

# GEOG 5140 - Methods in GIS

*Course Syllabus (Summer 2014)*

## Instructor

**Dapeng Li**

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Office Hours (OSH 334): Tuesday 1:00 pm – 4:00 pm or by appointment

**Lab Location: OSH 273, Tuesday 4:00 pm – 6:00 pm (optional)**

## Prerequisites

GEOG 3140 or equivalent. If you fail to meet the requirement but feel you are qualified to be successful in this course, contact the instructor before enrolling.

## Credit hours

GEOG 5140 is a **four-credit-hour** course. This is an online or hybrid course, so while there is no obligation to spend any time on campus, you are expected to join in online and laboratory activities which may be scheduled at set times. The instructor will work with the students to set up a schedule that works for most. Expect to spend around 3 hours per credit per week or **12 hours per week** total on this course, depending on your experience taking online courses and your background in GIS.

## Course objectives and scope

This course explores advanced use of a Geographic Information System (GIS) to support geographic inquiry and decision making. You will strengthen your theoretical knowledge of geospatial information concepts and methods through online instructor-supported self study.

You will learn to apply this knowledge and expand your practical skills in operating a GIS. Upon completing this course successfully, you will possess all competencies necessary to meet the challenges that a junior GIS analyst will typically face when employing a GIS to answer real world geospatial questions in a professional context. In a new epilogue to this course, you will make your acquaintance with some emerging new GIS domains such as the Geoweb and the Cloud Computing.

*Detailed learning objectives for each week will be published on Canvas*

## Required reading

Chang, K. 2013. *Introduction to Geographic Information Systems (Seventh Edition)*, McGraw-Hill. ISBN-13: 978-0077805401

*Further reading may be assigned over the course of the semester and will be provided as needed.*

## Required Software

You will need access to ArcGIS 10.1 software for the duration of the course. There are a few ways you can get this access. If you are a local University of Utah student, you are welcome to use the facilities provided at the Department. You can also use the [CSBS Virtual Lab \(instructions\)](#). I will also have [ESRI software student licenses](#) if you want to install ArcGIS on your own (Windows) computer. I will distribute information on that through Canvas.

## Assessment

There will be **two midterm exams** (15% each). These will be timed, online, open-book exams and may include multiple choice, short answer and essay questions.

There will be **ten lab assignments** (40% total, weighted equally) and **one final project** (20%)

There will be some on-line **discussions and exercises** (10% total)

I will offer **no extra credit assignments**.

## Grading Scale

A	94% - 100%
A-	90% - 94%
B+	87% - 90%
B	84% - 100%
B-	94%-100%
C+	94%-100%
C	94%-100%
C-	70% - 74%
D+	67% - 70%
D	64% - 67%
D-	60% - 64%
E	< 60%

## Late assignments

Assignment due dates will be posted in Canvas. Late assignments will be penalized 10% for every day or part thereof that they are late. You can only request one-week extension for one time during this semester. Such requests need to be made at least one day before the due date.

## *Make-up exams*

Requests for a make-up exam need to be made before the exam date. Only in exceptional, documented circumstances will a make-up exam be granted. If a make-up exam is granted, it may take any form, at the discretion of the instructor. You will be required to take this make-up exam at the University Testing Center. Please note that a fee is charged by the testing center for the use of their services.

## *Course structure*

### *Reading and Exercises*

This is an online course, which means that there will not be any classes in the traditional sense. Just like in a traditional course, however, you are expected to keep up with the reading schedule outlined below. There will be a weekly interactive session with the instructor where you will have the opportunity to ask questions and explore the topics further.

You will be quizzed on your comprehension of the readings on a very regular basis. The quizzes will typically comprise a practical exercise. For examples, please see the textbook.

### *Labs*

There will be ten two-hour labs on campus. A set of tutorial videos will be simultaneously uploaded on Canvas. You are strongly encouraged to attend these lab activities on campus although you can watch online tutorial videos on your own.

### *Final Project*

You will design and complete a **geospatial analysis project**. The project will involve defining a geospatial problem, gathering and processing the required data, performing geospatial analyses, and reporting and visualization of the results. You are strongly encouraged to seek out a local GIS professional for inspiration for a real world problem. You will submit all project proposals to the instructor before embarking on execution.

### *Instructor Availability*

Apart from participating in the discussions, the instructor will be available for private or smaller group **consultations**. You can request a consult (to be conducted through Skype) at any time during the course. The instructor reserves the right to reschedule consultation appointments at any time. The instructor will answer all **personal messages** within 2 weekdays (Mon-Fri).

