

OGLALA LAKOTA COLLEGE



Course Syllabus for GIS 313 Applications of GIS Fall 2012

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Course Description:

This is an intermediate level GIS geospatial applications class which continues where students left off from GIS 213. Continued learning of geoprocessing tools are revisited in more depth as well as working with raster datasets, geodatabase management, and data manipulation tools. The main objective of the course is to either incorporate a student's/professionals project or create new a workable, manageable, and communicable GIS project which could continue its usage after class conclusion. At the end of the course the student will be able to manage projects, manipulate data, make and design mapping projects independently 3 Credits

Prerequisites/Expectations of Previous Experience: You must have taken GIS 213 Intro to GIS or an equivalent approved transfer class. The course assumes that the student already has experience using ArcGIS program modules: ArcMap and ArcCatalog and can perform basic mapping tasks, creating, copying and deleting shapefiles. Reasonable expertise in using word processing, spreadsheet, web browsers, and presentation software is also expected.

Course Outcomes: Application of GIS is an advanced course in GIS using ESRI's ArcGIS software. At the end of the semester successful students will have the following skills:

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 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

Program Outcomes: This course meets the following outcomes of the Math and Science Program

- Demonstrate competence in basic computer tools including word processors, spreadsheets, and Internet utilization.
- Create and analyze map data on computers using Geographic Information Systems (GIS).
- Formulate a research problem and design a strategy to address it in a research proposal.
- Communicate effectively in written form through words, graphs, and tables.
- Communicate orally using prepared presentations
- Create scientific communication documents such as reports and proposals using the correct formats

Using Internet-based Content Management Systems: The course will be Internet supported through either by email or by Virtual Campus course management system. Virtual Campus/email or both will be used to facilitate much of the daily course activity. Students will learn how to do the following:

- Download course material and information
- View and submit your assignments and reading quizzes electronically (email)
- Receive your graded assignments and comments electronically
- Correspond with the instructor and other students by email
- Keep track of your grades and progress in the class

Textbook: *Mastering ArcGIS*, Maribeth H. Price, McGraw-Hill, **fifth edition**, 2012 (required). Previous editions are out of date and not suitable for use in the class. If purchasing a used copy, make sure it includes the CD. If ordering outside the bookstore, make sure you get the fifth edition.

Supporting Documentation: The instructor will provide supporting documentation via the Virtual Campus/email course management system.

Descriptive Reading Load: Grade 14 reading level. Students are expected to read approximately one chapter every week.

Types and Amounts of Writing Expected: The nature of this course offering requires that writing to be completed as homework on a weekly basis and in the form of a GIS project plan.

Lakota Perspective: This course stresses **Wolakotakiciapi** or “learning Lakota ways of life in the community”. Understanding aquatic ecosystems 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 that are used during this course.

Grading: Your final grade is calculated based on the percentage of possible points in the course. Individual assignments may have the total possible points adjusted at the instructor's discretion.

Assignment Type	Points	Number	Total pts	Percent
Attendance	4	15	60	32%
Reading Assignment	4	8	32	17%
Mastering the Content	8	8	64	34%
Project Proposal	20	1	20	10%
Proposal Presentation	14	1	14	7%
Total			190	100%

Grading Rubric for Attendance, Reading Quizzes, and Mastering the Content

Grade	Points	Description
A	4	Completed work in a timely manner; High enthusiasm for course material; Met expectations for professionalism and content based on abilities.
B	3	Work completed in a less timely fashion or not meeting expectations for professionalism or content; moderate enthusiasm for course material.
C	2	Work does not meet expectations for timeliness, professionalism, and/or content; low enthusiasm for course material
D	1	Work and class participation shows minimal effort; Excused absence with other homework made up on time.
F	0	Unexcused absence; no effort to make up missed work.

The following scale will be used:

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

Materials: You will be allowed to use public hard disk space in the computer lab for your data sets. A limit of 500MB per person is imposed. This space is for GIS data and course work ONLY. Because computers are public use, your data may be deleted at any time, so you should archive it on a jumpdrive or elsewhere if you want to keep it. **Using your own laptop is highly recommended. Ask the instructor if there is an available laptop to check out.**

Attendance Policy: Attendance is important to your success in the class. 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.

Class Format: Applications of GIS is being offered concurrently at He Sapa and Pejuta Haka Center (Kyle, SD) and Pine Ridge. The format for GIS 313 includes: 1) short lectures in the Pictel room, 2) instructor-led examples in the use of the computers and laptops at the college centers, 4) laboratory time to master skills and content, 5) semester project.

