OGLALA LAKOTA COLLEGE

STEM DEPARTMENT STRATEGIC PLAN:

AY 2013-2018

(Date Prepared: Friday, August 23, 2013)

(Date Updated: May 19, 2014)

VISION STATEMENT

To provide constructivist-learning opportunities in Math, Science, and Technology while incorporating traditional Lakota values.

MISSION STATEMENT

The Math, Science, and Technology learning philosophy emphasizes a constructivist framework, a hands-on approach to improve the quality of life on the Reservation through science and technology.

- Tribal: Support and train new and train existing Tribal Agency professionals in environmental, earth and life sciences, engineering and information technology through academics and shared research
- Community: Positively influence the perception of math, science and technology in Tribal communities through formal and informal learning opportunities in cooperation with the K-12 education community
- Cultural: Support, encourage, and respect Lakota values in all aspects of our academic, research, and outreach efforts.
- Academic: Establish a foundation of academic excellence for our stakeholders in Science, Technology, Engineering and Math.

STRATEGIC GOALS

STRATEGIC GOAL 1: Improve STEM education at Oglala Lakota College

Objective 1.1: Improve student success in the math sequence by 2% per year through alignment with Foundational Studies

Objective 1.2: Improve recruiting and retention of first- and second-year STEM students by 5% per year

Objective 1.3: Maintain or increase the number of students pursuing advanced degrees or entering the science and technology workforce.

STRATEGIC GOAL 2: Develop a sustainable departmental funding model

Objective 2.1: Increase the percentage of institutional support for instruction

Strategy 2.1.1 Align STEM strategic plan to OLC strategic plan by developing goals to sustain STEM programs

Objective 2.2: Increase the number of new principal investigators

Objective 2.3: Increase the total number of refereed publications by one per year

STRATEGIC GOAL 3: Revitalize science and technology instruction to fit a constructivist model

Objective 3.1: Improve access to math, science, and technology workspaces and laboratories by one per year

i. Utilize Lab / field assistants
ii. Explore transportation possibilities for interns

Objective 3.2: Increase the number of course using a field or laboratory component by one course per semester

Objective 3.3: Increase student intern dissemination by 20% per year

Objective 3.4: Increase and diversity service learning opportunities by one per semester

STRATEGIC GOAL 4: Provide professional development and informal education opportunities in STEM for faculty, staff, students, and community members

Objective 4.1: Support the pursuit of advanced degrees for faculty, staff, and adjuncts at a rate of two per year

Objective 4.2: Establish a venue for the dissemination of research / training to tribal agencies at a rate of two per year

Objective 4.3: Support extra-curricular outreach activities at the K-12 level at a rate of five activities per year

Objective 4.4: Support co-curricular STEM activities at the K-12 level for 1,200 students per year

STRATEGIC GOAL 5: Grow Math, Science, and Technology research capacity

Objective 5.1: Provide faculty and research staff with opportunities for science and technology research collaboration

with Tribal Agencies academic partners through salary support for research, and purchasing / maintaining laboratory equipment, and supplies
Objective 5.2: Provide research internships and dissemination opportunities for 20 students per year
Objective 5.3: Increase collaboration with Tribal agencies and national and international institutions.
Objective 5.4: Collaborate with Graduate Studies to offer a STEM based graduate degree track

OGLALA LAKOTA COLLEGE
MS&T DEPARTMENT PROGRAM **YEARLY** ACTION PLAN:
AY 2014-2015

OLC Strategic Goal 1: *Oglala Lakota College will produce graduates who demonstrate excellence in their chosen areas of study and fields of endeavor*				
Departmental Strategic Goal 1: Improve STEM education at Oglala Lakota College				
Departmental Strategic Objective 1.1: Improve student success in the math sequence by 2% per year through alignment with Foundational Studies				
Strategies	Criteria	Assessment Tools	Results	Use of Results
Strategy 1.1: Align curricula at the 093-103 level with the Foundational Studies department	Meeting minutes and revised syllabi reflect an alignment of curriculum	Meeting minutes Syllabi		

MST Strategic Objective 1.2: Improve recruiting and retention of first- and second-year STEM students by 5% per year
MST Strategic Objective 1.3: Maintain or increase the number of students pursuing advanced degrees or entering the science and technology workforce
MST Strategic Objective 1.4: Develop an academic enrichment program for new and non-attaining interns