## Canvas use

The instructor will broadcast all announcements via Canvas and only via Canvas. **It is your responsibility to log in to the Canvas course website frequently** and you are encouraged to set up email forwarding to ensure you receive important messages timely. Not having read an announcement that was issued through the course website is never an acceptable excuse for anything.

## Course Schedule

This schedule is subject to change, always check the course web site for the latest. Reading assignment refers to the textbook unless otherwise indicated.

Module	Readings	Content
Week 1 5/12 – 5/18	Chapter 1	<b>Introduction</b>
Week 2 5/19 – 5/25	Chapter 2, 9	<b>Cartography, Projections &amp; Coordinate Systems</b> (Lab 1 projection and mapping)
Week 3 5/26 – 6/1	Chapter 3, 4, 8	<b>Data Modeling</b> (Lab 2 geodatabase)
Week 4 6/2 – 6/8	Chapter 5, 6, 7	<b>Data Acquisition &amp; Transformation</b> (Lab 3 georeferencing and editing)
Week 5 6/9 – 6/15	Chapter 11	<b>Vector Data Analysis</b> (Lab 4 vector data analysis)
Week 6 6/16 – 6/22		<b>MIDTERM 1 (Chapter 1, 2, 3, 5, 6, 7, 8, 11)</b> (Lab 5 topology)
Week 7 6/23 – 6/29	Chapter 4, 12	<b>Raster Data Analysis</b> (Lab 6 suitability analysis, <b>final project proposal due</b> )
Week 8 6/30 – 7/6	Chapter 13, 14	<b>Terrain Mapping, Viewshed and Watershed Analysis</b> (Lab 7 viewshed analysis)
Week 9 7/7 – 7/13	Chapter 18	<b>GIS Models and Modeling</b> (Lab 8 GIS modeling)
Week 10 7/14 – 7/20	Chapter 16, 17	<b>Geocoding &amp; Network Analysis</b> (Lab 9 geocoding and transport network analysis)
Week 11 7/21 – 7/27	Chapter 15	<b>Spatial Interpolation</b> (Lab 10 spatial interpolation)
Week 12 7/28 – 8/3		<b>MIDTERM 2</b> (Chapters 4, 12, 13, 14, 15, 16, 17, 18)
Week 13 8/4 – 8/10		<b>Final Project Reviews</b> (Final project due on 8/10/2014)

**Please note: If you have a legitimate conflict that prevents you from joining any activity or taking any quiz or exam at the scheduled time, it is your responsibility to contact the**

**instructor well ahead of time, but no later than one week in advance of the activity or exam, to make suitable arrangements. There will not be any guarantees that you will be able to make up any activity or exam missed due to scheduling conflicts.**

### *Additional Information*

**Scheduling Conflicts:** Please speak with the instructor within the first two weeks of class regarding any known conflicts you may have with the course schedule.

**Academic Integrity:** The University of Utah is committed to nurturing academic excellence, truth, honesty, and personal integrity. The faculty expects all students to maintain high ethical standards. Academic misconduct will not be tolerated. Penalties will include failure of an assignment, or possibly the entire course, and the filing of formal charges with appropriate university authorities. Academic misconduct includes, but is not limited to, cheating, misrepresenting one's work, and plagiarism:

- Cheating involves the unauthorized possession or use of information in an academic exercise, including unauthorized communication with another person during an exercise such as an examination.
- Misrepresenting one's work includes, but is not limited to, representing material prepared by another as one's own work or submitting the same work in more than one course without prior permission of all instructors.
- Plagiarism means the intentional unacknowledged use or incorporation of any other person's work in one's own work offered for academic consideration or public presentation.

**Faculty and Student Responsibilities:** The class will follow accepted University of Utah policies and procedures. Please refer to the University of Utah Faculty Handbook and Student Code. Specifically: All students are expected to maintain professional behavior in the classroom setting, according to the Student Code, spelled out in the Student Handbook. Students have specific rights in the classroom as detailed in the Code. The Code also specifies proscribed conduct that involves cheating on tests, plagiarism, and/or collusion, as well as fraud, theft, etc. Students should read the Code carefully and know they are responsible for the content. According to Faculty Rules and Regulations, it is the faculty's responsibility to enforce responsible classroom behaviors, beginning with verbal warnings and progressing to dismissal from class and a failing grade. Students have the right to appeal such action to the Student Behavior Committee.

**Disability Accommodation:** The University of Utah seeks to provide equal access to its programs, services and activities for people with disabilities. If you will need accommodations in the class, reasonable prior notice needs to be given to the Center for Disability Services, 162 Olpin Union Building, 581-5020 (V/TDD). CDS will work with you and the instructor to make arrangements for accommodations. All written information in this course can be made available in alternative format with prior notification to the Center for Disability Services.