Geog 463: GIS Workshop
Spring 2006

Instructors
- Julie Hwang, shwang5@u.washington.edu, office hour: Friday 10:30-12:30 or by appt.@ Smith 303A
- Steve Hyde, TA (AA), sjh7@u.washington.edu, office hour: TBA @ Smith 417
- Joe Hannah, TA (AB), jhannah@u.washington.edu, office hour: TBA @ Smith 417

Meetings
- Lecture: MW 1:00-1:50 PM at DEN 216
  Friday meeting can be scheduled for special events such as exam and undergraduate research symposium or in case students need to meet for the group project
- Lab Section AA: MW 2:00-3:20 PM, SMI 401
- Lab Section AB: TTh 1:30-2:50 PM, SMI 401

Course website
http://courses.washington.edu/geog463/

Course description
Geography 463 is designed to be an in-depth experience in the use of a GIS in a group-based, workshop setting, focusing on a topic of interest to be chosen by student groups. Students are encouraged to select a project from a collection of candidate projects, which connect students with GIS professionals in the Puget Sound region. Graduate students are encouraged to use the workshop as a place to develop MA or Doctoral research work. The course fosters an in-depth intellectual/social experience. Lecture topics introduce and address project management principles to be applied throughout the quarter. Lab sessions are structured so that work groups of 3-5 students implement a single project throughout the quarter. Students will make use of GIS concepts and software training as provided in previous GIS courses.

Six work stages will be used throughout the course to guide groups in managing each group's time and effort.

Stage 1) *Needs Assessment*: In consultation with instructors, group members determine and clarify a topic of interest in terms of client needs or research question(s). Needs assessment must consider the broader decision situation or problem context.

Stage 2) *System Requirements*: Requirements enumerate data, software, hardware and personnel that will be used to address identified needs and objectives.

Stage 3) *Data Acquisition*: Groups acquire of digital data from department/university data resources and/or other organizations, or the manual conversion of data. As part of this process, groups evaluate the fitness for use (quality) of potential data.

Stage 4) *Data Analysis*: Groups conduct geospatial modeling and/or analysis using any conveniently available and suitable software package. Analysis results are interpreted with respect to project objectives or research question(s).

Stage 5) *Project Presentation*: Groups present their work and findings to the class and project clients. Presentations are a chance to share ideas and solicit feedback on findings and interpretations.

Stage 6) *Final Report*: Groups compile a final report based on the milestones of the five previous work stages. Work product(s) (e.g., data, maps, tables, charts, or protocols) are submitted to instructors and project clients.

Project milestones in Gantt chart
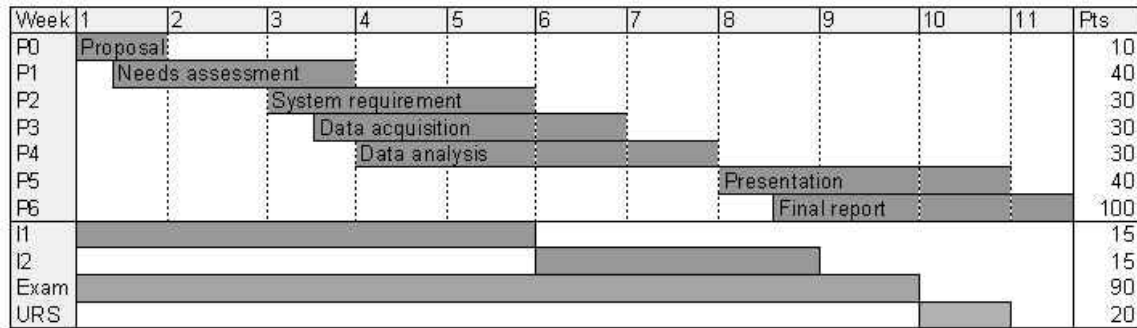
See grading section for the explanation of terms

Prerequisites

Geography 463 is not an introduction to GIS or a particular software package. Students must have taken Geography 460 or Geography 461 or Urban Design and Planning 422, or equivalent GIS experience (with permission from the instructor).

