

OGLALA LAKOTA COLLEGE

Course Syllabus for EnS 263/NSci 328 Wastewater Management Fall 2007

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Course Description: A study of the biological treatment of sewage and wastewater. Wastewater management discusses the processes used to treat raw water and raw sewage. Students successfully completing taking this course will gain knowleges appropriate for a sanitarian, wastewater technician, or water technician. Students will be introduced to conventional wastewater treatment techniques and processes, including wastewater sampling and analysis. Special emphasis will be placed on small-scale treatment systems that are commonly found in rural areas.

Course Objectives: The objectives of EnS 263 / NSci 328 are to:

- Develop qualified waste treatment operators on the Pine Ridge reservation;
- Expand the capabilities of existing waste treatment operators, permitting better service to their employers and the public at large;
- Prepare current and future operators for CERTIFICATION EXAMINATIONS.

Prerequisites: Math 154, Chem 233, Chem 231; all completed with a grade of “C” or better; or permission of instructor.

Required Textbook: Operation of Wastewater Treatment Plants 6th Ed. (2004) Vol. I and II. CSU Sacramento Office of Water Programs for the U.S. Environmental Protection Agency. California State University, Sacramento Foundation. ISBN 1-59371-006-2 (Volumes I and II).

Descriptive Reading Load: Grade 14 reading level. We will be covering one to two chapters every week.

Types and Amounts of Writing Expected: The nature of this course offering requires that a significant amount of writing to be completed as homework.

Homework is an opportunity to practice professionalism. All homework involving writing 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.

Lakota Perspective: This course stresses **Wolakotakiciapi** or “learning Lakota ways of life in the community”. 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: The homework will utilize the Internet and spreadsheets. Students are expected to have a working knowledge of the Internet and spreadsheets, or the capacity to learn these skills *on their own time* over the course of the semester.

Class Attendance: 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 is to apply and reinforce concepts from the weekly readings. Whenever possible, the results of weekly assignments will be directly applied to the semester project. Handing in the assignment after the due date will result in an automatic **50-percent deduction** for each week the assignment is late.

The instructor is available for additional help on homework via email or through a telephone interview (please email to set-up an interview time).

Quizzes and Exams: There will be weekly quizzes based on the weekly readings, which will be administered through the OLC Moodle server. Students are expected to complete online weekly quizzes on time, as **exams and quizzes will only be available during their scheduled week**. Making up missed exams and quizzes are at the Instructor's discretion.

Laboratory: Students will be required to participate in required laboratories, which may be scheduled at the Lakota Center for Science and Technology (LCST) at Piya Wiconi (also called the Math and Science Building or Area 51). Alternatively, we may utilize the teaching laboratory at the Pejuta Haka center in Kyle or the teaching laboratory in Rapid City for hands-on activities. Students will be required to provide their own transportation to the LCST or Pejuta Haka.

Final Exam: There will be a **comprehensive final exam** that will be based on both readings and field methods.

<u>Lecture Grade:</u>		A = 90% - 100%
Quizzes and Homework	50%	B = 80% - 89.9%
Laboratories	25%	C = 70% - 79.9%
Final Exam	25%	D = 60% - 69.9%
Total	100 %	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 waste management 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 and excel in it. But it is up to you. You have to invest your time. The instructor will work to provide time within the allotted class period and laboratory time outside of the class when students will have the opportunity to work on homework in a collaborative fashion.

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 laboratories. 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.

Suggested Course Outline

The following is a suggested course outline for EnS 263/NSci 328.

1. The Treatment Plant Operator (Ch.1) and Why Treat Wastes (Ch. 2)
2. Wastewater Treatment Facilities (Ch. 3) and Racks, Screens, Communicators, Grit Removal (Ch. 4)
3. Laboratory 1 – Bacteria analysis at the LCST (need to schedule a time)
4. Sedimentation and Flotation (Ch. 5)
5. Trickling Filters (Ch. 6)
6. Rotating Biological Contactors (Ch. 7) and Activated Sludge (Ch. 8)
7. Field Trip 1 – Rapid City Wastewater Treatment Plant (need to schedule a time)
8. Waste Stabilization Ponds I (Ch. 9)
9. Waste Stabilization Ponds II (Instructor Materials)
10. Disinfection and Chlorination (Ch. 10)
11. Sludge Digestion and Solids Handling (Ch. 12)
12. Analysis and Presentation of Data (Ch. 18)
13. Laboratory Procedures and Chemistry 1 (Ch. 16a)
14. Laboratory Procedures and Chemistry 2 (Ch. 16b)
15. Laboratory Procedures and Chemistry 3 (Ch. 16c)