

The Geographer's Craft
GRG 460C
Spring 2013
Unique Numbers 37525 and 37530

Class Meeting Times:

Tuesday and Thursday 12:30 PM - 2:00 PM
CLA 1.102

Lab Sections:

Lab 37525: CLA 1.402, Tuesday 9:30–11:00 AM

Lab 37530: CLA 1.402, Thursday 9:30-11:00 AM

Instructor:

Peter H. Dana

Office: CLA 3.408

pdana@austin.utexas.edu

Office Hours:

Tuesday and Thursday 2:00 3:00 PM

or by appointment

Teaching Assistant:

Joshua Rudow

jorudow@gmail.com

Office Hours:

TBA

Course Description

The Geographer's Craft is a one-semester course that will examine a variety of contemporary geographic research techniques. The course will draw from geodesy, surveying, mapping, navigation, statistical analysis, remote sensing, and geographic information sciences. Using an integrated set of projects, we will examine conceptions of time, earth-shape, distance, direction, position, and boundaries and their impact on the measurement, analysis, and visualization of geographic data. The goal of the course is to relate these concepts to our understanding of geographic processes.

For students continuing in Methods and Techniques the course will provide a background for further studies in Geographic Information Science, Remote Sensing, and Spatial Analysis. For those continuing in Physical or Human Geography, The Geographer's Craft will provide an overview of methods that may be helpful in a variety of research applications.

Classes will consist of discussions of the readings and other topics in geographic research. Weekly labs will provide instruction on a range of fundamental techniques. Students will participate in two group research projects, weekly labs, and will be responsible for proposing and carrying out an individual geographic research project. Each week a group project result will be presented in class by the group members.

Quantitative Reasoning Flag

This course carries the Quantitative Reasoning flag. Quantitative Reasoning courses are designed to equip you with skills that are necessary for understanding the types of quantitative arguments you will regularly encounter in your adult and professional life. You should therefore expect a substantial portion of your grade to come from your use of quantitative skills to analyze real-world problems.

(<http://www.utexas.edu/ugs/core/flags/guidelines#reasoning>)

Grading

Grades will be based on 11 Lab exercises (25%), two Group Projects (12.5% each for 25%), a Midterm Exam (15%), an individual Final Project (15%), and a Final Exam (20%).

Requirements

Students are expected to attend all classes, participate in discussions, and complete all assignments. No late assignments will be accepted without prior notice and all late work will result in a 5% assignment grade reduction for each day late.

Intellectual Integrity

Intellectual integrity is expected in all work. Collaboration and the use of a wide range of references is encouraged, but any plagiarism, use of un-cited materials, or un-credited project assistance will result in a “faculty disposition” of course failure.

See: (http://deanofstudents.utexas.edu/sjs/scholdis_plagiarism.php).

UT Policy on Scholastic Dishonesty:

Students who violate University rules on scholastic dishonesty are subject to disciplinary penalties, including the possibility of failure in the course and/or dismissal from the University. Since such dishonesty harms the individual, all students, and the integrity of the University, policies on scholastic dishonesty will be strictly enforced. For further information please visit the Student Judicial Services Web site:

<http://deanofstudents.utexas.edu/sjs>.

UT Academic Accommodations for Students with Disabilities

Any student with a documented disability who requires academic accommodations should contact Services for Students with Disabilities at 471-6259 (voice) or 1-866-329-3986 (Video Phone) as soon as possible to request an official letter outlining authorized accommodations.

(<http://www.utexas.edu/diversity/ddce/ssd/providing.php#SYLLABUS>)

Required Reading

Course Textbook:

Gomez, Basil and J. P Jones III, eds. 2010. *Research Methods in Geography*. West Sussex, UK. ISBN 078-1-4051-0711-2

Other readings and materials on Blackboard:

Anselin, L. 2005. Interactive techniques and exploratory spatial data analysis. Chapter 17 in Longley, Paul, M. F. Goodchild, D. J. Maguire, and D. W. Rhind.

Geographical Information Systems: Principles, Techniques, Management, and Applications. 2nd Ed. Hoboken, NJ. John Wiley & Sons. 253-266.

Borges, Jorge Luis. 1972. Of exactitude in science. In *A universal history of infamy / Jorge Luis Borges*; translated by Norman Thomas di Giovanni. New York : Dutton, 1972

Conrad, Joseph. 1926. Geography and explorers. Chapter 2 in Conrad, J. 1926. *Last Essays*. London, Toronto, J.M. Dent & Sons Ltd.

Couclelis, H. 2005. Space, time, and geography. Chapter 2 in Longley, Paul, M. F. Goodchild, D. J. Maguire, and D. W. Rhind. *Geographical Information Systems: Principles, Techniques, Management, and Applications*. 2nd Ed. Hoboken, NJ. John Wiley & Sons. 29-38.