Strategies	Criteria	Assessment Tools	Results	Use of Results
utilize two Fridays a month to have new and non-pace of progress interns complete incomplete or failing coursework. use a shared faculty mentorship approach to ensure students are attaining monthly goals.	50% of new and non-pace of progress students will complete incomplete or failing coursework through enrolling in classes or working with instructors	Changes of grade		
Develop a targeted recruiting system: 1) Work with retention director to develop a comprehensive strategy to tutor students below Math 134	Find 5 potential students per semester who might be eligible for internships. Criteria – in Math 134 and 2.5 GPA for previous term	Webadvisor OLC Reference	.	

2) Use Math 134 for formal candidacy to program. 3) Use Jenzabar data to identify factors for low performing students				
Provide high quality research opportunities that lead to workforce or graduate school	Institutional parity-other institutions research assistants	TCUP Annual Report		

OLC Strategic Goal III: Enhance the academic quality of the college by emphasizing teaching, service learning and applied research.

C. Promote faculty-student service learning and research opportunities engaging and responding to needs of the community.

a. Measurement: The total number of service learning and field based Research activities.

OLC Strategic Goal Goal IV: Provide financial resources consistent with the OLC mission.

A. Provide financial resources to the academic and support services efforts of the college.

a. Measurement: grants received and annual operating budget

B. Continue fund raising activities to increase the college endowments for Faculty salaries and student scholarships.

a. Measurement: Annual report of funds raised and allocated.

STRATEGIC GOAL 2: Develop a sustainable departmental funding model
Objective 2.1: Increase the percentage of institutional support for instruction
Objective 2.2: Increase the number of new principal investigators
Objective 2.3: Increase the total number of refereed publications by one per year

Strategies	Criteria	Assessment Tools	Results	Use of Results
Strategy 2.1.1 Align STEM strategic plan to OLC strategic plan by developing goals to sustain STEM programs	Review department strategic plan	Department meeting minutes		
Strategy 2.2 Increase the number of new principal investigators	Three new principle investigators submit proposals for funding	Number of proposals funded		
Strategy 2.3 Increase the total number of refereed publications by one per year	Department research staff will increase by one publication per year	Publication in a peer reviewed journal		

OGLALA LAKOTA COLLEGE
MS&T ANNUAL ACTION PLAN:
AY 2013-2014

OLC Strategic Goal 4: *Enhance the academic quality of the College by emphasizing teaching and applied research.*
Departmental Strategic Goal 3: Revitalize science and technology instruction to fit a constructivist model
Departmental Strategic Objective 3.2: Increase the number of courses using a field or laboratory component by one course per semester

Strategies	Criteria	Assessment Tools	Results	Use of Results
Investigate outside funding sources for the acquisition of lab or field based components	Identification of two RFPs	Requests for Proposals (RFPs)		
Prioritize existing and future spaces in the STEM, College Centers, and other Administrative Buildings:	Develop a 5-year action plan with targets	Action plan		
Utilize existing funding to expand lab and field experiences in Natural Science TCEP-cover Rang 103 Epscor-Geol 143 and 153	One new course per semester with lab or field component	Syllabi		
Explore the feasibility of labs for the following Bio 103 Bio 113 Geol 143 Geol 153 Rang 103	Use course faculty feedback forms to see if a lab component would be feasible and transferrable,	Faculty course feedback forms and student survey		
Complete a Lab inventory	Data base will be created	Data base		

MS&T ANNUAL ACTION PLAN:
CO-CURRICULAR
ANNUAL ACTION PLAN
AY 2013-2014

OLC Strategic Goal 4: *Enhance the academic quality of the College by emphasizing teaching and applied research.*

Departmental CO-CURRICULAR Outcome 1: Students will develop scientific projects for outreach in the community and region.
Criteria 1: -Students attend at least four outreach activities and assist the MST Department as well as partner institutions or Tribal entities per year

Departmental CO-CURRICULAR Outcome 2: Students synthesize scientific and engineering learning through applied research
Criteria 1: -Student is paired with a mentor to design and carry out at least one research project
Criteria 2: -Students assist with OLC Science Fair as judges
-Students present to at least one high school class

Departmental CO-CURRICULAR Outcome 3: Students distinguish between Lakota cultural and scientific theory
Criteria 1: -Students attend one field trips and etc… coordinated by OLC instructional divisions
Criteria 2: -Students attend outreach events at local schools

Departmental CO-CURRICULAR Outcome 4: Student researchers demonstrate effective oral and written communication skills
Criteria 1: -Students prepare an abstract for poster or oral presentation of their research for competitions or display at Tribal, State and National conferences
Criteria 2: -students explain their research and science outreach activities to local community and schools.

