Geography 80 Digital Worlds: An Introduction to Geospatial Technologies

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Schedule

Lectures Mon, Wed, 9-10, 145 McCone
Labs Tue 11-1, Thu 1-3, Fri 11-1, 535 McCone (the *CAGE Lab*)

Course description

The goal of this course is to introduce some of the digital mapping and geospatial technologies used in geography and other fields, which increasingly underpin contemporary digital society. The class covers this material in a three-fold way.

First, key ideas that underpin the tools and technology will be introduced in lectures, to give you a solid understanding of 'how things work'. Under this theme, we will look at topics such as map projections, spatial data types, simple kinds of spatial analysis, aspects of map design, and so on.

Second, you will be able to develop that understanding further and *do something with it* in the lab sections of the course, in a sequence of assignments that introduce tools and methods, particularly web-mapping, the Global Positioning System (GPS), and an initial look at Geographical Information Systems (GIS).

Third, key concepts from geography (such as *scale*, *space and place*, *relationality* and *neighborhood*) will be explored in lectures both to help our thinking about how well (or badly) the digital tools represent the world, and also to bring into question those representations. This aspect of the course will also encourage you to consider the wider implications of these technologies, particularly ethical considerations related to privacy, surveillance and data ownership.

This course covers a broad topic and is intended to provide a survey overview of the field, rather than detailed in-depth coverage. It will introduce you to key concepts and expose you to some of the tools, but you will certainly not be an expert on any of them by the time we are done! For greater in-depth knowledge you should think about taking other classes listed in the GIS Minor offered by Geography, Environmental Science Policy and Management, and the College of Environmental Design, which includes classes from all those programs along with others in related fields. You might even consider completing the Minor. For more information, see

http://nature.berkeley.edu/advising/minors/gist

Note that the minor is approved in all three Colleges of Letters and Science, Natural Resources and Environmental Design.

Course website

The course has materials on bCourses, but also at http://southosullivan.com/geodos/ where lecture slides will be posted at http://southosullivan.com/geodos/pages/geog-80.html. Readings are on bCourses, not the open web, due to copyright restrictions. Please sign up to receive updates on bCourses to your regularly used email, so that you don't miss out on any announcements and can keep up with readings.

Lecture schedule

This schedule may change as semester unfolds. See http://southosullivan.com/geodos/pages/geog-80.html for any updates or recent changes.

Week	Monday	Wednesday
Aug 21		Syllabus, welcome, introductions
Aug 28	Course overview	Anatomy of a web map
Sep 4	*NO CLASS – Labor Day*	Geographical concepts I: Scale
Sep 11	Map tiles and scale	Projections I: a traditional perspective
Sep 18	Ubiquitous location [discussion]	*NO CLASS – Instructor traveling*
Sep 25	Projections II: seeing geographically	Location and GPS
Oct 2	Geographic concepts II: Space and place	Spatial data types
Oct 9	Mapping place not space	*MIDTERM REVIEW*
Oct 16	*MIDTERM*	*NO CLASS*
Oct 23	Geographical concepts III: neighborhood, region, territory	Polygons and social data
Oct 30	Geospatial data and gerrymanders	You are where you live: geodemographics I
Nov 6	Heatmaps versus polygons	Geographical concepts IV: distance, movement, connectivity, process
Nov 13	Time geography and geographical spacetime	Simulations: serious play
Nov 20	You are where you *go*: geodemographics 2.0	*NO CLASS – Thanksgiving*
Nov 27	Do no evil: the ethics of geospatial	*FINAL REVIEW*
Dec 4	*READING WEEK*	
Dec 11	*TAKE HOME FINAL EXAM (due date to be announced)*	

Lecture attendance is expected, and **strongly advised**. The course assessments (the midterm and final) draw on the lecture materials, but *you will learn a lot more by attending the lectures*, participating in discussions, asking questions, and all the other stuff that happens there. I don't put very many words on my lecture slides, so they aren't very useful on their own for revision purposes. Nevertheless, slides will be available at

http://southosullivan.com/geodos/pages/geog-80.html

When they become available relative to class-time is likely to vary. A few days after class the version of the lecture at that web address will become 'final'. Periodically, I will post PDF versions of the slides so you can also view them offline.

