UPP 461 Geographic Information Systems for Planners, Fall 2016

Instructors
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Teaching Assistant
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There are four sections of this course. All classes meet in AEH2201.

Day and Time	Graduate CRN	Undergrad CRN	Instructor
Tuesday 12:30-3:15	32432	39819	Nabil
Wednesday 12:00-2:45	39790	39821	Nabil
Wednesday 6:00-8:45	33884	39820	Nina
Thursday 12:30-3:15	39791		Mark

The Course
Our UPP461 course covers GIS principles and concepts with an emphasis on mapping, thinking spatially, and performing and quantifying spatial analysis. We use ESRI's ArcGIS Desktop version 10.4. We teach you how to work systematically, including how to organize files and document your work. We teach using vector GIS, but some students incorporate raster data. During the semester you will learn how to find data and make it GIS-ready; and for your final project, you will develop your own work. We will guide you through the process of asking a question only GIS can answer, finding appropriate data, making a map, and quantifying the resulting spatial analysis. Along the way, we teach you how to record your work using project logs (think "lab reports" or geology field notes) and teach you solid ways of using ArcGIS for Desktop 10.4 software.

Although the title of our class is "Geographic Information Systems for Planning", it has always been multidisciplinary. This semester is typical; for example, we have 23 students from public health, civil engineering, economics, and public administration. Our planners specialize in a range of disciplines from physical planning to community development. Our mixed classes enrich student experience because we've found that learning outside your discipline informs your research.

Rather than a separate lab and lecture, we incorporate the two. We meet once a week for 3 hours in a computer lab. Most lectures are accompanied with hands-on demos so you use the software while learning GIS techniques. We require a lot of homework to reinforce concepts; we wrote these assignments so you will not find them in a book. We assign a textbook that has different exercises so you can practice skills. We give students the opportunity to redo most homework for full credit so they can fully understand GIS principles.

Schedule
The schedule is included in a separate document. Updates will appear on Blackboard so keep looking and watch for the revision dates on the document.

Office Hours
GIS Help Desk
It is highly recommended that students utilize the GIS Help Desk (drop-in GIS assistance) on
Mondays and Tuesdays 10am-12pm in the UDVL lab, CUPPA, Room 141. If you need help with an exercise,
you should email Youngjun Kim, and copy all the other instructors.

Office hours
If your schedule does not permit you to utilize the GIS Help Desk, we will schedule appointments at other times
by email only. Please email instructors for an appointment.

Please do not drop in to the UDVL lab in Room 141 outside of the GIS Help Desk hours without an
appointment with "a quick question". We might not be there or we may be working on other projects.

Contacting Instructors and TA by Email
When emailing be sure to email all instructors and the TA to insure quickest response.
Emails must have the following in Subject Line: Your Name, UPP461, Section, topic of email.
    For example: JonesUPP461 Wed12 Question About HW05.
Attachments to emails also need to contain your name, UPP461, and section in their filenames.

Student Evaluation
Performance will be evaluated on the basis of varied assignments (40 points), class attendance (20 points), and a
final project of your own design (40 points).

40 points	10 Homework exercises -- point values will be indicated on each exercise	Due as shown on class schedules 1 point is deducted for late exercises "Late" means after 6pm on the due date
20 points	Attendance	1.333 points subtracted per missed class
40 points	Final Project	Final project proposal (3 points) Oral presentations during last two classes. Final presentation with notes due, Fri 9 Dec 2016 (37 points)

Usually each class will include lecture and lab. Attendance in class is expected and attendance means all of
class! Usually there is much content to cover in class so classes start promptly at the scheduled time. Students
are responsible for all material posted on Blackboard whether it is covered in class or not. If you miss a class,
you will be responsible for the material. Find a study-buddy to help you.

Homework
Homework, unless we tell you otherwise, is due by 11:59 p.m. on your due date.

   for Tuesday class: Sunday after exercise is assigned
   for Wednesday classes: Monday after exercise is assigned
   for Thursday class: Tuesday after exercise is assigned

Homework will be submitted to Blackboard to the content area "Dropbox for Assignments."

If we give you the opportunity to redo a homework, you have **one week from the day it is discussed in class** to
complete it to earn extra points. Redone exercises will **not** be accepted after this one week period. There will be

only 1 redo opportunity per exercise, except for HW03. The Dropbox for Assignments content area allows you to resubmit your assignment.

