

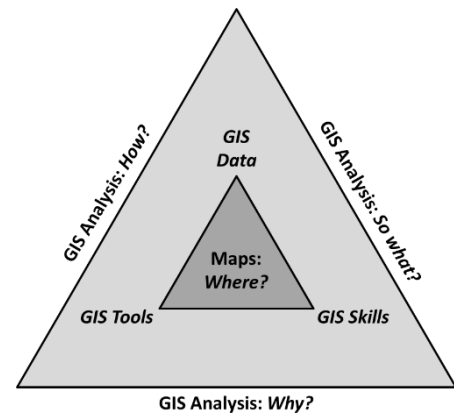
Advanced Geographic Information Systems (GIS)

GARP 0344-001 – Fall 2013 – CRN 11015

1) What is Advanced GIS?

This course builds upon the skills and knowledge you acquired in the *Introduction to GIS* course. I think of *Advanced GIS* as *Advanced and Applied GIS* in the sense that this course is designed to be applicable to your own interests and future professional/academic needs.

We now expand GIS and geospatial data from merely ‘making maps’ to meaningful geospatial data analysis and data collection – using GIS as a problem-solving tool.



In this sense this course is not necessarily any more difficult than GARP 0244, but introduces you to new GIS tools, ArcGIS extensions, data types, and real-world analytical applications.

2) Learning Goals

- 1) GIS Knowledge
Geospatial concepts and intelligent mapping using GIS software (especially ArcGIS), evaluation/acquisition/creation of geospatial data, and quantitative geospatial analysis.
- 2) Skills and Critical Thinking
Application of GIS knowledge to relevant real-world situations and problems. Intellectual inquiry, critical analysis, and effective communication using maps.
- 3) Geographic Perspective
Space, spatial patterns, and spatial relationships as global organizing concepts. GIS as a tool for a variety of applications and disciplines

3) Your Instructor

Dr. Carsten Braun	Email	cbraun@westfield.ma.edu
	Phone and office	413-572-5595, Wilson 201
	Office Hours	MWF, 12:15 to 13:15
	Web	www.westfield.ma.edu/cbraun

➔ 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.

4) Time, Location, Numbers

- GARP 0344-001; CRN 11015, 3 credit hours
- Monday and Wednesday, 15:10 to 16:25, Bates 22 GIS Technology Center

We meet formally twice a week – missing class (for any reason) leaves you with a considerable gap in your learning process. You will spend significant additional time each week outside of class practicing with the software and working on our tutorials, exercises, homework assignments, and GIS projects.

- This is a ‘scaffold’ course = each week builds the knowledge you need for the next week and it is critical to keep-up with the weekly course material. You cannot ‘skip’ a weekly assignment in this course!
- This is a high-powered, difficult, and time-consuming elective course with complex content that requires a substantial amount of work to be successful! This is not an easy course to fill-out your schedule!

It may be necessary to meet (occasionally) at different times and locations in order to complete some of the data collection or meet with local GIS users. It may also be beneficial to meet on weekends. We will make every effort to account for everyone’s needs and responsibilities when scheduling extra or longer meetings.

5) Prerequisites

GARP 0244 *and* robust computer and mathematical/statistical skills (e.g. knowledge of Microsoft Excel). Please consult with me if you have any concerns.

- I will *not* be teaching basic computer skills!
- I assume that you still understand and remember all that you learned in GARP 0244. Otherwise it is *your* responsibility to review the material on your own time.

6) Required Course Resources

- **USB flash drive (just for this class!).** A USB flash drive is required for this course (in order to save your data, exercises, assignments, and GIS projects). Required size: 8 GB or greater. Or: consider investing in an external SSD.
- **3-ring binder.** To organize the weekly course materials and graded assignments/projects.
- **Google Account and Esri Global Account**
Google Account: <https://accounts.google.com/Login>
Esri Global Account: <https://webaccounts.esri.com/cas/index.cfm>

7) Optional Course Resources

- Getting To Know ArcGIS for Desktop (3rd Edition for ArcGIS 10.1). Esri Press, ISBN 978-1-58948-308-8
- GIS Tutorial 1: Basic Workbook, 10.1 Edition Esri Press, ISBN 9781589483354
- GIS Tutorial 2: Spatial Analysis Workbook, 10.1 Edition, Esri Press, ISBN 9781589483378
- GIS Tutorial 3: Advanced Workbook, Esri Press, ISBN 9781589482074
- GIS Tutorial for Crime Analysis, Esri Press, ISBN 9781589482142
- GIS Tutorial for Health, 4th Edition, Esri Press, 9781589483132

