

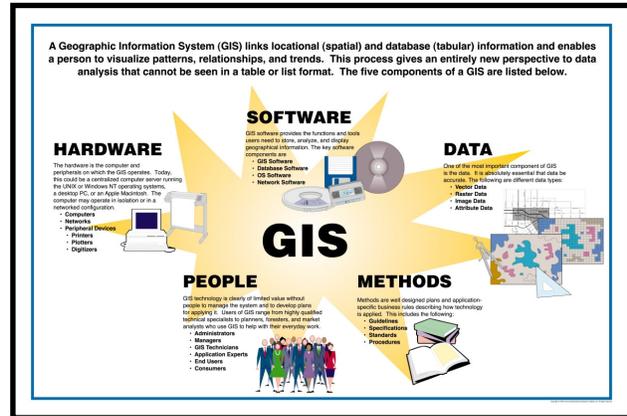
# Introduction to Geographic Information Systems (GIS)

GARP 0244-001 – Online – Fall 2010 – CRN 11148

This course provides you with the fundamentals of GIS and digital mapping, including GIS skills, geospatial databases, and the ArcGIS 9.3.1 suite of software applications.

The goal of this course is to understand GIS as a useful and flexible tool that you can use to address and solve a wide range of everyday 'geographic' questions and problems.

We will also learn how to export your GIS maps into Google Earth and explore some of the new Web Mapping Applications.



This course is suitable for a wide variety of disciplines: Regional Planning, Environmental Science, Criminal Justice, Business and Management, Sociology, History, etc.

## 1) Learning Goals

GIS is many things. At the most basic level, GIS is a tool for making intelligent maps using a computer and we will spend a fair amount of time learning the software and GIS data sources. However, GIS is more than just making pretty colorful maps – you need to think about the information and the underlying analysis to appreciate how space is often a fundamental organizing concept.

- 1) Knowledge  
Geospatial concepts and analysis using GIS tools (ArcGIS 9.3.1) and GIS data sources.
- 2) Skills and Critical Thinking  
Problem Solving: application of geospatial concepts, analysis, and GIS tools.  
Intellectual inquiry and effective communication.
- 3) Perspective  
Space, spatial patterns, and spatial relationships as global organizing concepts.

## 2) Your Instructor

Dr. Carsten Braun      [cbraun@wsc.ma.edu](mailto:cbraun@wsc.ma.edu), 413-575-5595, Bates 217  
Office Hours (in person):      MWF 12:00 to 13:00  
Office Hours (online) :      W 20:00 to 22:00

<http://www.wsc.ma.edu/prospective-students/academics/geography-and-regional-planning/>

➔ If you feel that you are not progressing as well as you hoped, please feel free to talk to me during my office hours or a mutually convenient time – the sooner the better! Please do not wait until the end of the semester. I'm happy to support you to help you succeed.

### **3) Online Learning**

This is an *online course* within the PLATO online learning environment. Online learning is different from the traditional face-to-face learning that you may be used to. Please consider the following ‘big-picture’ aspects of online learning:

1. You have to be highly self-motivated and self-disciplined to learn online. If you have difficulties motivating yourself, then online learning may not be the best choice for you.
2. You have to be able to deal with technical challenges. I don’t expect you to know everything, but to use the available resources to solve problems on your own.
3. You can learn on your own schedule, but please realize there are firm deadlines for the weekly assignments and projects. Good time management and organization skills are therefore crucial for success.
4. You have to be proactive in your learning – I cannot ‘see’ you struggling with the content or the assignments – you need to ask the questions.
5. You need to collaborate with your fellow students in class, using the online discussion forums, chat rooms, Who Online?, etc.

***Please note: This is a high-powered, difficult, and time-consuming elective course with complex content that requires a fair amount of work to be successful! This is not an easy online course to conveniently fill-out your schedule!***

***Please note: Each week builds the skills and knowledge needed for the next week and it is therefore critical for success to keep up with the weekly course modules. You cannot ‘skip’ a weekly assignment in this course!***

### **4) Prerequisites**

None, but robust computer and statistical skills are absolutely necessary to be successful in this course (e.g. knowledge of Microsoft Excel) – please consult with me if you have any concerns. I will not be teaching basic computer skills!

- See Section 5 (Computer Access and Knowledge) for more detailed information about the required computer access and knowledge.
- For some, taking a course such as MGMT 0107 *Software Applications* before taking GARP 0244 is a good strategy. Note: MGMT 0107 *Software Applications* is also a requirement for the GIS Minor.
- Please note: this course a prerequisite for GARP0344 (Advanced Geographic Information Systems, Spring 2011 semester).