Departmental CO-CURRICULAR OBJECTIVES:

Strategies	Criteria	Assessment Tools	Results	**Recommendations for improvement for upcoming year include budget amount**
CCO-1 MST faculty/ staff will establish collaborations with outreach partners to coordinate outreach activities.	Students attend at least four outreach activities and assist the MST Department as well as partner institutions or Tribal entities per year	Co-curricular assessment form and students evaluation form		

CCO2 -Student is paired with a mentor to design and carry out research	**Criteria 2** Student participates in one research project -Students assist with OLC Science Fair as judges	Co-curricular assessment form		
CCO4 Students explain their research and science outreach activities to local community and schools.	-Students prepare an abstract for poster or oral presentation of their research for competitions or display at Tribal, State and National conferences	Co-curricular assessment form and students evaluation form		

OGLALA LAKOTA COLLEGE

MS&T ANNUAL ACTION PLAN FOR STUDENT LEARNING OUTCOMES:

AY 2014-2015

Bachelor of Science Natural Science- Conservation Biology

OLC Strategic Goal 1: Graduate students who have the necessary for Indian Country jobs.
Departmental Strategic Goal 1: Improve STEM education at Oglala Lakota College
Objective 1.2: Improve recruiting and retention of first- and second-year STEM students by 5% per year
Program Learning Outcomes **1. Students can express natural phenomena and relationships quantitatively** **2. Students can relate the biosphere and ecosphere through the field and laboratory** **3. Students can characterize ecosystem health based on physical, chemical, and biological factors.** **4. Students can manipulate geospatial and remotely sensed data, manage GIS projects, and independently create projects using an ArcInfo GIS platform** **5. Students can describe the flora and fauna of the Black Hills and Badlands in South Dakota** **6. Students can conduct an independent research project in conservation biology**

Intended Course/Program Outcome	Criteria	Assessment Method(s)	Results	Use of Results
Fall 2014 **Program Learning Outcome (PLO)** **Students can conduct an independent research project in**	**Students will achieve 75 or higher on a 100-point rubric** 95 Points=	**Assess semester project in NSci 393 Research Methods** **2 Presentation**		

conservation biology (criterion **Students can conduct an independent research project in conservation biology (criterion 2&4)** **Student Learning Outcomes (SLO) Nsci 393** 1) To carry out pear reviewed literature in the area of the topic in science under study. 2) To summarize literature reviews (introduction, data discussion etc.) 3) Properly use design and write a research proposal. 4) To design a qualitative research. Hypothesis and expected data to be used. Proper scale, space distribution in writing tables and figures for research proposals in a qualitative manner. 5) To design a qualitatively research project. Prepare and deliver conference presentations at professional meetings. **Student Learning Outcomes (SLO) Bio 463** Discuss conservation and biodiversity Discuss threats of biodiversity: extinctions and global change,	Exemplary 85 Points= Competent 75 Points= Satisfactory	**lecture exercises in Bio 463 Conservation Biology**		

ecosystem degradation, invasive exotics, and over exploitation Explain how to maintain biodiversity: protecting and managing populations and ecosystems Discuss social, political, and economic aspects of conservation biology				
Geol 143 Spr 2015 Program Goal 2 Students can relate the biosphere and ecosphere through the field and laboratory.	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.	Direct measure of students' notes		

OGLALA LAKOTA COLLEGE

(UNIT/DEPARTMENTAL) ANNUAL ACTION PLAN FOR STUDENT LEARNING OUTCOMES:

AY 2014-2015

Bachelor of Science Natural Science- Earth Science

OLC Strategic Goal 1: *Oglala Lakota College will produce graduates who demonstrate excellence in their chosen areas*

of study and fields of endeavor
Departmental Strategic Goal 1: Improve STEM education at Oglala Lakota College
Departmental Objective 1.2: Improve recruiting and retention of first- and second-year STEM students by 5% per year
Program Outcomes 1. Students can relate the atmosphere, geosphere, and hydrosphere through chemistry 2. Students can characterize watershed and stream ecosystem structure and health based on physical, chemical, and biological factors including human and natural impacts on the watershed such as floods and drought. 3. Students can manipulate geospatial and remotely sensed data, manage GIS projects, and independently create projects utilizing a GIS. 4. Students can describe the geological processes and history of the Black Hills and Badlands in South Dakota. 5. Students can conduct an independent research project in earth science. 6. Students demonstrate a fundamental understanding of biology, ecology, mathematics, and physics

Outcome	Criteria	Assessment Tools	Results	Use of Results
Fall 2014 **Program Learning Outcome (PLO)** Manipulate geospatial and remotely sensed data, manage GIS projects, and Independently create projects utilizing GIS Conduct an independent research project in earth science **Student Learning Outcomes (SLO) GIS 313** 1. Students learn to solve intermediate spatial analysis problems using the techniques and tools available in geographic information systems, including geodatabases 2. Students will be able to perform basic tool	Final Project Students create poster summarizing the results of their semester's work **Score 5 Exemplary** Student fully met and in some cases exceeded in meeting Student Learning Outcomes. The class fully meets all Program Outcomes. **Score 4 Competent** Student met Student Learning Outcomes. Program Outcomes were met. **Score 3 Satisfactory** Student generally met Student Learning Outcome but improvement is possible. Program Outcome generally met. **Score 2 Needs Improvement**	A five point rubric will be used to score project done for the PLO in the course GIS 313		

operation using geoprocessing, raster analysis, network analysis, and basic editing tasks 3. Students will be able to incorporate outside data (i.e. spread sheets, tab delimited text) from either student research or data from a professional workplace into ArcGIS and then back into its original format from ArcGIS. 4. Students will be able to create advanced aesthetically pleasing and technically appropriate maps 5. Students will be able to use the Internet to locate and obtain a variety of geographic data 6. Students will be able to plan and execute a mentored GIS project, and present the results orally and in writing				

Spring 2015 Program Learning Outcome (PLO) Conduct an independent research project in earth science **Student Learning Outcomes (SLO)** Write an *introduction* using a peer-reviewed literature review completed in NSci 393 Write *methods* from a research design completed in NSci 393 Visually summarize data collected during a research project using Sigma-plot, Excel, or another graphing program and summarize the *results* of the research project; Write a *discussion* that explains the meaning of the results; Write the *conclusions* drawn from the research	Students will achieve at least 70 points on a final paper in NSci 493 Research using a rubric. 90 Points= Exemplary 80 Points= Competent 70 Points= Satisfactory 69 points and below= Needs improvement	Research papers will be collected at the end of the spring semester. A 100 point rubric will be used to score.		

OGLALA LAKOTA COLLEGE

(UNIT/DEPARTMENTAL) ANNUAL ACTION PLAN FOR STUDENT LEARNING OUTCOMES:

AY 2014-2015

Bachelor of Science Information Technology

OLC Strategic Goal 1: *Oglala Lakota College will produce graduates who demonstrate excellence in their chosen areas*

of study and fields of endeavor

Departmental Strategic Goal 1: Improve STEM education at Oglala Lakota College

Objective 1.3: Maintain or increase the number of students pursuing advanced degrees or entering the science and technology workforce.

Program Outcomes

Communication: Communicate effectively with institutional network stakeholders.

Hardware: Install, maintain and support computer hardware in a networked and stand-alone environment.

Operating Systems: Install, maintain and support network and client operating systems.

Network: Install, maintain and support a network given a hypothetical or real LAN or WAN situation.

Security: Secure devices, networks and data.

National Certifications: Complete selected national certifications in hardware (A+), Network (Network+) and Security Certified Network Professional (SCNP).

