

Spring, 2019

Instructor: Dr. Keith Rice

Office Hours: Monday 1:00 – 1:50 pm
Tuesday & Thursday 11:00 – 11:50am
or by appointment

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This is an intermediate level, computer-based course that explores the latent abilities of geographic information systems. The complexity of spatial data bases, resolution & scale issues, differential global positioning systems (DGPS), applied cartographic modeling, geodemographics, relational spatial data formats, remote sensing data acquisition and delivery, rudimentary three-dimensional modeling, visualization, and programming issues will all be explored in regard to a GIS. The class will concentrate on the integration of data from different sources and their applications within a large-scale GIS. Both land management systems data (e.g., street networks, parcel maps) and natural resource land management data (e.g. land use, habitat cover) will be examined. Students will use GIS pc-workstations along with *ESRI*-GIS software (ArcGIS (ArcMap & ArcCatalog), ArcServer, ArcScene). Remote sensing software (i.e. *ERDAS Imagine*) will also be used to demonstrate applications within GIS.

Lecture: Lecture sessions will be on Tuesday and Thursday mornings, and will concentrate on both the basic theoretical and applied techniques of geographic information systems. The lectures will lay the foundation for the laboratory assignments.

Laboratory: There is one weekly laboratory session, two hours on either Monday afternoon (section 1 @ 2:00 – 3:50pm), or Thursday afternoon (section 2 @ 2- 3:50pm). Each laboratory will deal with one aspect of a GIS, that may involve either the introduction of a new technique, or a GIS database or design problem - all within an application situation. There are 10 laboratory projects, each counting between 5 and 7 percent of the final grade for a total of 60 percent of your grade for the course. The requirements for each laboratory session will be outlined in each individual lab assignment. Most of the laboratory projects will take longer than the allocated two hour period since all assignments either require field work or extensive time on computer equipment.

Students can use the Computer Geographics Lab (Science,B-346), the Spatial Information Analysis Lab (SIAL) - (Science, D-326), the Advanced Computing Lab (TNR-322), or the GIS/Remote Sensing Lab (Science, B-310/312), or the B-308 computers (when class is not in session). Some labs will utilize software that is only located in B-308, B-312 or B-346 (this will be noted during discussion of the assignment). Students will use ArcGIS (ArcMap, ArcCatalog, ArcToolbox) and several specialized extensions, ArcGIS Server, ERDAS Imagine, and other GIS related programs to finish the assignments. Lab assignments need to be completed and handed in on or before the due date indicated by the instructor. If you need help with any assignment, please see your class instructor.

Textbook: Geographic Information Science and Systems, 4th edition (2015)
Longley, Paul A., Goodchild, Michael F., Maguire, David, and David Rhind
John Wiley & Sons, New York, NY, 2015

Instruction

GIS Manual: Geography 343/543 Laboratory Manual – 2019 Edition (Volumes I & II)

Reference	<u>Getting to Know ArcGIS Desktop</u> , 4 th edition ESRI Press, 2015	(\$45 - \$85)
Textbooks:	Michael Law, Amy Collins	
	<u>GIS Tutorial 1: Basic Workshop, 10.3 edition</u>	(\$50 – \$80)
	Wilpen Gorr and Kristen S. Kurland	
	<u>GIS Tutorial 2: Spatial Analysis Workshop, 4th edition</u>	(\$50 - \$80)
	David Allen	
	<u>GIS Tutorial 3: Advanced Workbook</u>	out-of-print
	David Allen and Jeffrey Coffey	(used copies only)

These optional 'textbooks' should only be purchased for the *serious GIS user* due to their cost. These textbooks are handy for anyone considering using ArcGIS 10.3+ or any type of GIS-related research project and some may be available in the University bookstore. If not, you can order these books over the Internet (e.g. www.amazon.com).

Examinations: There will be two examinations, a *mid-term* on March 14th, covering the first eight weeks of the course, and a *final comprehensive exam* (**Tuesday, May 14th, 10:15am – 12:15pm**). The mid-term will be composed of both multiple-choice and matching questions that will focus not only on basic concepts, principles, and definitions, but also on the applications of this knowledge to pertinent GIS problems. It will count 20 percent of your final grade. The final examination will be worth 20 percent of your course grade, and will be of similar structure to the midterm.

