

GEOG 544

Geographic Information Systems for Impact Evaluation and Health Studies

Spring 2020 Class meets:

Tuesdays 3:30-6:30pm

Instructor: Michael Emch

Email: emch@unc.edu

Office hours: email to set up by appointment

Course Objectives

GEOG 544 is an advanced course covering the theory and application of geographic information systems (GIS) for impact evaluation and health studies. The course has a large project component that students will work on for much of the semester in and out of the classroom. The content will focus on the principles of GIS in impact evaluation and health. The practical component involves the use of desktop GIS software packages such as ArcGIS. All students will complete a project that includes a spatial component to evaluate the impact of an intervention or to conduct a health study.

Zoom and Sakai

All course materials and assignments are still available on Sakai and assignments should be submitted on Sakai. This has not changed. Starting Tuesday March 24th class will be held via Zoom during regularly scheduled class times. Here is the information about connecting to Zoom.

Topic: GEOG 541: GIS in Impact Evaluation and Health Studies

Time: Mar 24, 2020 03:30 PM Eastern Time (US and Canada)

Every week on Tue, until Apr 21, 2020, 5 occurrence(s)

Mar 24, 2020 03:30 PM

Mar 31, 2020 03:30 PM

Apr 7, 2020 03:30 PM

Apr 14, 2020 03:30 PM

Apr 21, 2020 03:30 PM

Please download and import the following iCalendar (.ics) files to your calendar system.

Weekly: <https://unc.zoom.us/meeting/uZErcOmspzgtZuamDQExOtXIYC9iEfDdpQ/ics?icsToken=98tyKu2tqDwqHt2Wt1ztd7QqOYH-buHmlktbq655rTr9LDRrSrzVb-tnNJZ7A0mB>

Join Zoom Meeting

<https://unc.zoom.us/j/456704937>

Meeting ID: 456 704 937

One tap mobile

+19294362866,,456704937# US (New York)

+13126266799,,456704937# US (Chicago)

Dial by your location

+1 929 436 2866 US (New York)

+1 312 626 6799 US (Chicago)

+1 669 900 6833 US (San Jose)

+1 253 215 8782 US

+1 301 715 8592 US

+1 346 248 7799 US (Houston)

877 853 5257 US Toll-free

855 880 1246 US Toll-free

Meeting ID: 456 704 937

Find your local number: <https://unc.zoom.us/j/abIXDHLwic>

Join by SIP

456704937@zoomcrc.com

Join by H.323

162.255.37.11 (US West)

162.255.36.11 (US East)

221.122.88.195 (China)

115.114.131.7 (India Mumbai)

115.114.115.7 (India Hyderabad)

213.19.144.110 (EMEA)

103.122.166.55 (Australia)

209.9.211.110 (Hong Kong)

64.211.144.160 (Brazil)

69.174.57.160 (Canada)

207.226.132.110 (Japan)

Meeting ID: 456 704 937

Class Portfolio

The general rule in this class is that whenever you read something or do something you will write something and hand it in. Everything you produce in the class will be part of your class portfolio. All of your portfolio items should be put in your Sakai Drop Box each week **before** class the day they are due. These items are described below and include (1) weekly reading reflections, (2) outputs based on in-class exercises, (3) practical exercises, and (4) a class project. The file format for all documents submitted for this class should be pdf except the final project which should be ppt. On Sakai there is a document called "Exact Portfolio Contents and File Names" that lists each document that must be included in your final class portfolio.

Readings

Readings are accessible via the course Sakai site which will include a series of papers and book chapters. Some of this material has been defined by the instructor before the class and other materials will be identified and distributed by class members. We will read parts of the following texts:

"GIS and Public Health: 2nd Edition" by Ellen Cromley and Sara McLafferty. The Guilford Press, February 2012.

"Impact Evaluation in Practice: 2nd Edition" by Authors: Paul Gertler, Christel M. J. Vermeersch, Laura B. Rawlings, Patrick Premand, Sebastian Martinez. World Bank, 2016.

Also, if you have little or no experience with GIS then I recommend that you read "Geographic Information Systems and Science," which was written by Longley, Goodchild, Maguire, and Rhind: Wiley, 3rd Edition (paperback version is cheaper). The first several chapters of the Cromley and McLafferty book have an introduction to GIS but it is not as comprehensive as the Longley et al. book.

Reading Reflections

You will hand in reading reflections each week **before** class on Sakai Dropbox. The reflections should be one page, typed in 12-point font, and single-spaced describing at least 3-5 useful things you learned from the readings for that week. When there is more than one reading for the day then you must write something about each reading.

Discussion Lead

All students will help lead the class discussion during one class period during weeks 6-13. Multiple students will be assigned to each of those class periods. The discussion leaders will give a short presentation of the material at the beginning of the class (no more than 20 minutes). The discussion leaders will supplement the reading for that day by adding one journal article of their choice to be distributed to the class at least one week before leading the discussion. The paper should be distributed to other students via Sakai. The discussion leaders are also welcome to supplement their own reading of the topic and present what they learned to the class but only one extra journal paper should be assigned to the entire class.