Intended Course/Program Outcome	Criteria	Assessment Method(s)	Results	Use of Results
Fall 2014 **Program Learning Outcome (PLO)** **Communication**: Communicate effectively with institutional network stakeholders. **Student Learning Outcomes (SLO)** **Sci-113** Learn verbal and non-verbal communication skills Understand types of listening and learn to improve listening skills Learn to draft letters, agenda and minutes of meeting, memo, resume and job application Learn and develop speaking skills for Group Discussion, Personal Interview and Seminar Presentation	Students achieve 3 or higher on a 4 point rubric. **Score 4 Competent** Student met Student Learning Outcomes. Program Outcomes were met. **Score 3 Satisfactory** Student generally met Student Learning Outcome but improvement is possible. Program Outcome generally met. **Score 2 Needs Improvement**	Selected artifacts collected from homework assignments from courses Sci 113 and IT 494 A Four Point Rubric will be used		

Learn to compose and effectively write Abstract, Research paper and Dissertation, Summarizing technical material, References and styling, Writing Business Proposal and Report Writing **Course Goal:** Students will understand and demonstrate writing effective technical documents **IT-474** Evaluate the project practices in an organization Undertake a research project in support of an organizational goal Explore current developments within the profession at the under graduate level				
Spring 2015 Program Learning Outcome (PLO) Operating Systems: Install, maintain and support network and client operating systems. **Network:** Install, maintain and support a network	Students achieve 3 or higher on a 5 point rubric. **Score 5 Exemplary** Student exceeds expectations. **Score 4 Competent** Student met Student Learning Outcomes.	Selected artifacts collected from homework assignments A Five Point Rubric will be used		

given a hypothetical or real LAN or WAN situation. **Student Learning Outcomes (SLO)** **IT-153** 01 Introduction Definition of Basic Terms and Concepts Structures or How is it Organized 02 Processes Managing Programs Threads Synchronization CPU Scheduling 03 Memory Main Memory Memory - Virtual Memory 04 Storage Mass-Storage File-Systems and Interface File-Systems Implementation I/O Systems **IT-243** 01 Network Models - OSI ISO Conceptual Model - Cabling and Typology - Physical Network Installation 02 Ethernet - Ethernet Basics - Modern Ethernet 03 TCP/IP - TCP/IP Basics - TCP/IP Applications - Securing TCP/IP 04 Route and Routing - Routing 05 DNS WINS	Program Outcomes were met. **Score 3 Satisfactory** Student generally met Student Learning Outcome but improvement is possible. Program Outcome generally met. **Score 2 Needs Improvement** **Score 1 Unacceptable**			

- Network Naming 06 Advanced Devices - VPN, LAN, VLAN, Switches, Load Balance, QoS 07 IPv6				

OGLALA LAKOTA COLLEGE

(UNIT/DEPARTMENTAL) ANNUAL ACTION PLAN FOR STUDENT LEARNING OUTCOMES:

AY 2014-2015

Associate of Applied Science Information Technology

OLC Strategic Goal 1: *Oglala Lakota College will produce graduates who demonstrate excellence in their chosen areas of study and fields of endeavor*				
Departmental Strategic Goal 1: Improve STEM education at Oglala Lakota College				
Departmental Objective 1.2: Improve recruiting and retention of first- and second-year STEM students by 5% per year				
Program Outcomes **Communication**: Communicate effectively with IT support staff. **Hardware:** Assist IT staff to support computer hardware in a networked and stand-alone environment. **Operating Systems:** Assist IT staff to support network and client operating systems. **Network:** Assist IT staff to support a network. **National Certifications:** Demonstrate progress toward completion of selected national certifications in hardware (A+), Network (Network+).				
Intended Course/Program Outcome	Criteria	Assessment Method(s)	Results	Use of Results
Fall 2014 Program Learning Outcome (PLO) **Communication**: Communicate effectively with institutional network stakeholders. **Student Learning Outcomes (SLO)** **Sci-113** Learn verbal and non-verbal communication skills Understand types of listening and learn to improve listening skills Learn to draft	Students achieve 3 or higher on a 4 point rubric. **Score 4 Competent** Student met Student Learning Outcomes. Program Outcomes were met. **Score 3 Satisfactory** Student generally met Student Learning Outcome but improvement is possible. Program Outcome generally met.	Selected artifacts collected from homework assignments in the course Sci-113 Technical Writing A Four Point Rubric will be used		