Texts

[T] Thinking about GIS, Revised and Updated Edition: Geographic Information System Planning for Managers, by Roger Tomlinson (2005), *available at the University Bookstore later this week*, ISBN: 1589481194 - ESRI Press (required)

[L] Geographic Information Systems and Science, by Paul A. Longley, Michael F. Goodchild, David J. Maguire, David W. Rhind (2005), ISBN: 047087001X - John Wiley and Sons

Tentative schedules

Wk	Date	Topic	Reading	Lab assigned
1	3/27	Course overview	Syllabus	P0: project proposal
	3/29	Needs assessment	MPLIS16	P1: needs assessment
2	4/3	Information data products	T6	
	4/5	Scoping the system	T7	
3	4/10	System requirement: data	T8-9	P2: system requirement
	4/12	System requirement: function	L7	P3: data acquisition
		System requirement: summary	T10	
4	4/17	Data acquisition	I1,2	P4: data analysis

	4/19	Data analysis	L13,16	
5	4/24	Project evaluation	T11	
	4/26	Issues in project management	LN	
6	5/1	Challenges in data acquisition	In-class	
	5/3	Challenges in data analysis	discussion	
7	5/8	GIS in an organization	Chan	
	5/10	GIS management strategies	Somers	
8	5/15	Information system architecture	Zachman	P5: presentation
	5/17	Information system integration	ESRI	P6: final report
9	5/22	ESDA	GISCCU128	
	5/24	SDSS	GISCCU127	
		VR (if time allows)	GISCCU131	
	5/26	**Exam** (take-home)		
10	5/29	Memorial day	No lecture this	
	5/31	**Presentation** in the lab section	week	
	6/1	**Presentation** in the lab section		
	6/2	Undergrad Research Symposium		

Class schedules are subject to change as the class progresses – students are expected to check the course website for the update on a regular basis

Weekly Agendas & Readings

Week 1: Overview of GIS project management   **Functional approach to GIS design and implementation**
[MPLIS] Multipurpose Land Information Systems: the Guidebook, prepared by the Federal Geodetic Control Committee; edited by Patricia M. Brown and D. David Moyer (1989)   Chapter 16: Needs Assessment by William Huxhold (1992)   Get the whole picture of GIS project
Week 2: Needs assessment   **Know/refine what end-users want**
[T] Chapter 6: Describe the information products   [T] Chapter 7: Define the system scope   Prepare what you should ask your clients
Week 3: System requirement   **Specify what is needed in detail**

Database design
[T] Chapter 8: Create a data design
[T] Chapter 9: Choose a logical data model
Further reading - [L] Chapter 10: Creating and maintaining geographic database

Survey of GIS software
[L] Chapter 7: GIS Software

Summary of system requirements
[T] Chapter 10: Determine system requirements

Begin system requirement report: data, software, hardware, personnel, and time

Week 4: Data acquisition & data analysis
Recent development in data acquisition and data analysis

Data acquisition
[I] Developing Spatial Data Infrastructures: From Concept to Reality
edited by Ian Williamson, Abbas Rajabiford, Mary-Ellen F Feene (2003), ISBN:
041530265X - Taylor & Francis
Chapter 1: SDIs – setting the Scene
Chapter 2: Spatial Data Infrastructures: Concepts, Nature and SDI Hierarchy

Data analysis
[L] Chapter 13: Geovisualization
[L] Chapter 16: Spatial modeling with GIS

Expand the scope of your knowledge on data acquisition and data analysis

Week 5: Project evaluation
Principles of project management

Project evaluation
[T] Chapter 11: Consider benefit-cost, migration, and risk analysis
Further reading – Measuring up the business case for GIS by ESRI Press (2004)

Issues in project management
TBA (guest lecture?)

Learn project evaluation techniques, and discuss what would take to achieve a successful
GIS project management

Week 6: Implementation
Issues in data acquisition and data analysis

What were the most challenging issues in data acquisition?

What were the most challenging issues in data analysis?