Practical Component and Final Project

The practical exercises are GIS exercises that you will do on computers. They provide a way to acquire skills using GIS software packages and to apply the course concepts to real data. The project is intended to provide a deeper understanding of a GIS application through experience. You should acquire spatial data and the project should involve some type of spatial analysis. The deliverable is a Powerpoint presentation that you will also present orally to the class on the final exam day. You should use the knowledge and skills you acquired in the class discussion, books, papers, and practical component of the course. Every project must include the following sections: Introduction, Data, Methods, Results, and Discussion. The introduction should situate your project within the theoretical context that you learned about in this class.

Grading

Practical Exercises 25%
Class Exercises 25%
Reading reflections 20%
Discussion lead 5%
Project 25%

The grading scale is: A 93-100, A- 90-92.99, B+ 87-89.99, B 83-86.99, B- 80-82.99, C+ 77-79.99, C 73-76.99, C- 70-72.99, D+ 67-69.99, D 63-66.99, D- 60-62.99, F below 60.

Attendance

Attendance to this course is mandatory. You are expected to take part in the class activities and if you are not in class then you cannot. If there is a special reason that you need to miss class such as a conference or a religious holiday then let the instructor know by emailing the instructor before you miss class. Also, each time you miss class you must hand in a typed two single-spaced summary/ critique of the readings/lectures for that day by the week after missing the class. The summary/ critique should be put in your portfolio. If you don't hand this in then you will be penalized 5% for each class period that you miss. You need to hand this in even if you have a good reason for missing class.

Class time is for discussion and activities. Unless otherwise instructed, please **put your devices away** (i.e., computers, phones, tablets) and **silence them** before you store them.

Course Schedule:

Week: Dates	Topics and Readings
Week 1: Jan 14	<u>Course Overview</u> Introduction to Course Description of Syllabus and Activities Class member Introductions Introduction to Practical Exercise 1
Week 2: Jan 21	<u>GIS Background/Introduction</u> Course content exercise (bring your calendar because each student will choose a day that they will lead the class discussion and choose additional readings for that topic/day)

	Readings: GIS and Public Health Introduction and Chapter 1
Week 3: Jan 28	<p><u>Context in Randomized Controlled Trials</u></p> <p>Readings: Ali et al (2005) and Emch et al. (2006)</p>
Week 4: Feb 4	<p><u>Geographic Information Systems Data</u></p> <p>Readings: GIS and Public Health, Chapter 3</p> <p>Class Exercise 1</p>
Week 5: Feb 11	<p><u>Context in Nationally Representative Surveys</u></p> <p>Readings: Messina et al. (2011), Janko et al. 2018 (bed nets), Janko et al. 2018 (agriculture)</p> <p>Practical Exercise 1 due</p> <p>Introduction to Practical Exercise 2</p>
Week 6: Feb 18	<p><u>Impact Evaluation Introduction</u></p> <p>Readings: Impact Evaluation in Practice Chapter 1</p> <p>Class Exercise 2</p> <p>Discussion Leads: Tory, Clay</p>
Week 7: Feb 25	<p><u>Preparing for Impact Evaluation</u></p> <p>Readings: Impact Evaluation in Practice Chapter 2</p> <p>Discussion Leads: Kaitlin, Anna, Lane, Elle</p>
Week 8: Mar 3	<p><u>Impact Evaluation: Causal Inference and Counterfactuals</u></p> <p>Readings: Impact Evaluation in Practice Chapter 3</p> <p>Class Exercise 3</p> <p>Discussion Leads: Marykate, Stephanie</p>

Week 9: Mar 17	No class
Week 10: Mar 24	<p>We will first discuss how the class will change and not change as we go forward online. We will have a discussion on how to organize the small group work via smaller Zoom groups.</p> <p><u>Impact Evaluation: Randomized Assignment</u></p> <p>Readings: Impact Evaluation in Practice Chapter 4</p> <p>Introduction to Practical Exercise 3</p> <p>Discussion Leads: Rachel, Kate, Lilly</p>
Week 11: Mar 31	<p><u>Impact Evaluation: Instrumental Variables</u></p> <p>Readings: Impact Evaluation in Practice Chapter 5</p> <p>Class Exercise 4</p> <p>Practical Exercise 2 due</p> <p>Discussion Leads: Omid, Brittany, Todd</p>
Week 12: Apr 7	<p><u>Impact Evaluation: Matching</u></p> <p>Readings: Impact Evaluation in Practice Chapter 8</p> <p>Discussion Leads: Cyrus, Nikhil, KD</p> <p>Practical Exercise 3 due</p>
Week 13: Apr 14	<p><u>Impact Evaluation: Choosing a Sample</u></p> <p>Readings: Impact Evaluation in Practice Chapter 15</p> <p>Class Exercise 5</p> <p>Discussion Leads: Tyler, Jenna, Wyatt</p>
Week 14: Apr 21	Class Exercise 6

Exam Time: Apr 28 4-7pm	Project Presentations
-------------------------	-----------------------

Students must follow the UNC Honor Code.