Often the exercises will have two main components. The first component will be focused on specific questions or challenges related to content of the class when the exercise is handed out. The second component will contain questions about the readings assigned for the next class. Incorrect answers in this second component will NOT be eligible for redo.

All homework exercises submittals must have Your Name, course number (UPP461), section (Tues, Wed12, Wed6, or Thur), Homework number, date, and page number ON EVERY PAGE or it will NOT be graded.
Here is an example:
     Nina Savar, Fall UPP461, Wed6, HW07, 22 Aug 2016   Page x

Computer Lab Access at CUPPA and UIC and software
All students enrolled in UPP 461 have the option to work in the computer labs at CUPPA. All students will have 24-hour swipe access into the front door of CUPPA and 1st floor entrance doors after 5pm.

Undergrads: 1st floor CUPPA cubicles 147-153; and 2nd floor UPP room 251 (7 computers).
UPP Grads: 1st floor CUPPA cubicles 147-153; and 2nd floor Lab Suburbs
Non-CUPPA folks: 1st floor CUPPA cubicles 147-153.

In addition, some ACCC labs have ArcGIS for Desktop installed. The Course Information content area on Blackboard lists labs across campus that have ArcGIS software.

--The AEH2201 computers and CUPPA lab computers are loaded with ArcGIS 10.4 (Advanced level).

--The **newest** version of the textbook, *Getting to Know ArcGIS – 4th Edition for ArcGIS 10.2 and 10.3* comes with ArcGIS for Desktop version 10.3 (Advanced level). We recommend that you get ArcGIS for Desktop 10.4 software from your instructors so you have the latest version.

Required Books and Materials

USB flash drive capable of holding 4 to 8 GB of data. We want you to do all your GIS work to this flash drive so the bigger the better.

Krygier, Wood. 2011- 2nd Edition. ***Making Maps** – A Visual Guide to Map Design for GIS.* The Guilford Press, New York. ISBN: 978-1-60918-166-6.

Mitchell. 1998. ***Zeroing In** – Geographic Information Systems at Work in the Community*. ESRI Press, Redlands CA. ISBN: 1-879102-50-1. A good summary of examples of things you can do with GIS. The necessary chapters will be provided on Blackboard so no need to purchase this book.

O'Looney, 2000. ***Beyond Maps** – GIS and Decision-Making in Local Government.* ESRI Press, Redlands CA. ISBN: 1-879102-X. Provides useful background in understanding uses of GIS by local government; fertile place for ideas about your final projects. The necessary chapters will be provided on Blackboard so no need to purchase this book.

Law and Collins. 2015**.** *Getting to Know ArcGIS* **– 4th Edition for ArcGIS 10.2 and 10.3**. ESRI Press, Redlands CA. ISBN 978-1-58948-382-8. This book comes with an evaluation copy of the software. <u>We recommend that you get a free one-year student version of the software from your instructors.</u> *

MAC users…the ArcGIS software won't work on your computers unless you have a windows operating system.   We are told that Bootcamp is preferred. A guide for installation on a MAC, although a few years old, can be found on the UDVL website:
http://www.uic.edu/cuppa/udv/GIS/ArcGISonMac200911.pdf

Also see http://edcommunity.esri.com/software-and-data/mac-os-support

See a summary of hardware requirements at the following site:
http://www.esri.com/software/arcgis/arcgis-for-desktop/system-requirements

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*Instead of downloading the software from the ESRI website, you can obtain a 1 year-licensed Education Edition of the software at the Advanced level of functionality from your instructor. This software can only be used for education purposes and may only be installed on non-UIC computers.

Reference Books (not required but useful)

** indicates that pdf of document is available on Blackboard > Class Materials for All Weeks > All Weeks

Brewer, Cynthia A. 2005. *Designing Better Maps – A Guide for GIS Users,* ESRI Press, Redlands, CA. ISBN: 9781589480896

ESRI Staff. 2004. *Understanding Map Projections*. ESRI Press, Redlands CA.
** filename: Understanding_Map_Projections.pdf, ESRI Staff, 2004.

What is ArcGIS. ESRI Press. Redlands CA.
** filename: What_Is_ArcGIS.pdf

Maher, Margaret M., 2010. *Lining Up Data in ArcGIS.* ESRI Press, Redlands, CA. ISBN: 978-1589482494
An excellent guide for understanding map projections in ArcGIS.