Jensen, J. R., 2005, Chapters 1 and 2 in *Remote Sensing of Environment: An Earth Resource Perspective*, Upper Saddle River: Prentice-Hall, Inc., 2nd Edition,

Web-Based Readings:

Unit 015 - The Shape of the Earth. A unit of the Core Curriculum in GIScience. Santa Barbara, CA: National Center for Geographic Information and Analysis.
www.ncgia.ucsb.edu/education/curricula/giscc/units/u015/u015_f.html

Unit 013 - Coordinate Systems Overview. A unit of the Core Curriculum in GIScience. Santa Barbara, CA: National Center for Geographic Information and Analysis.
www.ncgia.ucsb.edu/giscc/units/u013/u013_f.html

Unit 017 - The Global Positioning System. A unit of the Core Curriculum in GIScience. Santa Barbara, CA: National Center for Geographic Information and Analysis.
www.ncgia.ucsb.edu/education/curricula/giscc/units/u017/u017_f.html

Map Projections Overview, The Geographer's Craft Project. Department of Geography, University of Colorado Boulder.
www.colorado.edu/geography/gcraft/notes/mapproj/mapproj.html

Schedule of Classes, Labs Assignments, Projects and Exams (subject to change)

Date	Discussion Topic and Project Reports	Reading and Assignments Due on this Date
1/15 Tu	Discussion: Course Overview	-----
1/17 Th	Discussion: Representing Geography Relational Data Base Fundamentals	Text Chapters 25, 1 and 2. Project Signup Sheet Conrad (Blackboard)
Lab 15&17	No labs this week	-----
1/22 Tu	Discussion: Measurements	Text Chapters 4, 8, and 9
1/24 Th	Discussion: The Shape of the Earth Map Projections and Coordinate Systems	Text Chapter 16 NCGIA Unit 15 (Web) NCGIA Unit 13 Map Projection Overview
Lab 22&24	Lab 1: Excel	----
1/29 Tu	Discussion: GIS Fundamentals	
1/31 Th	Discussion: Statistical Fundamentals; Creating	Text: Chapters 17 and 18

	Normality	
Lab 29&31	Lab 2: Access	Ex1 Due
2/05 Tu	Project Report #1: Campus Boundary	Text Chapter 3 Project #1 Due
2/07 Th	Discussion: Census Issues	Text, Chapters 14 and 20
Lab 5&7	Lab 3: ArcMap I	Ex 2 Due
2/12 Tu	Project Report #2: Place Centroids	Text, Chapter 5 Project #2 Due
2/14 Th	Discussion: Research Design	Text, Chapters 7 and 21
Lab 12&14	Lab 4: ArcMap II	Ex 3 Due
2/19 Tu	Project Report #3: US Southwest	Text, Chapter 12 Project #3 Due
2/21 Th	Discussion: Sampling in Time and Space	Final Project Proposal Due Text, Chapter 6
Lab 19&21	Lab 5: Choropleth Mapping	Ex 4 Due
2/26 Tu	Project Report #4: The Equator	Project #4 Due Couclelis (Blackboard)
2/28 Th	Discussion: Measuring the Earth	NCGIA Unit 17 (Web) Text, Chapters 7 and 8
Lab 26&28	Lab 6: Map Projections	Ex 5 Due
3/05 Tu	Project Report #5: National Boundaries	Project #5 Due
3/07 Th	Mid Term Examination	-----
Lab 5&7	Lab 7: Georeferencing	Ex 6 due
3/12-14	Spring Break	
3/19 Tu	Discussion: Spatial Autocorrelation	Anselin (Blackboard)
3/21 Th	GPS Issues	Text Chapter 22
Lab 19&21	Lab 8: GPS Measurements	Ex 7 Due
3/26 Tu	Project Report #6: Coastline Length	Project #6 Due
3/28 Th	Discussion: Interpolation and Kriging	Text, Chapter 19
Lab 26&28	Lab 9: GPS Post-Processing	Ex 8 Due
4/02 Tu	Project Report #7: Repeat Photography	Project #7 Due
4/04 Th	Discussion: Concepts of Remote Sensing	Text, Chapter 10 Jensen, Chapter 1 and 2 (Blackboard)
Lab 02&04	Lab 10: Kriging and Analysis	Ex 9 Due
4/09 Tu	Project Report # 8: Spatial Distortion	Project #8 Due Text Chapter 23

4/11 Th	Discussion: Scale Matters	Borges (Blackboard)
Lab 9&11	No labs this week	Ex 10 Due
4/16 Tu	Project Report #9: Data Mining	Text, Chapter 13 Project #9 Due
4/18 Th	Discussion: Error Analysis and Management	Text, Chapter 11
Lab 16&18	Lab 11: ERDAS Imagine	Ex 10 Due
4/23 Tu	Discussion: Privacy, Ethics and Responsibility	Text, Chapter 24
4/25 Th	Project Report #10: Geo Privacy	Project # 10 Due Text, Chapter 15
Lab 23&25	Project Presentations	Ex 11 Due
4/30 Tu	Discussion: Participatory Research	Hale (Blackboard) Text, Chapter 13
5/02 Th	Class Review	Final Projects Due
Lab 30&02	No labs this week	---
5/11 Sa	Final Exam 7:00-10:00 PM	Check with Registrar!

Group Projects

1. Cultural Boundaries: What and Where is the UT Campus?
2. Place Centroids: What and Where is the Center of Arizona?
3. Fuzzy Regions: What and Where is the US Southwest?
4. Global Origins: What and Where is The Equator?
5. National Boundaries: What and Where is the Texas/Mexico Border?
6. Length in Nature: What is the Length of the Coastline of Texas?
7. Repeat Photography: Can Photographs Capture Temporal Change?
8. Spatial Distortion: How Can We Measure Errors in Old Maps?
9. Data Mining: Can We Connect the Dots?
10. GeoSlavery, GeoPrivacy: Where is Everybody?

Laboratory Exercises (Blackboard)

- Ex 1: Excel
- Ex 2: Access
- Ex 3: ArcMap I
- Ex 4: ArcMap II
- Ex 5: Choropleth Mapping
- Ex 6: Map Projections
- Ex 7: Georeferencing
- Ex 8: GPS Measurements
- Ex 9: GPS Post Processing
- Ex 10: Kriging and Spatial Analysis
- Ex 11: ERDAS Imagine

January 9, 2013