Prepare in-class discussion; each group should bring transparency for the presentation

Week 7: GIS in an organization
GIS in management perspective

GIS diffusion
[Chan] Chan and Williamson, 1999, The different identities of GIS and GIS diffusion, *International Journal of Geographical Information Science* 13(3): 267-281

Strategic planning for GIS
[Somers] Somers, 1998, Developing GIS management strategies for an organization, *Journal of Housing Research* 9(1): 157-178
Further reading – Chapter 3 in Managing Geographic Information System Projects, by William E Huxhold, Allan G Levinsohn (1995), ISBN: 0195078691 - Oxford University Press US

Understand the strategic role of GIS within the context of organizational structure

Week 8: GIS as an information system
GIS in information system perspective

Information system architecture
[Zachman] JA Zachman, A Framework for Information Systems Architecture, *IBM Systems Journal*, Vol. 26, No. 3, 1987

System integration
[ESRI] System design strategies by ESRI (2005)

Understand the evolving GIS system architecture in the context of system integration

Week 9: GIS implementation paradigms
Emerging GIS implementation paradigms

[GISCC] The NCGIA Core Curriculum in GIScience, http://www.ncgia.ucsb.edu/giscc/
Unit 128: Exploratory Spatial Data Analysis by Robert Haining and Stephen Wise
Unit 127: Spatial Decision Support Systems by Jacek Malczewski
Unit 131: Multimedia and Virtual Reality by George Taylor

Learn emerging rubrics of GIS implementation paradigms (future GISystem integration?)

Friday: take-home exam

Grading & important dates

Components	Points	How to turn in	Due date
Exam (take-home)	90	e-mail to Julie	5/26
P0: Project Proposal	10	to TA in the lab	4/3 or 4/4
P1: Needs Assessment Report	40	URL to TA	3rd week Fri 5PM
P2: System Requirement Report	30	URL to TA	5th week Fri 5PM
P3: Data Acquisition Report	30	URL to TA	6th week Fri 5PM
P4: Data Analysis Report	30	URL to TA	7th week Fri 5PM
P5: Presentation	40	Present in the lab	5/31 or 6/1
P6: Final Report	100	• Hard copy to Julie's mailbox • Project URL to TA	6/7 5PM (hardcopy + URL)
I1: Individual Project Logbook	15	to TA in the lab	4/26 or 4/47
I2: Individual Project Logbook	15	to TA in the lab	5/17 or 5/18
Total	400		

Conversion between percentage point and grading points is based on the conversion table which can be viewed at http://courses.washington.edu/geog463/06/gradescale.htm

Candidate projects for Geog 463 Spring 2006

Project #	Project Title	Agency	Contact
1	China Maps	UW Geography Dept	Kam Wing Chan kwchan@u.washington.edu
2	GPS/GIS mapping of Native Trees in Puget Creek Gulch area	Puget Creek Restoration Society	Scott Hansen 253-779-8890 pugetcreek@yahoo.com
3	Seattle Incomes Maps	Free-Lance Writer for Seattle Weekly Magazine	Joe Follansbee joef@speakeasy.net 206-932-7578
4	Urban Agriculture and gardening in Seattle	Environmental Management Program: Sound Food Group	Steven Garrett 253-272-0775 sgarrett@u.washington.edu
5	Communities Count Initiative: Environmental	Seattle King County Public Health	Kathryn Horsley 206-296-2789 kathryn.horsley@metrokc.gov

	Justice Indicator		
6	Neighborhood Street-Level Survey Mapping Project	Sustainable Seattle	Deborah Kuznitz deborah@sustainableseattle.org (206) 357-5433
7	TFM Site Mapping	Tacoma Farmers' Markets	Melisa Evangelos melisa@tacomafarmersmarket.com 253-272-7077
8	Citywide Skatepark Planning	City of Seattle	Susanne K. Friedman susanne.friedman@seattle.gov 206.684.0902
9	Shellfish Growing Area Mapping for Oil Spill Response	Pacific Shellfish Institute	Andy Suhrbier 360-754-2741 suhrbier@pacshell.org
10	Foot routes to escape Lahars	Bridge for Kids	Chuck Morrison 253-927-6838 chuckmorrison@Harbornet.com
11	SEP Maps	Fred Hutchinson Cancer Research Center	Deanna Stelling sep@fhcrc.org (206) 667-4487
12	Help Clean-up Puget Sound	UW School of Law	Rachel Gold and Tyson Kade ragold@u.washington.edu Rachel: (206)715-6632 tkade@u.washington.edu Tyson: (206) 227-8739
13	North of 45th Committee	UW	Aaron Hoard ahoard@u.washington.edu 206-221-7684

Half-page description of candidate projects can be viewed at
http://courses.washington.edu/geog463/06/candidateprojects.htm