### **5) Computer Access and Knowledge**

All PCs in the campus computer labs in Wilson and Bates Hall have all the required software and exercise data installed. Before the semester starts, please make sure that you and your computer are ready for online learning. Visit the following website to learn “how to login” to PLATO:

<http://www.wsc.ma.edu/prospective-students/academics/academic-resources/online-learning/plato-login/>

**Computer Literacy Requirements – Please ask yourself the following ten questions:**

- 1) Do I have a working Westfield State University computer account?
- 2) Do I know how to log onto the Westfield State University network from my dorm room and from off-campus?
- 3) Do I have a reliable and modern computer? This computer must be a PC running Microsoft Windows 7, XP, 2000, or Vista. The ArcGIS software will NOT run on a Mac unless you are an expert Mac user.
- 4) Do I know the basics about my computer and its operating system? For example: Use of USB flash drives, creating/copying files/folders, etc. I will not be teaching basic computer skills.
- 5) Do I have reliable high-speed internet access for online learning? If you cannot get access to high-speed internet you should use the campus computer labs to do your work.
- 6) Do I know how to send and receive Email attachments? This question applies to regular email, the PLATO Mail Tool, the PLATO Chat Rooms, and the PLATO discussion forums.
- 7) Do I know how to download files from a website and unzip them if needed?
- 8) Do I know how to use Microsoft Excel (e.g. making simple calculations and graphs) and Microsoft Word? You must have access to these two programs.
- 9) Do I know how to download files and plug-ins for my web browser? And install them from the web if needed – for example a flash player plug-into view \*.swf files?
- 10) Do I use Mozilla Firefox as my web browser? <http://www.mozilla.com/en-US/>  
You have to use Firefox as your web browser for this course and understand what you use for firewalls, pop-up blockers, and spam software. You must know how to disable some of the above software if it interferes with the PLATO online learning environment.

Please realize that technical issues will come up. You should be able to carry on an educated conversation about your computer and your software with the people at the IT and CIT HELP desk if you do encounter problems.

***If you have answered No to any of the above questions...***

**Consider taking MGMT 0107 Software Applications before GARP 0244. Note: MGMT 0107 Software Applications is also a requirement for the GIS Minor.**

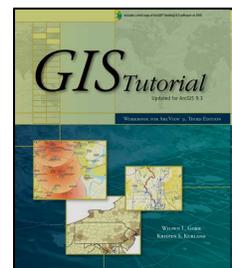
***Please note: It is your responsibility to setup your personal computer and Internet connection (but help and support are available from the campus IT folks).***

**6) Required Course Resources**

**2.1) Textbook**

GIS Tutorial: Workbook for ArcView 9 (3<sup>rd</sup> Edition), W.L. Gorr and K.S. Kurland  
ISBN 978-1589482050, 434 pp, ESRI Press August 2008

This excellent tutorial/textbook includes a series of chapters, exercises, and assignments to provoke critical thinking and develop quantitative problem-solving skills using a GIS.



***Please note: This is the 3<sup>rd</sup> edition of this textbook, updated for ArcGIS 9.3.1. Do NOT buy a previous edition or used copy of this book – the software and the exercises will NOT work with the current version of the software.***

The GIS Tutorial includes one CD and one DVD. The CD contains the exercise data, the DVD contains a free 180-day fully-functional version of ArcGIS 9.3.1. The data and software are provided for you in the computer labs on campus (Wilson and Bates), but you should install them on your personal computer at home. For more information:

<http://esripress.esri.com/display/index.cfm?fuseaction=display&websiteID=144&moduleID=0>

## **2.2) A dedicated USB flash drive for this course**

A dedicated USB flash drive is required for this class (in order to save your data, exercises, assignments, and GIS projects). Required size: 2GB or greater; approximate cost: \$15 and up.

## **2.3) Access to a reliable and modern PC**

This resource should be obvious: GIS is a software application and we will be using PLATO as our online learning environment. All PCs in the WSC campus computer labs in Wilson and Bates Hall have the required software installed. See Section 5 (Computer Access and Knowledge) for more detailed information about the required computer access and knowledge.

## **7) Course Logistics – The Big Picture**

Geospatial software and databases (i.e. GIS) are fairly complex – ‘learning-by-doing’ is therefore the most appropriate and efficient teaching/learning method. We will create and foster a cooperative learning environment by supporting each other in order to understand concepts and to solve problems.

One of the best techniques to learn yourself is by teaching others! I encourage you to collaborate with other students on the assignments and the GIS projects. However, you are always responsible to submit your own original work by the assigned due dates.

I expect a high level of individual effort and engagement when it comes to the discussion forums, assignments/exercises, and GIS projects. What you get out of this class is primarily a function of the amount of effort you put in. This is not a class where you can sit back and wait for ‘learning to happen’. In this course, you have to consistently and actively engage with the tasks, questions, assignments/exercises, and GIS projects in order to (a) learn to use the GIS software and (b) to understand what a GIS can do for you.

## **8) Course Logistics – Details**

Each semester week is broadly arranged around a corresponding chapter in the GIS Tutorial (see course schedule below). Each chapter of the GIS Tutorial takes you through a series of tasks and steps to familiarize yourself with the topic/theme of the chapter. Once you’re finished with that particular section, you can start with the weekly assignment or work on the GIS projects. It remains your responsibility to complete the weekly assignments and projects by the assigned due dates. About half of the weekly assignments are taken from the GIS Tutorial, the other half are specially designed to practice important GIS skills.

