

## Geography 3561: Principles of Geographic Information Science Summer 2010

Lectures: Tu/Th 6:00-8:30 p.m., 235 Blegen Hall

Lab: W 6:00-9:00 p.m. 455 Blegen Hall

Course web page: <http://www.moodle.umn.edu/>

### **Instructor:**

Ruth Baker, Ph.D. candidate in Geography

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Office hours: Tuesday and Thursday 5:00-6:00pm or by appointment

### **Teaching Assistant:**

Jerry Shannon

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Office hours and location: *to be determined and posted on Moodle site*

*If you have a disability that requires accommodation in this course, please notify the instructor as soon as possible. Appropriate accommodations will be made given suitable advanced notice.*

### Course materials:

Lo, C.P. and Albert K.W. Yeung, 2007. Concepts and Techniques of Geographic Information Systems, 2nd ed., Pearson Education Canada, Inc., Toronto.

### Prerequisites:

Students are expected to be of junior or senior standing and have a basic knowledge of computers.

### Course objectives:

This course will introduce the fundamental concepts of geographic information systems (GIS) and geographic information science (GIScience), and will introduce two of the several powerful GIS packages on the market, ArcGIS, from Environmental Systems Research Institute (ESRI), and IDRISI, from Clark University. By the end of the course, you should be able to:

- Understand the tools of a GIS and be able to explain and use them
- Locate, import, manipulate, and display geographic information in a GIS
- Describe and engage in the debates and themes in geographic information science

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## Lecture Component

**Attendance.** Prompt attendance at lecture is strongly encouraged. There is nothing that correlates as strongly to performance in the class as regular attendance in lecture. Lectures will include problem-based in-class exercises that will improve your understanding of the concepts. Some of these will be turned in for a grade (see QOWs below). Lecture exams will be primarily based on the lectures, with about 20% of the points on the exam coming from careful reading of the textbook. QOWs will be collected at least 6 lecture days and will also account for attendance on those days, totally 6% of your total course grade.

**QOWs.** The questions of the week (QOW) are *at least* weekly in-class or take-home assessments that will ask questions about subjects covered in the lectures and/or the readings. They are short - they should take only five or ten minutes to complete. The level of questions of the QOWs will be similar to that on the exams, and thus they will be good study aids. The QOWs will be distributed during lecture and should be turned in completed either during that lecture or at the beginning of the following lecture, as you will be instructed when given the assignment. Correct answers are not as

important on QOWs as good attempts that show that you are doing the reading and both attending and following the lectures.

**Exams.** Lecture exams will be primarily consist of multiple choice questions. Calculators will be allowed, but they cannot be apps on cell phones or laptops (which must be off and stowed). Exam 1 and 2 will focus only on the first and second half of the course, respectively. In other words, the exams are not cumulative. Some questions from the QOWs may be repeated on the exams or even inform them (you may be making exam questions!). Lab procedures and details of specific software or computer systems will not be covered on these exams. Make-up exams will only be given in special circumstances. Prior notice of the make-up must be give *at least one week in advance* of the exam, and any make-up exam must be taken *before* the exam time. In the case of severe illness on an exam day, a doctor's note must be provided and a different exam will be given as soon as physically possible.

**Recovery of lost points.** No extra credit options currently exist for the course. However, we will come back to this topic after the midpoint of the semester point totals are entered, at which time recovery of lost points *may be* made possible. This will only occur if the mean course or Exam 1 grade is *significantly* lower than anticipated. Instructions and deadlines would be presented at that time.

### **Laboratory Component**

The goal of the lab section is to build and reinforce GIS concepts introduced in lecture, by building understanding and expertise in ArcGIS and IDRISI software. Each lab builds upon the previous lab, so it is important to avoid falling behind.