Weekly Assignments: We will typically cover one chapter every two weeks for this class. Assessment for the chapter material will typically consist of answering ten questions based on the reading in a section of the book called “Chapter Review” and ten questions based on using the software to solve problems in a section called “Exercises”. There will also be other assignments added on throughout the semester. Please see the course outline at the end of the syllabus for due dates for weekly assignments.

Semester Project: GIS 313 will have several short written assignments that will culminate in the design of a GIS project. The GIS project may be used in conjunction with your individual research or with writing projects for other courses as long as you are performing a GIS analysis and not simply plotting data. You will have an opportunity to orally present your GIS research project design to the Math and Science department at a departmental meeting at the end of the semester using presentation software such as Microsoft’s PowerPoint.

Your written 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.

Honor Policy: You are encouraged to consult each other on the lab exercises, especially if you encounter a problem. However, you should ensure that YOU personally can do each and every problem, and the work you turn in must be your own. In the case that a student turns in work that is demonstrably in violation of the policy, the student(s) involved will receive a zero for the assignment, and an academic dishonesty report will be filed with the Vice President for Academic Affairs. Multiple or extensive violations will result in greater penalties, up to receiving an immediate F for the class.

Electronic Device Policy: Please turn off your cell phone before class starts. No text messaging in class. No headphones. If you wish to use a laptop in this class for purposes of note taking ONLY, that’s fine. No web surfing, emailing, or game-playing in class is permitted, and violators will be excused from class for the day. Repeat offenders may be dropped from the course. No other use of any other electronic/computer media is allowed during class time.

ADA Statement: Students with special needs or requiring special accommodations should contact the instructor, at the earliest opportunity.

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 the environment through GIS platforms will help you not only in your professional career, but also to understand and appreciate your surroundings and life itself.

This is a continuing course in environmental science. This is your chance to start build onto your existing knowledge and to excel in it. However, what you take away from this course is ultimately up to you the student. You have to invest your time into learning. The instructor will work to provide time within the allotted class period for students 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 may 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.

Proposed Weekly Course Outline (Note: there will be quizzes over chapter "important terms")

Wk Num	Location	Date class is held	Course Topic Drafts	Project	Assignment Due Dates
1	PS	8/28/12	GIS Review Presentation - Geoprocessing Review Chapter 7 - GIS In the Cloud		Ch. 7: Hwk 1 "Important Terms" p.197 describe 2 sentence minimum due 9/4 midnight
2	PR	9/4/12	Ch 7. Review cont. Creating shapefiles Chapter 8: Raster Analysis (Spatial Analyst)		Ch.8: Hwk 2 Review Questions- Hwk 3 Creating Shapefiles ALL due 9/11
3	RC	9/11/12	Excel ↔ ArcMap Advanced Management GIS Project <i>Idea</i> Draft Overview due 9/25		Ch. 8: Hwk 4 Exercises Hwk 4a: One page on "GIS In The Cloud" ALL due 9/18
4	PH	9/18/12	3D Analyst: Displaying DEM/NAIP data in 3-Dimensions		Ch.9: Hwk 5 Review Questions -due 9/25
5	PR	9/25/12	Chapter 9: Network Analysis 1st Project Proposal (2 pages) due 9/2		Ch. 9 Hwk 6 Exercises due 10/2
6	RC	10/2/12	Chapter 11: Coordinate Systems		Ch.11: Hwk 7 Review Questions due 10/9
7	PH	10/9/12		2nd Project Proposal (3 pages) due 10/16	Ch. 11: Hwk 8 Exercises due 10/16
8	PR	10/16/12	Chapter 12: Basic Editing Guest Lecturer TBA		Ch. 12: Hwk 9 Review Questions due 10/23
9	RC	10/23/12	Mid-Term Exam Chapters 8-12		Ch. 12: Hwk 10 Exercises due 10/30
10	PH	10/30/12	Chapter 13: Editing and Topology Final Project Proposal (3-5 pages) due 11/13		Ch.13: Hwk 11 Review Questions due 11/6
11	PR	11/6/12	Chapter 14: Geodatabases		Ch.14: Hwk 12 Review Questions due 11/13
12	RC	11/13/12			Ch.14: Hwk 13 Exercises due 11/20
13	PH	11/20/12	Chapter 15: Metadata		Ch15: Hwk 14 Review Exercises due 11/27
14	PR	11/27/12	TBA		Work on Projects and Presentations
15	RC	12/4/12	TBA		Work on Projects and Presentations
16	TBA	12/11/12	Final Oral and Written Presentations Due Final 5 Page GIS Project Write up Due		10 Minute Minimum Presentations Each
		12/18/12	Make Up Week		
					Paper must be 5 pages minimum

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