Geography 473, Winter 2015
University of Maryland College Park

GIS and Spatial Analysis

Lecture: Monday & Thursday 5-8:30pm, online
Lab: Tuesday & Wednesday 5-8:30pm, online

Instructor: Naijun Zhou, Ph.D.
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Teaching Assistant: Megan Williams
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Course Website: ELMS @ http://elms.umd.edu/

Adobe Connect Live Classrooms: URL links in *GEOG473Winter2015_Lecture_Lab_Classroom.PDF* posted on ELMS. Note the live classroom may not be available until the 2 hours before a class starts.

Course Objectives

This advanced GIS course introduces the analytical use of geospatial information. Students will develop an understanding of spatial analysis methods, and learn practical skills of using GIS and spatial analysis to discover features of spatial distribution. The class covers the methods of spatial analysis including

1) querying geospatial databases by attribute and by location,
2) measuring geometric features and identifying the spatial patterns of geospatial objects that are represented as point, line, network and polygon data, and
3) generating and analyzing 3-D surfaces.

As an important component of this class, labs are designed closely related to lectures and provide hands-on experiences of spatial analysis using GIS software ArcGIS 10.

Recommended Textbooks

There are no required textbooks. The following books may be useful for optional readings:

Andy Mitchell, 2005. *The ESRI Guide to GIS Analysis Volume 2: Spatial Measurements & Statistics*. ESRI Press. ISBN: 158948116X.

Paul Bolstad, 2005. *GIS Fundamentals: A First Text on Geographic Information Systems*, 2nd Edition. Eider Press, White Bear Lake, Minnesota, 2005. ISBN: 0971764719.

David O'Sullivan, David Unwin, 2003. *Geographic Information Analysis*, John Wiley & Sons. ISBN: 0471211761.

Andy Mitchell, 1999. *The ESRI Guide to GIS Analysis Volume 1: Geographic Patterns & Relationships*. ESRI Press. ISBN: 1879102064.

Course Requirements

- **FIVE** topics are covered: geospatial databases, point data analysis, line and network data analysis, area data analysis, and surface analysis.
- **FIVE** labs that are grouped into the above five topics**.**
- **FIVE** homework assignments, each for one topic. Each homework includes findings from lab exercises and discussion questions. A digital copy completed homework must be turned on ELMS (detailed submission direction will be provided with homework questions). Note: if you prefer writing the homework question by hand, you may need to scan or take a picture of the work and submit it on ELMS (the work should be clearly readable). You are expected to start the work early, particularly for winter course. Never underestimate the time you will spend on the assignments.
- **ONE** exam. The exam includes the materials covered in lectures. The exam format is a combination of short answers, essay, calculation, and multiple choice questions.
- **Although the class is online, attendance at all lectures and labs is required because no texts perfectly cover the lecture materials and the lab exercises are essential to learning practical skills**. Under special circumstances, you might miss one or few lectures and/or labs. Archived lecture/lab videos are provided on ELMS.
- Late work and make-up exams are given for University approved excused absences, and students must notify the TA and/or the Instructor and make arrangement at least 24 hours BEFORE the due date. Students also need to provide valid documents for late work and make-ups. Otherwise, no late work and make-up requests will be accepted.
- Materials including lecture slides, announcements, homework questions, archived lecture and lab videos will be posted on ELMS. Check ELMS frequently. Lab instructions and lab data are stored in Geography Lab computers.
- **E-mail**: for efficient communication, please give your full name, the class (i.e., GEOG473) and the section in your email subject or email body. **Instead of ELMS message, please email Dr. Naijun Zhou at njzhou@umd.edu, and Megan Williams at meganlw2@gmail.com**.
- **COMMUNICATE**! Feel free and do not hesitate to contact the instructor and the TA if you have any concerns, critiques and suggestions. They are ALWAYS welcome, and the earlier the better.

Grading

My baseline grade for the course, which assumes that you complete the work in good faith, on time, with serious effort, and with a certain degree of success, is a "B." To do better, you need to give something extra ☺, to do worse, you need to give something less.

The numeric points of student's work will be evaluated as:

Assignment Type	Number of Assignments	Points Per Assignment	Total Points (sum to 100)
Homework 1, 2, 3, 4, 5	5	15	75
Exam	1	25	25

The final letter grade is based on the calculated numeric points in the table, and will be graded as: A: 85.0-100, B: 75.0-84.9, C: 65.0-74.9, D: 55.0-64.9, F: <55.0

Academic Honesty

Within our class, students may work together on homework assignments, however, each student absolutely must turn in their own work, from their own computer, and any work must be theirs alone.

The University of Maryland, College Park has a nationally recognized **Code of Academic Integrity**, administered by the Student Honor Council. This Code sets standards for academic integrity at Maryland for all undergraduate and graduate students. As a student you are responsible for upholding these standards for this course. It is very important for you to be aware of the consequences of cheating, fabrication, facilitation, and plagiarism. For more information on the Code of Academic Integrity or the Student Honor Council, please visit http://www.shc.umd.edu.

Online Learning

We will meet online at the announced time for a live audio/video lecture using Adobe Connect. **The online classrooms for each lecture and each have been provided in the file GEOG473Winter2015_Lecture_Lab_Classroom.PDF on ELMS.** The lecture will be archived for anyone who absolutely must miss the class, but I encourage you to login at the appointed time so that you can participate in the class and ask questions.

Hardware and Software Requirements

The live lab classroom is on Adobe Connect. You may use either a PC or a Macintosh computer to access the live classroom (Adobe Connect) and ELMS. Whichever you choose, it must be equipped with the following hardware: Internet and speaker (or earphone), and the optional equipments are web cam and microphone if would like to communicate with the instructor/TA/class via video and/or audio during the lecture and lab. You also need flash player to view the archived videos. We will primarily use ArcGIS software (10.2) available at UMD server. The 1-year educational license of ArcGIS has been provided by the instructor together with the installation guide on ELMS.

Course Schedule

Date	Lecture	Lab and Due date
1/5	Geodatabases	
1/6		Lab 1: Geodatabases
1/8	Point data analysis	
1/7		Lab 2: Point data analysis Homework 1 due: 1/7, 5pm, ELMS
1/12	Line data and network analysis	
1/13		Lab 3: Line data and network analysis Homework 2 due: 1/12, 5pm, ELMS
1/15	Area data analysis	
1/14		Lab 4: Area data analysis Homework 3 due: 1/14, 5pm, ELMS
1/19	MLK Holiday Day. NO CLASS	
1/20	Surface analysis	
1/21		Lab 5 Surface analysis Homework 4 due: 1/20, 5pm, ELMS
1/22	**Conclusion, Review, Exam**	Homework 5 due: 1/22, 5pm, ELMS No lab.