Readings: A separate handout will outline the main reading assignments of the semester. Additional reading materials will be assigned during the term.

Evaluation & Grading:

	Maximum Points
Laboratories (ten total, 5 -7 points apiece)	60 points
Midterm Exam	20
Final Exam	20
Total	<hr/> 100 points

Ranges of percentage scores, exam points, course points, and their approximate equivalent letter grades are shown below. By referring to this table you can determine your letter-grade standing at any point in the course.

<u>Percent</u>	<u>5 Pt Lab</u>	<u>6 Pt Lab</u>	<u>7 Pt Lab</u>	<u>Course Pts.</u>	<u>Letter Grade</u>
93-100	4.7	5.6	6.5	93	A
90	4.5	5.4	6.3	90	A-
87	4.4	5.2	6.1	87	B+
83	4.2	5.0	5.8	83	B
80	4.0	4.8	5.6	80	B-
77	3.9	4.6	5.4	77	C+
73	3.7	4.4	5.1	73	C
70	3.5	4.2	4.9	70	C-
67	3.4	4.0	4.7	67	D+
63	3.2	3.8	4.4	63	D
<63	<3.2	<3.8	<4.4	<63	F

Printing Costs: During the course of the semester each student will be responsible to hand in several word documents, reports, and associated maps. All student printers are handed through UWSP-IT so you will be charged for 5 cents for each B&W page (single side) as well as 15 cents for each color copy (single side). You start out with \$10 in a UWSP printing account for the semester (for all of your classes) and then are charged a fee at the end of the semester for any printing exceeding that initial balance. You can always check your student printing account on your myPoint portal page on the Finances tab. Although it is *only an estimate*, you likely will print out 30-40 B&W pages and 15 color pages during the course of the semester for this class. Additionally, you will be creating two poster plots (large format printing) later in the semester that you will not be charged (paper & ink will be covered by the department).

Attendance: Although class attendance records will not be kept for grading purposes, it is strongly urged that class sessions not be missed. Remember that the success of class discussions is directly related to the amount of verbal participation, and with a small class one person can make a significant difference in aiding a classmate's understanding of a topic.

But in order to comply with federal financial aid Title IV legislation attendance will be taken several times during the course of the semester. UWSP Financial Aid Office is required by Federal law to retract financial aid for students that do not complete at least 60% of the semester for which they were awarded financial assistance. The mandated retraction formula uses the last date of attendance as a factor in determining the percentage of financial aid that must be returned to the U.S. Department of Education.

Student Rights and Responsibilities: Please make note of the following web-based documents, that explains your responsibilities and rights within the UWSP campus community, including required behavior by students and faculty within the classroom environment: <https://catalog.uwsp.edu/content.php?catoid=15&navoid=705#section-1-communal-bill-of-rights-and-responsibilities> & <https://www.uwsp.edu/dos/Documents/UWS%2014-1.pdf>

Accommodations for Students with Disabilities: UWSP is committed to providing reasonable and appropriate accommodations to students with disabilities and temporary impairments. If you have a disability or acquire a condition during the semester where you need assistance, please contact the Disability and Assistive Technology Center on the 6th floor of Albertson Hall (library) as soon as possible. DATC can be reached at 715-346-3365 or DATC@uwsp.edu.

Additional Requirements for Geography 543:

Students taking Geog. 543 (graduate credit) are required to conduct a separate GIS project that involves a topic of their choosing. It is usually to the advantage of the graduate student to select a topic related to their thesis or graduate school interest. The final project will consist of a paper and associated maps that are a synopsis of a natural resource problem that was solved using ArcGIS 10.5.1 or ERDAS Imagine or a combination thereof. Graduate students should discuss with the instructor their chosen topic before beginning the project. Final grades will be termed using the following formula:

Geog. 343 requirements	80% of final grade
GIS final project	20% of final grade