**Attendance.** Lab attendance will be taken by your TA and constitutes 7% of your final course grade.

**Assignments and late work.** Each week, our TA will give you a set of "deliverables" for the lab. These are due by the following Sunday night at 11:55 PM. You will upload these digitally to the Moodle site. Do not work on a previous lab during your allotted lab time. It is not fair to monopolize lab time with your TA to ask questions for a previous lab. Late work will be accepted, but at the price of 20% per day (-5pts per day), beginning 11:56 PM on Monday. After 5 days, a late lab will no longer be given value, but must still be adequately completed (would score at least 60% if turned in on time) in order for you to pass the course. ALL LABS MUST BE COMPLETED FOR A PASSING GRADE. The absolute deadline for ALL late work is the beginning of the last day of class (Thursday, August 5th).

**Lab practical.** There will be a lab practical which will be a 60-point timed assessment of your knowledge of and skills with ArcGIS and Idrisi. It will be given during the final lab period August 4<sup>th</sup>, and must be completed in your lab (Blegen 455) during the assigned lab time (6:00-9:00pm). This will be a closed-book, solo effort (no collaboration), but you are allowed to use the online help in the programs for assistance. These are designed to simulate real-world situations where you are using the software in a work environment. The practical is to ensure you can actually manipulate data and provide deliverables using a GIS. This is not something you can "cram" for; you will acquire these skills through your lab assignments.

**Software availability:** It is highly recommended that you work on and complete the lab assignments in the lab period and in the department computing labs. The labs have limited "open" hours posted outside the door. Because ArcGIS is a very large software package, it eats memory and disk space and is not recommended for your personal computers and laptops. You *may* put the software on your computer, though *we will provide no support for doing so*. I will have free student versions of the ArcGIS program available, though not the Idrisi program which you will need for several of the labs. If there is an unusual issue of access to the software in the labs, this is (to a limited extent) sufficient excuse to extend deadlines or grant leniency on lab assignments ("the lab was closed" according to its schedule is *not* sufficient, however). However, a problem with your personal computer, printer, etc. is not acceptable for granting an extension on assignments.

**Recovery of lost points.** Points lost on lab assignments cannot be recovered. Thus, it may be more beneficial for you to turn in a lab a day late than turn in a lab on time, but only half complete. Points lost on lab practical exams cannot be recovered.

**\*\* EXAMS AND DUE DATES – IMPORTANT! \*\***

Students are required to take exams on the announced dates. Make-up exams will not be given except in cases of University-excused absences (**one week advance notice minimum**) or for **documented** emergencies.

Lab assignments are due **at 11:55 pm Sunday following the lab session from which it was assigned**, on the scheduled due dates. Late assignments will incur a penalty of 20% for each 24 hours beyond the due date/time, including weekends and holidays. There will be no exceptions except for documented reasons as noted above.

(Again) all labs must be completed to a satisfactory level in order to pass the course.

Course Grading Structure

We will evaluate you on the basis of your performance on seven 25-point labs (one per week), one lab practical, two exams, and at least weekly QOWs. The point distribution is as follows: Exams and lab projects will be scored using a points system.

		Point Totals					
		number	x	points	=	total	% of grade
Labs	Labs	7	x	25	=	175	35
	Lab Attendance	7	x	5	=	35	7
	Practical	1	x	60	=	60	12
Lecture	Exam 1	1	x	100	=	100	20
	Exam 2	1	x	100	=	100	20
	QOW	6	x	5	=	30	6
Total					=	500	100

Your course grade will be assigned based on your percentage of the total possible points using the weighting scheme above. The grading scale is as follows:

Letter Grade	Percentage	Description of Achievement level
A A-	94-100 90-93.9	Represents achievement that is outstanding relative to the level necessary to meet course requirements.
B+ B B-	87-89.9 83-86.9 80-82.9	Represents achievement that is significantly above the level necessary to meet course requirements.
C+ C C-	77-79.9 73-76.9 70-72	Represents achievement that meets the course requirements in every respect. Minimum level at which a grade of S is achieved (see below)
D+ D	67-69.9 60-66.9	Represents achievement that is worthy of credit even though it fails to meet fully the course requirements.
S	70-100	Represents achievement that is satisfactory, which is equivalent to a C or better
N	<70	For a S/N grading option. Represents failure (or no credit) and signifies that the work was either (1) completed but at a level of achievement that is not worthy of credit or (2) was not completed and there was no agreement between the instructor and the student that the student would be awarded an I.
F	<60	For a letter grade option. Represents failure (or no credit) and signifies that the work was either (1) completed but at a level of achievement that is not worthy of credit or (2) was not completed and there was no agreement between the instructor and the student that the student would be awarded an I.

