

## Syllabus for GEOG473

### **Instructor**

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(Additional office hours can be scheduled by appointment via email or phone.)

### **Teaching Assistant**

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*Office Hours:* TBA  
Online office hours (TBA)

### **About the Course**

*Time:* 5:30m – 8:00pm, Tuesdays  
*Location:* Online (<http://elms.umd.edu>); **Note:** Last week meeting at LeFrak1171.

### ***Description***

This is an advanced course in GIS and spatial analysis developed specifically for students in the Master of Professional Studies, Geospatial Information Sciences program. Students will develop an understanding of spatial analysis methods and learn practical skills in using GIS and spatial analysis to discover features of spatial distribution. The class covers the methods of spatial analysis including measuring aspects of geometric features and identifying spatial patterns of geospatial objects that are represented as point, line, network, areal data, and 3-D surfaces. The material will be presented in readings, lectures, and lab assignments.

### ***Textbooks***

There is only one required textbook for the course:

1. Mitchell, Andy. The ESRI Guide to GIS Analysis, Volume 2. ESRI Press, 2005. ISBN: 978-1-58948-116-9. This book is available in the UMD bookstore or can be purchased from [www.esri.com](http://www.esri.com).

Should you have time and interest, an optional book can be used for your reference:

2. Longley, Paul A., Michael F. Goodchild. Geographic Information Systems and Science. John Wiley & Sons, 2005. ISBN: 047087001X.

### ***Assignments***

There are totally seven (7) lab assignments to be completed. Each of these lab assignments will count 10% of the final grade. Lab reports are due by the date specified in the Course Schedule. Late submission of lab reports will result in a reduction of the grade for that assignment of 10 points (out of 100 in total) per day. However, in some rare situations (e.g. medical or family emergency), if you need extra time, you will have to contact the instructor before the due date so that the deadline may be extended.

### ***Software***

The required software for this class is ESRI ArcInfo/ArcGIS 9.3.1. The software is available in the department's Open Lab. Even though this is an online class and you are not required to come to the

campus, you are still welcome to use the lab. It will be the best if you have access to the software at home or work.

**Note:** The free software that comes from ESRI in books and other venues does not have the ArcInfo license and cannot be used to complete most assignments.

### ***Course Communication***

All students are required to have a GLUE account and a UMD email address. We will frequently use email for communication in the class and we will **only** use UMD email addresses. Be sure that the email address on TESTUDO is your UMD account. Each student will also need permissions to the OpenLab. Instructions for getting these accounts will be given at orientation and on the first day of class.

Assignments, announcements, data sets, etc. will be made available to registered students via Blackboard: <http://elms.umd.edu>. You are strongly recommended to log in Blackboard and check the announcements regularly (at least once a day). You also need to check your UMD email account often so that you will get all the information sent to the class.

### ***Final Project***

Because this course is designed to be practical emphasizing on GIS analysis, a final project is considered a better option compared to a final exam. This will allow students spend more time focusing on how to use GIS as a tool in their study/research/work. The project is preferably relevant to the student's academic field.

A written proposal of research ( $\geq 2$  pages) must be submitted in class by the date specified in the Course Schedule. The proposal should: (1) identify research problem; (2) provide background information; (3) list objectives; and (4) describe data and methods. Students are encouraged to contact the instructor early during the semester to discuss potential topics and scope. This proposal will be worth 5% of your final grade

The project must be carried out individually and independently. This project should be limited in scope and designed for completion during the semester.

Students are required to report their research project in a poster format. The poster must be submitted by the deadline and it will account for 25% of your final grade. Students will learn how to make posters in the class.

### ***Grading***

The distributions of grade among lab assignments, quizzes, exam, and final project are:

Lab Assignments =	70%
Final Project =	30%

The plus/minus grading system will be used to assign student grades which will be determined as follows:

97-100 =	A+
93-96.99 =	A
90-92.99 =	A-
87-89.99 =	B+
83-86.99 =	B
80-82.99 =	B-
77-79.99 =	C+

73-76.99 = C  
70-72.99 = C-  
67-69.99 = D+  
63-66.99 = D  
60-62.99 = D-  
<60 = F

Minor adjustments to this scale might be made based on the performance of the class as a whole.