In addition, there is a graded discussion forum in most weeks where we will discuss some important aspects of GIS and geospatial analysis.

***Please note: Each week builds the skills and knowledge needed for the next week and it is therefore critical for success to keep up with the weekly course modules. You cannot ‘skip’ a weekly assignment in this course!***

### GIS Projects

The three GIS Projects are designed to practice important aspects of GIS and geospatial analysis using a problem-solving approach and real-world examples.

- 1) Project 1: Lying with Maps  
You have two weeks to complete this project, 10 percent of final grade
- 2) Project 2: MassGIS Project (land use change analysis)  
You have three weeks to complete this project, 30 percent of final grade
- 3) Project 3: Zoning in Westfield and Holyoke  
You have one week to complete this project, 10 percent of final grade

### Assessment

Your final course grade is a function of your performance throughout the entire semester and combines the grades from the weekly assignments and the three GIS Projects.

- 9 weekly assignments (including discussion forums) 50 percent of final grade
- 3 GIS Projects 50 percent of final grade

**Please note: The assigned due dates are mandatory and critical for your success. I will deduct 5 points for each late day. No exceptions.**

### A Few Rules

- 1) You have to check the course website at least every two days as I add and update content almost daily.
- 2) Please allow for a 48 hour response time for contacts.
- 3) Please only contact me through the Plato Mail Tool.

**Please note: Adjustments to the course logistics and assessment may be necessary to account for situations that arise over the course of the semester.**

Grade Conversion	
A	93-100
A-	90-92
B+	87-89
B	83-86
B-	80-82
C+	77-79
C	73-76
C-	70-72
D+	67-69
D	60-66
F	0-59

## 9) Help and Support

### IT Helpdesk

General computer and network support, also for computer labs and printers

Wilson 103, Mo to Fr, 08:00 to 17:00, [helpdesk@wsc.ma.edu](mailto:helpdesk@wsc.ma.edu)

On campus: ext. 4357 (HELP); off campus: 413.572.5300, select extension 4357

### Center for Instructional Technology (CIT)

For Questions and Problems regarding PLATO

Wilson 114, Mo to Fr, 09:00 to 16:00, 413-572-8130

<http://www.wsc.ma.edu/prospective-students/academics/academic-resources/online-learning/plato-login/>

### ResNet Help Desk

General computer support

Wilson Café Area, Mo to Fr, 09:00 to 17:00, campus: ext. 5528

### 24/7 Plato Live Support

1.866.281.5815 (toll-free)

<http://www.wsc.ma.edu/prospective-students/academics/academic-resources/online-learning/plato-login/>

### **10) GARP 0244 – Online (Fall 2010) Semester Schedule**

<b>Week</b>	<b>Date</b>	<b>Topics, Themes, and Tasks</b>		<b>Assignment</b>
Week 1	9/2 to 9/8	Welcome to GARP 0244-Online	Getting Started with Online Learning and GIS	HW #1
Week 2	9/9 to 9/15	What is GIS?	GIS = hardware, software, concepts, data, analysis, and people	HW #2
Week 3	9/16 to 9/22	Simple GIS	Web Mapping Applications Online GIS	HW #3
Week 4	9/23 to 9/29	GIS Tutorial Ch. 1	Introduction to ArcGIS 9.3.1: ArcMap and ArcCatalog	HW #4
Week 5	9/30 to 10/6	GIS Tutorial Ch. 2	GIS Map Design: Classification and Choropleth Maps	HW #5
Week 6	10/7 to 10/13	GIS Tutorial Ch. 3	GIS Outputs = Maps: Creating Meaningful Maps	HW #6
Week 7	10/14 to 10/20	GIS Project 1	'Lying with Maps'	Project 1
Week 8	10/21 to 10/27	Review and Reflection I	What is GIS? Intelligent and Meaningful Maps	
Week 9	10/28 to 11/3	GIS Data	Online Sources of GIS Data: MassGIS and More	HW #7
Week 10	11/4 to 11/10	GIS Tutorial Ch. 6	Spatial Analysis Part I: Creating GIS Data	HW #8
Week 11	11/11 to 11/17	GIS Tutorial Ch. 8	Spatial Analysis Part II: The ArcGIS Toolbox	HW #9
Week 12	11/18 to 11/24	GIS Project 2	MassGIS Project	Project 2
Week 13	11/25 to 12/1	GIS Project 2	MassGIS Project	Project 2
Week 14	12/2 to 12/8	Review and Reflection II	What is GIS? Intelligent and Meaningful Maps	
Week 15	12/9 to 12/15	GIS Project 3	Zoning for Westfield and Holyoke	Project 3

#### **Notes**

- Weeks are defined starting each Thursday to the following Wednesday (= 7 days).
- The weekly assignments are each Wednesday at 23:59 unless otherwise specified.
- The due dates for the three GIS Projects will be specified in the project instructions.
- Adjustments to this schedule may be necessary to account for situations that arise over the course of the semester.

Any Questions? Contact me anytime at [cbraun@wsc.ma.edu](mailto:cbraun@wsc.ma.edu)