Mitchell. 1999. *ESRI Guide to GIS Analysis – Geographic Patterns and Relationships*, Volume 1. ESRI Press, Redlands CA. ISBN: 1-879102-06-4

Mitchell. 2005. *ESRI Guide to GIS Analysis – Spatial Measurements and Statistics,* Volume 2. ESRI Press, Redlands, CA. ISBN: 1-589481-16-X

Mitchell. 2012. *ESRI Guide to GIS Analysis – Modeling Suitability, Movement, and Interaction*, Volume 3. ESRI Press, Redlands, CA. ISBN: 978-1-58948-2305-7

Important Notes about Data for Course
The lab portions of each class will require you to access exercise data sets. These data will not be installed on the classroom computers. You will have to bring this data with you to class or copy them from Blackboard at the beginning of class. To do this and to hold information created during class and in the creation of your final project **you will have to acquire an USB flash drive capable of holding at least 4 Gb of data.**

Not counting the data you will compile and use for your final projects, there are three different data sets you will need to load on to your USB flash drive as the course proceeds.

1. The first supports the exercises in *Getting to Know ArcGIS*. **We expect you to work through all the exercises for the chapters assigned in this book before the date the specific topics are discussed.**

    When you are using *Getting to Know ArcGIS for 10.3*, you can download the exercise data from the GIS 101 Blackboard site[†] (see below).

2. Data for Class Exercises. These data will appear on the course's Blackboard site as they are needed in the course. Refer to the class schedule to understand what data sets are needed by class dates. **You should set up your workspace for each class exercise prior to the class where that exercise will be used.** We will show you how to define a workspace during the first weeks of the course.

3. Data for Homework Exercises. Except for the first homework, these data will appear on the course's Blackboard site as they are needed in the course. Refer to the class schedule to understand what data sets are needed by class dates.

Blackboard
The course's Blackboard site is an important resource. In addition to the exercise data and basic information about the course, the instructors will post supporting materials, short videos on particular GIS tools, and a set of "Da Rules." You should use the discussion board to post questions for the instructors and your classmates, and to answer your classmates' questions.

[†]In addition to the course Blackboard site, there is a second Blackboard site called **GIS 101**. This is a permanent site meaning once you are enrolled, you will have access to this site as long as you have a UIC netID and logon privileges.

Working Together
The instructors believe that it is easier to comprehend and absorb the course content if you work with partners. We strongly urge you to work with your classmates both in the class/lab as well as outside of class. It is easy to get stuck in the logic of GIS operations. Partners should be able to push their way through what otherwise might be very frustrating challenges.

BUT A CAUTION: It must be evident to the instructor that the exercises you post are your own work. The point here is to work together to figure out how to do the exercises but *do them on your own.*   Note that the

University of Illinois at Chicago Guidelines Regarding Academic Integrity state that: "All members of the campus community—students, staff, faculty, administrators—share the responsibility of insuring that these standards are upheld…Academic dishonesty includes, but is not limited to: cheating, fabrication, facilitating academic dishonesty / plagiarism, … , non-original works." (The full guidelines are available online at http://www.uic.edu/depts/dos/studentconduct.html)

Food and Drink in the Lab
Keep bottles of water, munchies or whatever in your bags or on the floor. If you need to take care of thirst or hunger, get up and go out to hall.

Please turn off your cell phones. Should one be audible during class, you may be asked to leave class for
that afternoon or evening --- attendance points will be deducted.

Special Needs/Disabilities Accommodation
Students requiring specific accommodation please contact the UIC Disability Resource Center at: 1200 W. Harrison St. 1190 SSB (MC 321) or call (312) 413-2183 Voice or (312) 413-0123 TTY or (312) 413-7781 FAX or on-line at http://www.uic.edu/depts/oaa/disability_resources/

Geospatial Analysis and Visualization Certificate (GSAV)
This course is one of two core courses in the GSAV certificate program. If you are interested in pursuing the certificate, you should begin an application right now. To learn more about the program, check out:
http://www.uic.edu/cuppa/upp/academic_programs/certificate_programs.html

This is a lengthy page so scroll down to see GSAV courses and how to apply for the certificate.