The total points used to calculate final grades *are not* absolute. I may adjust grades at the end of the course based on the top points earned; however, I never raise the standards. For example, suppose the highest grade earned in the course is 480/500 points. If deemed necessary, I would then calculate student grades based on a total possible number of points of 480 rather than 500. This allows me some flexibility in grading and accounts for questions on exams that may have been unnecessarily difficult or that I did not cover adequately.

**Incompletes:**

Incompletes will be awarded **only** in rare circumstances and **only** when there is a documented medical emergency, family emergency, or legal reason for not completing the required coursework by the end of the semester. Awarding an incomplete requires a written agreement between instructor and student that states the terms for completion. In addition, an “I” grade requires that: (1) the instructor has a reasonable expectation that the student can successfully complete the unfinished course on his/her own no later than the end of the next semester, and (2) legitimate reasons exist to justify extending the deadline for course completion. An “I” grade will automatically lapse to an “F” at the end of the next semester of a student's registration. Students that request an incomplete for the course must meet with me in person to discuss the circumstances surrounding the request and a plan for making up the work.

**Procedure for disputing a grade:**

Any dispute regarding a grade on an assignment or an exam question must be submitted in writing (on paper or via e-mail) no more than 48 hours (including weekends and holidays) after the assignment or exam has been returned. You must provide clear rationale for why you believe that your assignment or exam question deserves a higher score. Statements like “I think I’m right” or “I think I met all of the requirements of this assignment” are not sufficient rationale.

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**General Rules of the Road***Do I have to show up all the time?*

Yes. I won't be formally taking attendance in lecture, but I will have a good sense of who is and who isn't there, and the QOWs will serve as evidence of attendance. I could cite all kinds of studies that the performance of a student is directly and primarily related to his/her attendance in class... just attend every class! You'll get a lot more out of the course. In labs, attendance will be taken and you will be docked 5 points for each absence or late arrival, *excused or unexcused*. Attending lab and keeping up with the labs is the single most important factor in succeeding in the course.

*PowerPoint slides online?*

Yes, they will be posted after lecture on Thursdays. Many things that we discuss in class won't be on the PowerPoint slides, so they will be of only limited help. Attend every class.

*Electronics and distractions during lecture.*

No electronic equipment should be "on" in the lecture other than the computer I'm using for the lecture. This includes **cell phones and laptops!** If you have a particular need for an electronic aid because of a disability, you can talk to me about it and clear its use. Generally, electronic devices are unnecessary distractions not only to you, but to those around you and the lecturer, so put them away. Other distractions, such as talking, snapping gum, eating dinner, snoring, picking at your teeth, drooling, spilling your coffee, etc., should also be done elsewhere.

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**Expectations**

I want you to do well, to enjoy the class, to feel like you are respected as a student and scholar, and to learn skills that may be very important to the rest of your career (academic or otherwise) in Geography and GIS. I want to create a learning environment to encourage those things. I will have occasional check-ins with you to ensure that that is happening. Please don't hesitate to seek me out during office hours or by appointment.

- ~ I expect you to attend each class having read the materials assigned for that day.
- ~ Please respect your fellow students by arriving on time and by not packing up your things until you are dismissed. I work very hard at releasing you on time each day so please give me the courtesy of allowing me to finish a lecture before packing things up. It is disruptive to other students trying to listen to closing remarks.
- ~ Please turn off cell phones, iPods, and other electronic devices (laptops!) and other items (food, newspapers) that can be a distraction to others. If you have better things to do than to pay attention to the lecture by all means do them—elsewhere.
- ~ I encourage you to ask me questions and please answer the questions that I pose to you during the lecture. It is likely there will be times where I cannot answer your questions. I will do my best to discover the answer before the next class or post a response on the Moodle site.