letters, agenda and minutes of meeting, memo, resume and job application Learn and develop speaking skills for Group Discussion, Personal Interview and Seminar Presentation Learn to compose and effectively write Abstract, Research paper and Dissertation, Summarizing technical material, References and styling, Writing Business Proposal and Report Writing	**Score 2 Needs Improvement**			
Spring 2015 Program Learning Outcome (PLO) Operating Systems: Install, maintain and support network and client operating systems. **Network:** Install, maintain and support a network given a hypothetical or real LAN or WAN situation. **Student Learning Outcomes (SLO) IT-153** 01 Introduction Definition of Basic Terms and Concepts Structures or How is it Organized 02 Processes	Students achieve 3 or higher on a 4 point rubric. **Score 4 Competent** Student met Student Learning Outcomes. Program Outcomes were met. **Score 3 Satisfactory** Student generally met Student Learning Outcome but improvement is possible. Program Outcome generally met. **Score 2 Needs Improvement**	Selected artifacts collected from homework assignments in courses IT 153 Survey of Operating Systems and IT 243 Introduction to Networks A Four Point Rubric will be used		

Managing Programs Threads Synchronization CPU Scheduling 03 Memory Main Memory Memory - Virtual Memory 04 Storage Mass-Storage File-Systems and Interface File-Systems Implementation I/O Systems **IT-243** 01 Network Models - OSI ISO Conceptual Model - Cabling and Typology - Physical Network Installation 02 Ethernet - Ethernet Basics - Modern Ethernet 03 TCP/IP - TCP/IP Basics - TCP/IP Applications - Securing TCP/IP 04 Route and Routing - Routing 05 DNS WINS - Network Naming 06 Advanced Devices - VPN, LAN, VLAN, Switches, Load Balance, QoS 07 IPv6				

OGLALA LAKOTA COLLEGE

(UNIT/DEPARTMENTAL) ANNUAL ACTION PLAN FOR STUDENT LEARNING OUTCOMES:

AY 2014-2015

Associate of Arts- Life Science

OLC Strategic Goal 1: *Oglala Lakota College will produce graduates who demonstrate excellence in their chosen areas of study and fields of endeavor*

Departmental Strategic Goal 1: Improve STEM education at Oglala Lakota College

Departmental Objective 1.2: Improve recruiting and retention of first- and second-year STEM students by 5% per year

Program Learning Outcomes

1. The ability to demonstrate basic knowledge of mathematics, biology and chemistry in situations encountered by a Life Science Major.
2. Demonstrate good laboratory skills
3. Critically review and communicate scientific data in a qualitative and quantitative manner through oral and written formats
4. Distinguish how altercations to the human body systems can contribute to disease.
5. Identify and relate research methods and protocols

Intended Course/Program Outcome	Criteria	Assessment Method(s)	Results	Use of Results
Spring Program Learning Outcome Demonstrate good laboratory skills **Student Learning Outcomes (SLO)** Competently use the vocabulary and the symbols of the language of chemistry To apply the Scientific method of inquiry and use proper rules for measurements (accuracy and precision) of physical objects. To be able to distinguish between the	Students will improve from Lab I by 25% to the midterm by 25% to the final lab.	During the spring 2015 semester three lab reports from the Chem 231 Experimental General Chemistry Lab I will be collected during the semester to track laboratory skill improvement through the semester. Target goal is to see 25% incremental improvement for each lab collected.		
		A four point rubric was created to score the lab reports 4=Excellent/Exceeds Standard		

different states of matter. To be able to recognize the structural approach to the atom and its basic composition. To be able to extract information regarding nomenclature, structure and properties of atoms using the periodic table To be able to relate manifestation of energy with the composition of the atom To be able to distinguish different types of chemical reactions by using different elements with different positions in the periodic table.		3=Acceptable/Meets Standards 2= Acceptable but needs improvement 1=Unacceptable		

OGLALA LAKOTA COLLEGE

(UNIT/DEPARTMENTAL) ANNUAL ACTION PLAN FOR STUDENT LEARNING OUTCOMES:

AY 2014-2015

Associate of Arts- Pre-Engineering-Civil Engineering

OLC Strategic Goal 1: *Oglala Lakota College will produce graduates who demonstrate excellence in their chosen areas of study and fields of endeavor*
Departmental Strategic Goal 1: Improve STEM education at Oglala Lakota College
Departmental Objective 1.2: Improve recruiting and retention of first- and second-year STEM students by 5% per year
Program Outcomes 1. Demonstrate an understanding of Newtonian principals and relationships between forces, energy, work and power 2. Apply the rules of differentiation and integration to quantify processes occurring in the natural world. 3. Evaluate how materials act under conditions of equilibrium 4. Apply laws of Chemistry and stoichiometric rules to predict changes in temperature, volume and

ionic compositional behavior. 5. Perform engineering design and analysis				
Intended Course/Program Outcome	Criteria	Assessment Method(s)	Results	Use of Results
FALL 2014 **Program Level Outcome (PLO)** Apply the rules of trigonometry, differentiation and integration to quantify processes occurring in the natural world. **Student Learning Outcomes (SLO)** 1. Evaluate trigonometric functions of any angle. 2. Evaluate trigonometric functions using the unit circle. 3. Evaluate and graph the inverse trigonometric functions. 4. Sketch the graphs of basic trigonometric functions. 5. Use the fundamental trigonometric identities to evaluate trigonometric functions. 6. Use the Laws of Sines and Cosines to solve oblique triangles. 7. Perform basic vector operations and represent them graphically.	70% of students will achieve 70% on the final exam in trigonometry Students will achieve 70% or higher on the final exam in trigonometry Scoring 90% Exemplary 80% Competent 70% Satisfactory 70% and Below Needs Improvement	The Trigonometry Final Exam will be collected at the end of the fall semester. The final exam covered all the learning objectives for the course		
Spring 2015 **Program Level Outcome (PLO)**	Students in Introduction to	A five point rubric will be used to score the poster		

Perform engineering design and analysis **Student Learning Outcomes (SLO)** Become an effective team member and campus leader Develop the communication skills necessary to package their technical and professional skills to succeed in an engineering practice. Be able to use Excel tools to analyze and solve engineering problems Be able to understand the difference between analysis and design Complete a small-scale engineering project Communicate project results to a general audience	Engineering 101 and 111 will produce a poster and will score a 3 or higher. Students will be involved in a team project to design a solar heater for the green house at the Pejuta Haka College Center in Kyle. Students must participate at 75% of the project time **Score 5 Exemplary** Student fully met and in some cases exceeded in meeting Student Learning Outcomes. The class fully meets all Program Outcomes. **Score 4 Competent** Student met Student Learning Outcomes. Program Outcomes were met. **Score 3 Satisfactory** Student generally met Student Learning Outcome but improvement is possible. Program Outcome generally met. **Score 2 Needs Improvement**	project done for the PLO. Points will be given for participation in the project to design a solar heater for the green house		

OGLALA LAKOTA COLLEGE
(UNIT/DEPARTMENTAL) ANNUAL ACTION PLAN FOR STUDENT LEARNING OUTCOMES:
AY 2014-2015
Associate of Arts- Pre-Engineering- Geological Engineering

OLC Strategic Goal 1: *Oglala Lakota College will produce graduates who demonstrate excellence in their chosen areas of study and fields of endeavor*

Departmental Strategic Goal 1: Improve STEM education at Oglala Lakota College

Departmental Objective 1.3: Maintain or increase the number of students pursuing advanced degrees or entering the science and technology workforce.

Program Outcomes
1. Demonstrate an understanding of Newtonian principals and relationships between forces, energy, work and power
2. Apply laws of Chemistry and stoichiometric rules to predict changes in temperature, volume and ionic compositional behavior.
3. Apply the rules of differentiation and integration to quantify processes occurring in the natural world.
4. Evaluate how materials act under conditions of equilibrium
5. Perform engineering design and analysis
6. Manipulate geospatial and remotely sensed data, manage GIS projects, and independently create projects utilizing a GIS
7. Describe the rock cycle, properties of rocks and minerals, and plate tectonics