- The GIS 20: Essential Skills 2nd edition, Esri Press, ISBN 9781589483224
- Mastering ArcGIS, 6th Edition, McGraw-Hill, ISBN 978-0077826260
- ArcGIS Desktop Resource Center: <http://resources.arcgis.com/>
- ArcLessons: <http://edcommunity.esri.com/Resources/ArcLessons>
- Free Esri Training: <http://training.esri.com/gateway/index.cfm>
- More books at <http://esripress.esri.com/>

8) Course Logistics – The Big Picture

Geospatial analysis is complex – ‘learning-by-doing’ is therefore the most effective teaching/learning strategy. We will create a cooperative learning environment by supporting each other in order to understand concepts and to solve problems.

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. 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’. Instead, you have to consistently and actively engage with the tasks, questions, assignments/exercises, and GIS projects.

We will use an online e collaboration ‘tool’ = a discussion forum or blog where we can collaborate, share data, and exchange information in an informal but effective manner. Note: I will *not* answer *any* individual questions for help, explanation, or clarification! Instead:

- 1) Ask Dr. ArcGIS Help!
- 2) Ask Dr. Esri Resource Center!
- 3) Ask Dr. Google!
- 4) Ask the Team!

9) Course Logistics – Details

- Seven pre-defined GIS projects – detailed instructions and parameters will be provided.
- Weekly homework assignments.

The three *Special Topics* weeks give us the opportunity for more in-depth analysis or to explore additional GIS tools and applications. We may also collaborate with local GIS users on some of their projects if the opportunity arises.

Assessment

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

- Homework Assignments 30 percent of final grade
- 7 GIS Projects 70 percent of final grade

The assigned due dates are mandatory and critical for your success.
5 point deduction for each late day. No exceptions!
No make-ups or extra-credit work!

The Fine Print

- Attendance is mandatory – missing class is unacceptable. If you have to miss class...you have to inform me beforehand.
- I except you on-time – being late is unacceptable.
- The required resources and due dates are mandatory.
- It is your responsibility to complete the homework assignments and projects by the assigned due dates.

If using your own computer...

- Your own computer = your own problem!
- Your own Internet connection = your own problem!
- No support from me or our IT Helpdesk!
- Problems with your own computer are NOT an excuse for late work.

Grade Conversion	
A	94-100
A-	90-93
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



GARP 0344 Advanced GIS (Schedule Fall 2013)

<i>Week</i>	<i>Class</i>	<i>Date</i>	<i>Topic</i>
Week 1	Class 1	9/4 (We)	A Professional Map!
Week 2	Class 2 Class 3	9/9 (Mo) 9/11 (We)	Online GIS (Part 1) Online GIS Project
Week 3	Class 4 Class 5	9/16 (Mo) 9/18 (We)	Online GIS (Part 2)
Week 4	Class 6 Class 7	9/23 (Mo) 9/25 (We)	GIS Analysis (Part 1) Site Selection Project
Week 5	Class 8 <i>No class</i>	9/30 (Mo) 10/02 (We)	GIS Analysis (Part 2) Tuition Project
Week 6	Class 9 Class 10	10/07 (Mo) 10/09 (We)	GIS Analysis (Part 3)
Week 7	<i>No class</i> Class 11 Class 12	10/14 (Mo) 10/15 (Tu) 10/16 (We)	Raster Analysis (Part 1)
Week 8	Class 13 Class 14	10/21 (Mo) 10/23 (We)	Raster Analysis (Part 2) Solar Village Project
Week 9	Class 15 Class 16	10/28 (Mo) 10/30 (We)	Raster Analysis (Part 3) Viewshed Analysis
Week 10	Class 17 Class 18	11/04 (Mo) 11/06 (We)	Network Analysis (Part 1)
Week 11	<i>No class</i> Class 19	11/11 (Mo) 11/13 (We)	Network Analysis (Part 2) Network Project
Week 12	Class 20 Class 21	11/18 (Mo) 11/20 (We)	Network Analysis (Part 3)
Week 13	Class 22 <i>No class</i>	11/25 (Mo) 11/27 (We)	Special Topics (Part 1) Special Project
Week 14	Class 23 Class 24	12/02 (Mo) 12/04 (We)	Special Topics (Part 2)
Week 15	Class 25 Class 26	12/09 (Mo) 12/11 (We)	Special Topics (Part 3)

Special Topics

Mobile GIS
 Census Data Analysis with ArcGIS and Social Explorer
 3D GIS
 Advanced Google!
 Better Digitizing with Geodatabases
 Your Ideas – what do *you* want to learn?