UPP 461 Fall 2016 Schedule

All sections meet in room AEH 2201

GTK="Getting to Know GIS"; MM=Making Maps"; CE=Class Exercises; HW=Homework Exercises
Z=Zeroing In (pdf will be available on Blackboard); BM=Beyond Maps (pdf will be available on Blackboard);UMP=Understanding Map Projections (pdf will be available on Blackboard)

Week	Dates	TOPICS	TOPIC DETAILS	Do Before Class	Do In Class
Class 1	23-Aug-2016 24-Aug-2016 25-Aug-2016	Course Logistics & Content Basic Things You Need to Know Introduction to ArcGIS Interface	File Management, Path Names, Screen Captures Exploring ArcMap & ArcCatalog & Help files Uploading Homework to Blackboard	GTK Ch 1,2	CE A HW 01 (started)
Class 2	30-Aug-2016 31-Aug-2016 1-Sep-2016	GIS Concepts Getting to Know Your Data (1)	More than Maps: Spatial Reasoning Symbolizing and Classifying	HW 01 GTK Ch 3, 4, 7, 8 MM Ch 3, 8, 9	Review HW 01 CE B
Class 3	6-Sep-2016 7-Sep-2016 8-Sep-2016	Getting To Know Your Data (2) Keeping a Project Log	Labeling, Identifying Data, Selection by Attributes What Goes into a Project Log Resource: ESRI Virtual Campus	HW 02 GTK Ch 9, 15 (to p.517 in Ed 3 and p.528 in Ed 4)	Review HW 02 CE C
Class 4	13-Sep-2016 14-Sep-2016 15-Sep-2016	Excel Adding to Your Data	Excel Tricks for GIS Joins, Relates, Selection by Location	HW 03, HW 04 GTK Ch 16, 17	Review HW 04 CE D CE E
Class 5	20-Sep-2016 21-Sep-2016 22-Sep-2016	Making New Data (1) Introduction to Final Project	Geodatabase Discussion Exporting Joins and Selections Dissolving and Clipping **Introduction of Final Projects**	HW 05 GTK Ch 11, 18 (to p. 619 in Ed 3 and p. 630 in Ed 4)	Review HW 05 CE F CE G
Class 6	27-Sep-2016 28-Sep-2016 29-Sep-2016	Review, catch our breath Manipulating data Spatial selections	Review previous materials Summarize Spatial Joins and similarities to SBL Spatial Join from context menu; from tool		CE N **Proposal Discussion**
Class 7	4-Oct-2016 5-Oct-2016 6-Oct-2016	Making New Data (2)	Buffers, Unions, Intersects **Small Group Discussion of Proposals** Geometry Calculation for Shapefiles	HW 06 GTK Ch 19 (to p 666 Ed 3 and p 679 in Ed 4	Review HW 06 CE H CE I CE J
Class 8	11-Oct-2016 12-Oct-2016 13-Oct-2016	Data Wrangling Calculate Attribute Values	Moving data from Excel to GIS Calculating Attribute Values Repair broken mxd links	**Project Proposal Due**	CE K CE L CE M
Class 9	18-Oct-2016 19-Oct-2016 20-Oct-2016	Spherical and flat maps 1	Coordinate Systems, Datums, Projections Creating Flow Chart	HW 07 GTK Ch 6 UMP; MM Ch 5	Review HW 07 CE O
Class 10	25-Oct-2016 26-Oct-2016 27-Oct-2016	Spherical and flat maps 2 Where to Find Data Metadata - What, Why, Where	Review any projection questions Using American Factfinder & Census TIGER site; Using and Finding Metadata	HW 08	Review HW 08 CE Q CE R
Class 11	1-Nov-2016 2-Nov-2016 3-Nov-2016	Geocoding	Geocoding Addresses, Using XY Events	HW 09	Review HW 09 CE S CE T
Class 12	8-Nov-2016 9-Nov-2016 10-Nov-2016	Making Maps for Presentation Map Design	Layout View; Map Elements Merge, Erase	GTK Ch 10 MM Ch 1, 2, 6, 7, 10, 11 HW 10 GTK Ch 5	CE U Review HW 10 CE V
Class 13	15-Nov-2016 16-Nov-2016 17-Nov-2016	A few new skills Reviews	Using Editor Toolbar Inserting Table in a Map		CE W CE X
THANKSGIVING HOLIDAY BREAK WEEK					
Class 14	29-Nov-2016 30-Nov-2016 1-Dec-2016	**Presentations of final project**			
Class 15	6-Dec-2016 7-Dec-2016 8-Dec-2016	**Presentations of final project**			