committee makes the following recommendation:

The committee recommends retaining the program with a full review again in three years.

Follow up actions and timeline:

- Work with Outreach to increase recruitment and enrollment.
- Full program review May, 2021.

Completed Program Reviews Verification

Name of Program Reviewed: **Natural Resources**

Heidi Zeigenmeyer Director or Faculty of Record	5-10-18 Date of Review
 Curriculum Committee Chair	5-10-18 Date of Review
Karen Saari Academic Dean	11/7/18 Date of Review
Cynthia Lindquist President (as appropriate)	11-15-18 Date of Review
Not Needed Chair CCCC Board of Regents (as appropriate)	 Date of Review