OGLALA LAKOTA COLLEGE

Course Syllabus for

NSci 463 GROUNDWATER

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NSci 463 Groundwater

Prerequisite: Chem 233 and Chem 231, Math 154, EnS 253, and Geol 133, all completed with a grade of "C" or better, or permission of instructor. This course involves a study of subsurface geology, water (quantity and quality), and water flow. Topics will include lithologic controls on water storage, migration of water through the vadose zone, soil moisture, ground water recharge, flow through aquifers, methods of measuring flow direction and velocity. Chemical interaction between the ground water aquifer and ground water will be discussed, along with the factors affecting the rate of contaminate migration in ground water and soils**.** A laboratory portion of the class may include the use of the Geoprobe® to drill and complete monitoring wells, and I'm going to try to arrange at least one field trip. 3 credits

Course Objectives: The objectives of this course are to introduce students to the groundwater capacity and occurrence in the rocks of the northern Great Plains in general, and the Pine Ridge in particular. Both bedrock and surficial aquifers will be examined in term of groundwater quantity and quality.

Student Learning Outcomes: Students completing Groundwater will have skills to:

- Understand and interpret the North American Stratigraphic Code (1983);
- Describe the geology of the Pine Ridge region in detail;
- Understand the relationships between rainfall, runoff, and recharge;
- Understand the relationships between groundwater and surface water;
- Understand the interconnectedness of surface and subsurface aquifers;
- Explain the properties of aquifers to a non-technical audience;
- Explain the principles of ground-water flow to a non-technical audience;
- Understand groundwater flow to wells;
- Understand the regional flow system of the High Plains and Dakota Aquifers;
- Predict the potential occurrence of ground-water from the regional geology;
- Explain the basic principles of ground-water chemistry to a non-technical audience;
- Develop and manage ground-water sustainably.

Required Textbook: There is no text required for this class. I will provide the scientific literature needed, and you have the option to use additional readings of your choosing, also. If you don't already have a field notebook, you'll be able to get one from me in about 2 weeks.

Descriptive Reading Load: Grade14 reading level. One to two chapters every 2 weeks.

Types and Amounts of Writing Expected: The nature of this course offering requires that a significant amount of writing to be completed as homework. For distance students homework can be submitted using the Moodle server or by fax. The fax number for homework submissions is 605-455-2603

Homework is an opportunity to practice professionalism. All homework should be completed in paragraph form, which consists of: i) a topic sentence; ii) 3-5 body sentences; and iii) a conclusion or transition sentence. Professional ethics requires referencing the author of any text or pictures that are used in assignments. Plagiarism (i.e. passing off another author's work off as your own) will not be tolerated. Please refer to the Oglala Lakota College Student Handbook for the official policy on plagiarism. Please contact the Instructor if you have questions on plagiarism, or on how to site another person's work. Suspected cases of plagiarism or academic dishonesty will be referred to the OLC Administration.

Everybody in the class is encouraged to work with myself and the other department faculty in expoloring, describing, and publishing on the geology and groundwater resources of the Pine Ridge Reservation and the surrounding region. As opportunities to participate in these activities come up I'll let you know!

Lakota Perspective: This course stresses **Wolakotakiciapi** or "learning Lakota ways of life in the community". Understanding how the methods taught in the course applies to the 'real world' requires patience and quiet observation. Participants in this course are expected to practice respect for each other, the instructor, and for all living and natural things used during this course.

Course Requirements: This course is Internet-based. Students are expected to complete weekly homework and quizzes on time. Exams and quizzes will only be available on-line during their scheduled week. Making up missed tests and quizzes are at the Instructor's discretion.

Class Attendance: Class attendance will be documented through completion of the weekly quiz. In accordance with OLC policy, you will be dropped from the course if you miss more than three consecutive class periods. If you miss more than five class periods during the semester, you will also be dropped from the course.

Assignments: Weekly homework assignments are based on weekly readings and are tied to weekly objectives. The purpose of these assignments are to apply and reinforce concepts from the weekly readings. Each weekly assignment is worth approximately 2% of the final grade. Some of these assignments may require field work. Handing in the assignment after the due date will result in an automatic **15 point deduction** for each week the assignment is late.

The instructor is always available for help on homework via email or through a telephone interview (please email to set-up an interview time). The instructor will meet directly with students two or more times during the semester to go over concepts.

Weekly homework should be faxed to 605-433-2603 (fax homework 'Attention: Dr. LaGarry). Homework that is submitted in an Excel format is worth an additional 10% extra credit.

Discussion: The discussion portion of the class is very important. This is an opportunity for us to share our perspectives with one another and to learn from one another. Please participate in the discussion forums as the discussions are worth 20% of your final grade for the semester.

Quizzes: There will be weekly quizzes based on the weekly readings. Each quiz counts for about 2% of the final grade. Late quizzes are subject to a **15 point reduction** for each week the quiz is late.

Final Exam: There will be a **comprehensive final exam** which will be based on both readings and field methods. The final exam is worth 20% of the final grade.

Lecture Grade:	
Assignments	30%
Quizzes	30%
Discussion	20%
Final Exam	20%
Total	100 %

The following scale will be used:

A = 90% - 100%
B = 80% - 89.9%
C = 70% - 79.9%
D = 60% - 69.9%
F = below 60%

Course Philosophy: You are not studying and learning for the instructor, but for yourself. Grades are important for your academic career; nevertheless, your professional life really begins after you graduate. Understanding hydrogeology and the hydrologic cycle will help you not only in your professional career, but also to understand and appreciate your surroundings and life itself.

This is a continuing class in environmental science. This is your chance to start build onto your existing knowledge. What you take out of this course is up to you. You have to invest your time (at least 4 hours of reading and 2 hours of problem-solving per week aside from your homework for this course).

Tips to Succeed in this Course:

Read chapters **before** trying to do the homework or the quiz. Then it will be much easier for you to follow the online lecture and to use online forums to ask questions about material that you did not understand.

Do not just "read" your textbook. Keep good notes in a separate notebook that you can use to study for the final exam. Use your notebook to comprehend new concepts and define new terms **in your own words.** This notebook will be useful for studying for the final exam.

Homework will include essay questions. Be sure that you can define (in full, comprehensible sentences) any new concepts and key terms when reading through a chapter so that you can use these terms in a meaningful way in your homework.

When you do your assignments, go back through the appropriate chapters and read them carefully a second time to find the answers.

Actively take part in the class using the online forums. This will help you solve problems in your homework in a collaborative fashion.

Note: **The instructor reserves the right to make changes. Students will be informed of any such change.**