

Geography 88 Data Science Applications in Geography

Lead instructor	Prof David O’Sullivan, dosullivan@berkeley.edu , 589 McCone Office hours: Weds 10:30-12:30 sign up for 20 minute slots on my office door, or by appointment
Other instructors	Prof Jeff Chambers, jqchambers@berkeley.edu Prof John Chiang, jch_chiang@berkeley.edu Dr Alicia Cowart, alicia@berkeley.edu Prof Kurt Cuffey, kcuffey@berkeley.edu Prof Rob Rhew, rrhew@berkeley.edu
Class meetings	Mon, Wed, 5:00-7:00, 535 McCone (the CAGE Lab)

Course description

Data science methods are increasingly important in geography and earth science. This course will introduce some of the particular challenges of working with spatial data in data science, particularly those arising from characteristics specific to such data. These issues will be explored in a series of modules deploying data science methods to investigate contemporary topics in geography and earth science, relating to climate science, population census and remote sensing of environment.

As with other data science ‘connector’ courses the aim is to contextualize the tools, data and analysis methods in Data Science 8 so that students are better able to grasp the utility, relevance, challenges, and potential of data science in addressing particular domain-relevant scientific questions.

Lecture schedule

<i>Week</i>	<i>Class and assignment topic</i>	<i>Instructor</i>
Mar 6	General course overview and initial exploration of spatial data Assignment: effects of map projection on hexbinning	David O’Sullivan
Mar 13	Challenges of spatial data Assignment: the electoral college in the 2016 election	David O’Sullivan
Mar 20	An introduction to principles of map design Assignment: TBA	Alicia Cowart
Mar 27	SPRING RECESS	
Apr 3	An introduction to remote-sensed imagery and classification Assignment: TBA	Jeff Chambers
Apr 10	Data collection for climate science Assignment: TBA	John Chiang
Apr 17	Information visualization design for scientific communication Assignment: TBA	Rob Rhew
Apr 24	Epilogue: models and data in geography and earth science Assignment: TBA	Kurt Cuffey

Lecture attendance is **required**.

Lectures will take place in the same setting as ‘labs’ and each instructor may schedule how this works differently (e.g. some may deliver a two hour lecture on Monday, followed by lab on Wednesday; others may split each two hour session between lecture and lab materials).

Assignment will generally be to dropbox on bCourses, with assignments due by midday, Monday of the week following. Instructions specific to each assignment will be provided.

No late submissions will be 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

Individual readings relevant to each segment of the class will be provided on bCourses.

Assessment

Course assessment consists of 1/7 of the total credit across 7 weekly lab assignments (14.285714% each).

Details of the assessment criteria for each lab assignment will be clear in the associated materials.

David O’Sullivan
March 2, 2017

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.

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>).