Outcome	Criteria	Assessment Tools	Results	Use of Results
FALL 2014 Program Level Outcome (PLO) Apply the rules of trigonometry, differentiation and integration to quantify processes occurring in the natural world. **Student Level Outcomes (SLO)** 1. Evaluate trigonometric functions of any angle. 2. Evaluate trigonometric functions using the unit circle. 3. Evaluate and graph the inverse trigonometric functions. 4. Sketch the graphs of basic trigonometric functions. 5. Use the fundamental trigonometric identities to evaluate trigonometric functions. 6. Use the Laws of Sines and Cosines to solve oblique triangles. 7. Perform basic vector operations and represent them	Students will achieve 70% or higher on the final exam in trigonometry Scoring 90% Exemplary 80% Competent 70% Satisfactory 70% and Below Needs Improvement	The Trigonometry Final Exam will be collected at the end of the fall semester. The final exam covered all the learning objectives for the course		

graphically.				
Spring 2015 **Program Level Outcome (PLO)** Perform engineering design and analysis **Student Learning Outcomes (SLO)** Become an effective team member and campus leader Develop the communication skills necessary to package their technical and professional skills to succeed in an engineering practice. Be able to use Excel tools to analyze and solve engineering problems Be able to understand the difference between analysis and design Complete a small-scale engineering project Communicate project results to a general audience	Students in Introduction to Engineering 101 and 111 will produce a poster and will score a 3 or higher. Students will be involved in a team project to design a solar heater for the green house at the Pejuta Haka College Center in Kyle. Students must participate at 75% of the project time **Score 5 Exemplary** Student fully met and in some cases exceeded in meeting Student Learning Outcomes. The class fully meets all Program Outcomes. **Score 4 Competent** Student met Student Learning Outcomes. Program Outcomes were met. **Score 3 Satisfactory** Student generally met Student Learning Outcome but improvement is possible. Program Outcome generally met. **Score 2 Needs Improvement**	A five point rubric will be used to score the poster project done for the PLO. Points will be given for participation in the project to design a solar heater for the green house		

OGLALA LAKOTA COLLEGE

(UNIT/DEPARTMENTAL) ANNUAL ACTION PLAN FOR STUDENT LEARNING OUTCOMES:

AY 2014-2015

Associate of Arts in Science, Engineering and Math (SEM)

OLC Strategic Goal 1: *Oglala Lakota College will produce graduates who demonstrate excellence in their chosen areas of study and fields of endeavor*
Departmental Strategic Goal 1: Improve STEM education at Oglala Lakota College
Departmental Objective 1.2: Improve recruiting and retention of first- and second-year STEM students by 5% per year
Program Outcomes 1. Apply laws of Chemistry and stoichiometric rules to predict changes in temperature, volume and ionic

compositional behavior. 2. Demonstrate an understanding of Newtonian principals. 3. Apply the rules of differentiation and integration to quantify processes occurring in the natural world. 4. Demonstrate an understanding of the relationships between forces, energy, work, and power				
Intended Course/Program Outcome	Criteria	Assessment Method(s)	Results	Use of Results
FALL 2014 **Program Level Outcome (PLO)** Apply the rules of trigonometry, differentiation and integration to quantify processes occurring in the natural world. **Student Level Outcomes (SLO)** 1. Evaluate trigonometric functions of any angle. 2. Evaluate trigonometric functions using the unit circle. 3. Evaluate and graph the inverse trigonometric functions. 4. Sketch the graphs of basic trigonometric functions. 5. Use the fundamental trigonometric identities to evaluate trigonometric functions. 6. Use the Laws of Sines and Cosines to solve oblique triangles. 7. Perform basic vector operations and represent them graphically.	Students will achieve 70% or higher on the final exam in trigonometry Students will achieve 70% or higher on the final exam in trigonometry Scoring 90% Exemplary 80% Competent 70% Satisfactory 70% and Below Needs Improvement	The Trigonometry Final Exam will be collected at the end of the fall semester. The final exam covered all the learning objectives for the course		

Spring 2015 **Program Level Outcome (PLO)** Apply laws of chemistry and stoichiometric rules to predict changes in temperature, volume and ionic compositional behavior	Students will achieve 70% or higher on the final exam in chemistry. Scoring 90% Exemplary 80% Competent 70% Satisfactory 70% and Below Needs Improvement	The Chemistry Final Comprehensive Exam will be collected at the end of the spring semester		