In short, **DO NOT** assume that lecture slides will provide a complete account of everything covered in class. [See also **Readings**, below.]

Lab schedule

The labs for this course are intended to compliment the lecture material, and also constitute a substantial part of the course assessment (65% + 2% for Lab 0 attendance).

Attendance in labs in your assigned section is not required, but it is only during the scheduled times that you are guaranteed access to assistance from the course Graduate Student Instructor (GSI). Think of the lab times as open office hours.

Week starting	**Tue 11-1 / Thu 1-3 / Fri 11- 1** **submission deadlines *usually* Tue 9AM, subject to specific announcements relating to each lab**
Aug 28	Introduction to the labs and to HTML (2% credit for attendance) *You **MUST** attend your assigned lab section in this week to sign the lab usage agreement, and sign up for keys that allow you access to the lab after hours*
Sep 4	**Lab 1** (10%) **A simple web-map** due Sep 19 (2 weeks)
Sep 18	**Lab 2** (10%) **Fun with base maps** due Oct 3 (2 weeks)
Oct 2	**Lab 3** (15%) **Making spatial data** due Oct 24 (3 weeks)
Oct 23	**Lab 4** (10%) **A simple polygon map using GIS** due Nov 7 (2 weeks)
Nov 6	**Lab 5** (10%) **Making a point intensity map (a 'heatmap')** due Nov 21 (2 weeks)
Nov 20	**Lab 6** (10%) **Muddling through messy real-world data** due Dec 8 (2 weeks)

Each lab will consist of written instructions and guidelines to help you work through a practical task of some kind. The instructions will not be complete 'point-and-click' guides to what to do, every step of the way, but will leave you some room to explore and figure some things out for yourself. If you get stuck you can seek help from the GSI, who will be available in the scheduled lab sessions. Even better, you should work with other students. This can help both the person who is stuck and the person who is giving assistance.

Of course, even if you work with others on figuring out how to complete the assignment, the work you submit for assessment must be your own individual work. [see **Academic Integrity** below]

As noted, all labs are due on **Mondays at 9pm**, unless this happens to coincide with a vacation day. Submission method will be electronic via *bCourses*.

No late submissions will accepted. If you anticipate problems submitting a lab on time, then please contact the GSI *ahead of the due date*, and we can discuss options to accommodate you, depending on the circumstances. We cannot accommodate you if we don't hear about the problem *in advance*.

Reading

The technical material covered by this course remains relatively new, and there is no textbook that offers good coverage of the course material in an appropriate style. Perhaps the closest to complete coverage of the class material is provided by

Peterson, M. 2014 *Mapping in the Cloud.* Guilford Press, New York.

An e-copy (3 simultaneous readers only) is available through the library and a paper copy is on short-term reserve. However, I will also provide key chapters via the bCourses site for the class. I don't suggest buying a copy.

There are many other relevant materials, both in books, the research literature, and online. These will be linked from lecture slides (available online as noted above), and where possible, provided via *bCourses*.

Assessment

Course assessment consists of 65% across the 6 lab assignments (NOT equally allocated, see the list of lab assignments above), 13% on the midterm, 20% on the final and 2% for attendance at the first lab sessions in the week of August 29.

Assessment criteria for each lab assignment will be made clear in the associated assignment materials (and clarifying the expectations is another good reason to attend lab sessions).

The midterm will be run in class and will consist of short answer questions on materials covered in the first half of the semester.

The final exam will be a take home essay question exploring some larger themes of the class.

Additional logistical information

Academic Integrity

Any test, paper or report submitted by you and that bears your name is presumed to be your own original work that has not previously been submitted for credit in another course unless you obtain prior written approval to do so from your instructor.

In all of your assignments, including your homework or drafts of papers, you may use words or ideas written by other individuals in publications, web sites, or other sources, but only with proper attribution. "Proper attribution" means that you have fully identified the original source and extent of your use of the words or ideas of others that you reproduce in your work for this course, usually in the form of a footnote or parenthesis.

As a general rule, if you are citing from a published source or from a web site and the quotation is short (up to a sentence or two) place it in quotation marks; if you employ a longer passage from a publication or website, please indent it and use single spacing. In both cases, be sure to cite the original source in a footnote or in parentheses.