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### **Statement on Classroom Conduct**

Courteous, respectful behavior is expected at all times. Disruptive classroom conduct may result in disciplinary action. The University Student Conduct Code defines disruptive classroom conduct as "...engaging in behavior that substantially or repeatedly interrupts either the instructor's ability to teach or student learning. The classroom extends to any setting where a student is engaged in work toward academic credit or satisfaction of program-based requirements or related activities." Discussions of alternative viewpoints are encouraged in this class but I expect that any such discussions will be constructive and courteous. Questions on class material are always welcome but I ask that extended discussions of such questions be conducted outside of class time. Students who disrupt the positive learning environment in the classroom will be asked to leave. Students whose behavior suggests the need for counseling or other assistance may be referred to their college office or University Counseling Services. Students whose behavior may violate the University Student Conduct Code may be referred to the University Counseling Office.

### **Statement on Academic Conduct**

Academic integrity is essential to a positive teaching and learning environment. All students enrolled in University courses are expected to complete coursework responsibilities with fairness and honesty. Failure to do so by seeking unfair advantage over others or misrepresenting someone else's work as your own can result in disciplinary action. The Student Conduct Code defines scholastic dishonesty as follows: Scholastic dishonesty means plagiarizing; cheating on assignments or examinations; engaging in unauthorized collaboration on academic work; taking, acquiring, or using test materials without faculty permission; submitting false or incomplete records of academic achievement; acting alone or in cooperation with another to falsify records or to obtain dishonestly grades, honors, awards, or professional endorsement; altering, forging, or misusing a University academic record; or fabricating or falsifying data, research procedures, or data analysis. In a lab class such as this, it is acceptable for groups to work together; which may result in assignments turned in that look similar. It is your responsibility to ensure that labs done in groups do not look identical, leaving no doubt that each of you did all the work as assigned. Copying another's work, either in the class or from another class, and turning it in as your own work, or sharing your work knowing that another student will be turning it in as his or her own work, is strictly forbidden and constitutes academic dishonesty. Other examples of academic dishonesty include but are not limited to bringing a "cheat sheet" to an exam, using a cell phone for any reason during an exam, or copying another's work on an exam. Academic dishonesty may result in a minor penalty (a zero for that week's assignment, for example) or a major penalty (an academic dishonesty failure for the course and/or referral to the Dean for further disciplinary actions), at the discretion of the instructor or TA.

### **Statement Regarding Sexual Harassment**

Students are expected to observe University policies regarding sexual harassment, defined as "unwelcome sexual advances, requests for sexual favors, and/or other verbal or physical conduct of a sexual nature when: (1) submission to such conduct is made either explicitly or implicitly a term or condition of an individual's employment or academic advancement in any University activity or program; (2) submission to or rejection of such conduct by an individual is used as the basis of employment or academic decisions affecting this individual in any University activity or program; or (3) such conduct has the purpose or effect of unreasonably interfering with an individual's work or academic performance or creating an intimidating, hostile, or offensive working or academic environment in any University activity or program." Violation of this policy may result in disciplinary action. Complaints about sexual harassment should be reported to the Office of Equal Opportunity and Affirmative Action, 419 Morrill Hall, 612-624-9547.

### **Statement Regarding Students with Disabilities**

It is a University policy to provide, on a flexible and individualized basis, reasonable accommodations to students who have documented disabilities (e.g., physical, learning, psychiatric, vision, hearing, etc.) that may affect their ability to participate in course activities or to meet course requirements. Students with disabilities are encouraged to contact Disability Services and then their instructors at the beginning of the semester to discuss their individual needs for accommodations. Disability Services is located on the East Bank of the Minneapolis Campus at 180 McNamara Alumni Center Gateway Building, 200 Oak Street at University Avenue, 612-626-1333 TTY/voice, <http://ds.umn.edu/>. This syllabus is available in alternative formats upon request.

**\*\*This course syllabus and schedule is subject to revision as necessary.\*\***