## **Rules & Policies**

### ***Lab Access***

If needed, students will have access to the GIS labs through their UMD ID cards as well as an account to use the PCs in the GIS lab.

Students are responsible for keeping their account in good standing. This includes keeping the total amount of storage space on the network drive to a reasonable amount that is required to complete the current lab assignments. No materials unrelated to the GIS courses are allowed. Storage space allocations will be checked periodically to determine if any students exceed the reasonable amount of storage. Failure to comply with this policy may result in suspension of GIS lab use privileges. All student accounts will expire at the end of the course. Student must move or copy any materials the she or he intends to keep for later reference.

### ***Class Environment***

In this class, students will meet in a virtual space online which will be treated as a classroom. It is important to recognize that the classroom is an environment that requires respect for all participants. Therefore, students are expected to conduct themselves in a considerate manner.

Disruptive behavior of any kind will not be tolerated. Students who are unable to show civility with one another, the teaching assistants, or myself will be subject to being referred to the Office of Student Conduct or to Campus Police. You are expected to adhere to the Code of Student Conduct.

### ***Medical Excuses***

Campus Senate policy requires students who are absent due to illness/injury to furnish documentary support to the instructor. I require students to contact me by email or by phone prior to class time in which you indicate that you have an illness or an injury. You must provide written documentation verifying your illness/injury immediately upon your return to class. You will not be allowed to turn in missed assignments or make up quizzes, tests, papers, etc. if you have not provided this documentation. Documentation not presented to me in a timely manner will not be accepted. In addition, if it is found that you have falsified the documentation provided, I will refer you to the University's Student Conduct Office.

### ***Students with Disabilities***

Any students with a disability in this class are encouraged to meet with the instructor privately during the first week of class to discuss accommodations. I will make every effort to accommodate students who are registered with the Disability Support Services (DSS) Office and who provide me with a University of Maryland DSS Accommodation form which has been updated for Fall'2009 semester. This form must be presented to me no later than October 1, 2009. I am not able to accommodate students who are not registered with DSS or who do not provide me with documentation which has been reviewed by DSS after October 1, 2009.

**Course Schedule**

This is a tentative schedule and may be adjusted to suit our class. Changes will be announced and posted on Blackboard.

<b>Week</b>	<b>Date</b>	<b>Lecture Topics</b>	<b>Readings</b>	<b>Assignments *</b>
1	Sep 1	Course Overview Introduction to Spatial Analysis Demonstrations and Examples Class Survey	Lecture Slides	
2	Sep 8	Fundamental Spatial Analysis – Spatial Query –Spatial Join –Overlay Operations –Buffering	Mitchell 1-20	Lab 1 out
3	Sep 15	Point Pattern Analysis –Geometric Measurements –Quadrat Count Analysis –Kernel Density Analysis –Nearest Neighbor Analysis	Mitchell 21-50, 80-103, 135-145, 147-162	Lab 1 due  Lab 2 out
4	Sep 22	Line Data Analysis –Line Length –Line Density –Line Direction –Line Orientation	Mitchell 51-60	Lab 2 due  Lab 3 out
5	Sep 29	Network Analysis –Routing –Service Area –Closest Facility	Lecture Slides	Lab 3 due  Lab 4 out
6	Sep 30	Areal Analysis –Spatial Autocorrelation –Joint Count	Mitchell 104-132, 163- 180	Lab 4 due Lab 5 out
7	Oct 6	Surface Analysis –Spatial Interpolation –Distance Analysis –Density Analysis –Surface Analysis Operations	Lecture Slides	Lab 5 due  Lab 6 out
8	Oct 13	3D Analysis	Lecture Slides	Lab 6 due Lab 7 out Final project proposal due
9	Oct 20	Advanced Topics Summary	Lecture Slides	Lab 7 due
10	Oct 27	Poster session **		Final project due on Oct 26

**Note:**

\* - The deadline is midnight (12:00am) of the specified due date.

\*\* - Students are required to attend the class in person on this date.