If you are not clear about the expectations for completing an assignment or taking a test or examination, be sure to seek clarification from your instructor or GSI beforehand.

Finally, you should keep in mind that as a member of the campus community, you are expected to demonstrate integrity in all of your academic endeavors and will be evaluated on your own merits. So be proud of your academic accomplishments and help to protect and promote academic integrity at Berkeley. The consequences of cheating and academic dishonesty—including a formal discipline file, possible loss of future internship, scholarship, or employment opportunities, and denial of admission to graduate school—are simply not worth it.

In fairness to students who put in an honest effort, cheaters will be harshly treated. Any evidence of cheating will result in a score of zero (0) on that assignment or examination. Cheating on the final exam results in an "F" for the course. Cheating includes but is not limited to bringing notes or written or electronic materials into an exam or quiz, using notes or written or electronic materials during an exam or quiz, copying off another person's exam or quiz, allowing someone to copy off of your exam or quiz, and having someone take an exam or quiz for you. Incidences of cheating will be reported to Student Judicial Affairs, which may administer additional punishment.

Accommodation of religious creed

In compliance with Education code, Section 92640(a), it is the official policy of the University of California, Berkeley to permit any student to undergo a test or examination, without penalty, at a time when that activity would not violate the student's religious creed, unless administering the examination at an alternative time would impose an undue hardship that could not reasonably have been avoided. Requests to accommodate a student's religious creed by scheduling tests or examinations at alternative times should be submitted directly to the faculty member responsible for administering the examination by the second week of the semester.

Reasonable common sense, judgment and the pursuit of mutual goodwill should result in the positive resolution of scheduling conflicts. The regular campus appeals process applies if a mutually satisfactory arrangement cannot be achieved.

The link to this policy is available in the Religious Creed section of the Academic Calendar webpage.

Conflicts between extracurricular activities and academic requirements

The Academic Senate has established Guidelines Concerning Scheduling Conflicts with Academic Requirements to address the issue of conflicts that arise between extracurricular activities and academic requirements. These policies specifically concern the schedules of student athletes, student musicians, those with out-of-town interviews, and other students with activities (e.g., classes missed as the result of religious holy days) that compete with academic obligations.

These policies were updated in Spring 2014 to include the following statement:

-The pedagogical needs of the class are the key criteria when deciding whether a proposed accommodation is appropriate. Faculty must clearly articulate the specific pedagogical reasons that prevent accepting a proposed accommodation. Absent such a reason, the presumption should be that accommodations are to be made.

The guidelines assign responsibilities as follows:

-It is the instructor's responsibility to give students a schedule, available on the syllabus in the first week of instruction, of all class sessions, exams, tests, project deadlines, field trips, and any other required class activities.

-It is the student's responsibility to notify the instructor(s) in writing by the second week of the semester of any potential conflict(s) and to recommend a solution, with the understanding that an earlier deadline or date of examination may be the most practicable solution.

-It is the student's responsibility to inform him/herself about material missed because of an absence, whether or not he/she has been formally excused.

The complete guidelines are available on the Academic Senate website. Additionally, a checklist to help instructors and students comply with the guidelines is available on the Center for Teaching and Learning website.

Absences due to illness

Instructors are asked to refrain from general requirements for written excuses from medical personnel for absence due to illness. Many healthy people experience a mild-to-moderate illness and recover without the need to seek medical attention. University Health Services does not have the capacity to evaluate such illnesses and provide documentation excusing student absences. However, UHS will continue to provide documentation when a student is being treated by Tang for an illness that necessitates a change in course load or an incomplete.

From time-to-time the Academic Senate has issued guidance concerning missed classes and exams due to illnesses such as influenza advising that students not attend class if they have a fever. Should a student experience repeated absences due to illness, it may be appropriate for the faculty member to ask the student to seek medical advice. The Senate guidelines advise faculty to use flexibility and good judgment in determining whether to excuse missed work, extend deadlines, or substitute an alternative assignment. Only the Committee on Courses of Instruction (COCI) can waive the final exam. However, a department chair can authorize an instructor to offer an alternative format for a final exam (e.g., paper, take-home exam) on a one-time basis (http://academic-senate.berkeley.edu/committees/coci/toolbox#16).