

GEOG/ESE 380: Spatial Problem Solving **Spring 2016**

Lecture/Lab: Tuesday and Thursday, 9:30AM-10:50AM, 338 Davenport Hall

Instructor: Dr. Shakil Bin Kashem (kashem1@illinois.edu)

Office: 254 Computer Application Building, 605 East Springfield Avenue Champaign, IL 61820

Office hours: Wednesday, 3:00PM-5:00PM

Course Description:

This course is designed to teach students about the analytical capabilities of geographic information systems with an emphasis on learning to solve spatial problems in both the vector and raster data formats. Students will develop the skills necessary to answer questions or solve problems in their areas of interest, with particular emphasis on problems and questions that require multiple steps to resolve. Students will learn the fundamental theory behind spatial problem solving, but also learn to execute these procedures with industry-standard software packages. Thus, this class contains both lecture/discussion elements and hands-on laboratory work. This course syllabus outlines the overall course format, requirements, and policies. For detail contents throughout the semester please look at the 'Course Outline' page on course website at learn.illinois.edu.

Course Objectives

This course has the following objectives:

- develop analytical capability to process and analyze geographic information in both raster and vector formats.
- learn to complete a geographic information system project from initial project development, data acquisition, data preprocessing, analysis, to successful communication of the results.
- learn to optimize geoprocessing for efficiency, and automate the process through graphical programming or workflows and text-based Python scripts.

Prerequisites

Students must have successfully completed GEOG: 379 – Introduction to Geographic Information Systems (or an equivalent course) in order to enroll in this class.

Textbooks

There are two required books for this course:

Allen, David W., (2011). *Getting to Know ArcGIS ModelBuilder*. 1st edition, ESRI Press.

Zandbergen (2013). *Python Scripting for ArcGIS*, 1st edition, ESRI Press.

Other Materials

Students will receive student licenses of the GIS software used in the course valid for one year which they may install on their personal computers. This can be used to complete class assignments as necessary. Additionally, students will need to have a portable USB hard drive (or thumb drive) to save their work.

Important Note: We will be using an industry standard software package for the laboratory component of this course. This is ESRI's ArcGIS software platform. The University does have a site license for ArcGIS and so it is available for free to all students to install on their personal computers through the Webstore. It is available in most computer labs on campus. You can also access ArcGIS through the Virtual Machines made available by ATLAS for this course. Please look at the 'Accessing Virtual Machines' page for detail instructions.

Moodle and University Email

The University's Moodle system will be used to distribute course materials, assignments, and to keep students informed of their grades. You are responsible for checking it regularly, as this is an official method for communication between the instructors and students for this course. Additionally, please check your university email account daily. University email is also an official course communication method.

The Q&A Forum

In order to increase efficiency, this course has a Q&A Forum for posting questions about the course. Chances are, if you have a question about something in the course, someone else does as well. Therefore, posting the question to the Q&A forum will allow the instructor to answer the question once for the entire class rather than several times through individual emails. Please post all such questions to the Q&A Forum, and please do not be offended if you email the instructor and you are requested to redirect the question to the Q&A Forum. The instructor will try to address any question posted to the forum within 24 hours, but also students are encouraged to answer questions from their peers if they have the answer. That will dramatically help get everyone in the course get the information they need. The Q&A forum is an official communication channel for the course.

Grading Summary

Final grades for this course will be calculated out of 1,000 total points in the following categories:

Item	Points
Midterm Exam 1	150
Midterm Exam 2	200
Python on CodeAcademy	100
Lab Tasks	100
Lab Assignments	150
Mini Project	100
Major Project	200

Exams: Exams will primarily cover the lecture material and be concerned with GIS theory. However, you may also be required to solve GIS problems on the exams, and potentially even use GIS software.

Lab Assignments: Five major laboratory assignments will be turned in for a grade. Each of these assignments is worth 30 points. These laboratory assignments will focus on the technical aspects of using software to answer a geographic question.

Lab Tasks: Lab tasks are based on completion of tasks from the tutorial or laboratory manual assigned for every week. Every week the instructor will specify the lab task to be submitted for lab credit. Lab tasks should be submitted online. You will earn full credit for the lab tasks by successfully completing the tasks at least ten times throughout the semester (10 points each).

Mini Project: Students will complete a mini project that involves programming or otherwise automating some kind of GIS procedure. This is an individual project.

Major Project: Students will be required to complete a major project and it will represent a significant portion of final grade. Students will work in small teams to complete this project. Additional information regarding this project will be provided during the semester, but completing the project will require using a large number of the techniques talked about in class.

Grading Scale

Point Total	Letter Grade
970-1000	A+
940-969	A
900-939	A-
870-899	B+
840-869	B
800-839	B-
770-799	C+
740-739	C
700-739	C-
670-699	D+
640-669	D
600-693	D-
Less than or equal to 599	F

At the discretion of the instructor, minor adjustments to this scale may be made based on the performance of the class as a whole at the end of the course.

Make-Up Exam and Late Work Policy

The Department of Geography does not allow make-up exams except for students in special circumstances and at the discretion of the instructor. These circumstances include (1) the death or illness of a family member, (2) illness of the student, (3) three or more final examinations on the same day, and (4) participation in a university sponsored activity at the same time as the regularly scheduled examination. Make-up exams will not be granted for personal convenience or for personal travel. Make-up exams will also only be granted if the student can document one of the situations described above. Advanced arrangements must be made for situations (3) and (4). If you miss an exam for situations (1) or (2), the instructor must be notified by the end of the workday of the exam either by phone or by email. The missed exam must be made up within one week. Contact the instructor in order to schedule the make-up exam. Tests that are not made up within a week will be graded as a zero.

It is very important for students to complete the assigned laboratory materials on time and in the sequence they are assigned. Laboratory assignments can be accepted up to one week late for a flat 25% late penalty. Laboratories more than one week late will not be accepted.

Laboratory Policies

Students are to obey all department policies regarding the use of the GIS lab. **NO FOOD OR DRINK IS PERMITTED IN THE LABS.** Because of the number of classes taught in the lab, it is generally not available for use outside of class time. However, ArcGIS software is available on nearly every computer on campus. The recommended location for working on lab exercises outside of lab sessions is ATLAS's G8 Computing Lab, located in the basement of the Foreign Languages Building.

Plagiarism and Academic Dishonesty

To claim as one's own the ideas or words of another is plagiarism. Plagiarism is defined as the following:

1. using the exact words of another person's work/writing without acknowledgment of your source through the use of quotation marks and correct citation/documentation;
2. rephrasing a passage of another writer without giving proper credit; - using someone else's facts or ideas without acknowledgment;
3. using a piece of writing for one course that was already used in a previous course (or in courses in which you are simultaneously enrolled) without expressed permission from both instructors to do so;
4. turning in papers or other assignments from "paper mills" or "paper banks" such as those available for purchase from online databases, or where "ghostwriting" services can be acquired;
5. presenting fabricated or falsified citations or materials.

Please consult with the instructor if you are unsure about how to document sources. The instructor of this course may employ different methods of detecting plagiarism and other academic dishonesty, including the use of electronic plagiarism detection software. In accordance with University policies, students who submit a plagiarized assignment shall receive an "F" with a numerical value of zero on the item submitted, and "F" shall be used to determine the final course grade. The instructor also has the option to fail the student in the course. Other forms of academic dishonesty will not be tolerated in class, including, but not limited to, cheating on exams, the fabrication of data, information, or citations in any formal academic exercise, deception (such as providing false information to the instructor concerning exercises - e.g. giving a false excuse for missing a deadline or falsely claiming to have submitted work), the sabotage of other students from completing their assignments, or the impersonation of another student for the purposes of completing an exam or other assignment.

Please review the University's academic dishonesty policies and procedures. They are all in force for this course. If you have any questions about where an activity might constitute academic misconduct, ask the instructor before you engage in the activity.

Classroom Conduct

Beyond the requirements of academic honesty, as a member of the learning community, each student has a responsibility to other members of the community. All students are expected to comport themselves in a dignified and professional manner. It is particularly important to this instructor that students treat one another with respect, which includes not taking part in any behavior which will disrupt the learning environment or inhibit other students' ability to learn or fully participate in class. Please do not talk a while others are talking, while the lecture is ongoing (except for asking questions of course!), and if you finish an exam or other assignment before others, please find a way to keep yourself silently occupied while they finish.

When a cell phone rings in class, it is immediately disruptive to the class. Therefore, cell phones and other such communication devices should be turned off or put on silent (not simply vibrate), and ordinarily should not be taken out during class. Refrain from talking on the telephone, sending text messages, IMing using Facebook, Twitter, personal email, etc., while in class. Students may choose to use electronic methods for note taking, or use technology (such as Internet access) to find information relevant to the lecture or classroom discussion. Such technology usage is permissible.

Policy Regarding Recording Any Face to Face Interactions

This instructor believes that students may be discouraged from participation in class, especially in the discussion of potentially controversial material, if students are making recordings of the class proceedings. Therefore, students may make audio recording of the lecture materials only with the expressed permission of the instructor. Such recordings may only be used for the personal study or research and may not be distributed or otherwise circulated to any third party in any manner whatsoever. Video recordings are prohibited. Further, the lecture material is the intellectual property of the instructor and he holds the copyright for it. Under no circumstances are notes or recordings from the class authorized to be sold.

Disability Policy

Students with a disability in this class are encouraged to meet with the instructor privately during the first week of class to discuss reasonable accommodations. Course requirements cannot be waived, but reasonable accommodations may be provided based on disability documentation and course objectives. Accommodations cannot be made retroactively. Students seeking reasonable accommodations due to disability are referred to the university's disability office in order to discuss their particular needs and also to obtain any documentation necessary for the instructor when the semester begins.

Disclaimer

This syllabus (including course requirements, class policies, and course schedule) is subject to change. However, any students will be notified of any changes through classroom announcement and/or electronic notification through official channels. The announcement of information during any face-to-face meeting is an official communication channel for information in this course. Not being present to receive such information is not a valid excuse for having the most updated information.