

GIS FOR POLICY ANALYSIS

PUBP 491 / 514

Spring 2020

Morton Hall 244

Tuesday & Thursday 2:00 pm - 3:20 pm

INSTRUCTOR : S.P. Harish
DEPARTMENT : Government, William & Mary
OFFICE : Rm 357, Tyler Hall
EMAIL : spharish@wm.edu
OFFICE HOURS : Tue, Thu: 11:30am - 1:00pm (or by appointment)

Course Overview & Objectives

This is an introductory level course to concepts of Geographic Information Systems (GIS) in policy analysis. Students can expect to learn the basics of GIS and use relevant software to analyze spatial data. The first part of the course focuses on the technical aspects of GIS - students will learn how to make a good map, collect and present spatial data, work with different projection systems, and digitize historical maps. The assignments will give students the opportunity to apply theoretical concepts into practice, and gain hands-on experience with ESRI ArcGIS software. In the second part of the course, we will discuss social science papers that use spatial data, and examine how GIS concepts have been used in the academic literature. Students will learn how to critically analyze such papers and incorporate spatial analysis in their own research projects.

Required Book

There is no required textbook for this class, but there are a number of books on GIS you may find useful. These include:

- Paul Bolstad (2016). *GIS Fundamentals*. XanEdu
- Michael Law and Amy Collins (2015). *Getting to Know ArcGIS*. Esri Press
- Paul A. Zandbergen (2015). *Python Scripting for ArcGIS*. Esri Press

Class Requirements & Expectation

The course will be taught using a combination of lectures and lab sessions.

Grading

In Class Midterm Exam, 5 Mar 2020, 30% The midterm will test the material covered in the first part of the class. It will cover the lectures, lab sessions or any additional material distributed in class before that date. The exam will be a mixture of a multiple choice, true/false, short answer and lab problems (that will require you to use software).

Lab Assignments, DUE DATE: Tuesdays at 11:59pm, 30% Lab assignments will be distributed on Thursdays during class and is due the following Tuesday at 11:59pm. There are no extensions allowed for the lab assignment unless you have a medical note that covers all the days between Thursday-Tuesday. There will be a total of 4 lab assignments.

Poster Presentation, in-class in-class during the last two weeks of the course, 25% There will be an in-class poster presentation in-class during the last two weeks of the course. You are required to apply the concepts you learnt over the course to present on an original research topic. You will also need to submit a description of your poster (more details on this will be provided in class). You need to discuss your poster presentation with me before **27 Feb 2020**. The date and time of your poster presentation will be done by lottery.

Class Attendance/Participation, 5% Class attendance is mandatory and participation in class is critical to understanding the concepts discussed in this course. You are required to read the week's material before class, and come prepared to ask questions and engage in a constructive discussion. I encourage you to ask questions and make your opinion heard at any time during the class.

Take Home Final, DUE DATE: 13 May 2020, 10% The final exam will be a take-home exam that will cover all the lectures and readings discussed in class. The final exam will be made available on **1 May 2020** and is due on **13 May 2020** at 5pm.

GOVT Omnibus Study (optional), 1% Optional extra credit for participating in the GOVT Omnibus Study: The Department of Government runs a collaborative subject pool for survey and experimental research conducted by students and faculty. To help introduce you to the field of political science and earn extra credit for this course, you will have the opportunity to participate as a subject in a research project this semester. Doing so will contribute to the efforts of your fellow W&M students and faculty members in Government. Completing the requirements to earn extra credit will involve taking a survey and possibly participating in a session with student or faculty researchers. Typically, the commitment is about an hour of your time. An alternative assignment will be offered to students who do not want to participate in the Omnibus Project or who are not old enough to participate (you must be 18 years of age), but who still would like to seek extra credit. The maximum amount of extra credit available is 1 percentage point toward your final semester grade.

I will base final course grades on the following scale, with partial-percents typically rounded to the nearest full percent: A 100-93, A- 92-90, B+ 89-88, B 87-83, B- 82-80, C+ 79-78, C 77-73, C- 72-70, D+ 69-68, D 67-63, D- 62-60, F < 60.

Class Attendance

We will meet twice a week during the semester. You can expect me to come prepared to lecture, conduct discussions, and answer any queries you have on the material. During each class, I will work to provide you with an environment where you can ask interesting questions and engage in a constructive discussion. Attendance is mandatory as your class participation grade is dependent on your presence and participation. Note also that the lab assignments, midterm and the final exam will rely on the lectures and class discussions.

Classroom Policy

The classroom is a place of learning and I expect all of us to strive towards making the class an enjoyable academic environment. It is important that all of us: (1) arrive on time each week; (2) be respectful towards each other in our comments; and (3) turn off or put our cell phones on vibrate mode. You can use other electronic devices such as laptops for note-taking in class as long as it does not distract your fellow classmates or disrupt the class.

Communication

You are encouraged to attend office hours to clarify any of the classroom material and discuss your assignments. You can also send me questions over email, but please include the course number and your full name in the subject header. If you wish to make an appointment outside of my office hours, I will need you to email me at least 48 hours before our meeting. Between Mon 9am - Fri 5pm, you can expect me to reply to emails within 24 hours. If you do not receive a response by then, please send me a reminder. I will respond to all emails received after Friday 5pm on Monday.

Accommodations for Students with Disabilities

William & Mary accommodates students with disabilities in accordance with federal laws and university policy. Any student who feels she or he may need an accommodation based on the impact of a learning, psychiatric, physical, or chronic health diagnosis should contact Student Accessibility Services (SAS) staff at 221-2509 or at sas@wm.edu. An official letter from SAS is required before students can receive an accommodation.

Academic Misconduct

Please familiarize yourself with the University's policies for academic integrity. Answers to questions on cheating, plagiarism, or other types of academic dishonesty are available on the William & Mary Honor Councils web site (<http://www.wm.edu/offices/deanofstudents/services/studentconduct/honorcodeandcouncils/honorcode/index.php>) and the Honor Code section of the Student Handbook. If I discover any academic misconduct, I will initiate an Honor Council proceeding and recommend that the student receive an F for the course.

Summary of Important Dates

Tuesdays at 11:59pm Lab Assignments

31 Jan 2020 Add/drop deadline

27 Feb 2020 Last date to discuss poster presentations with me

5 Mar 2020 In-class Midterm

23 Mar 2020 Withdraw deadline

21 Apr 2020, 23 Apr 2020, 28 Apr 2020, 30 Apr 2020 In-class poster presentations

13 May 2020 Final take-home exam due (at 5pm)

Class Schedule

Week 1, 23 Jan 2020 - Course Introduction

Week 2, 28 Jan 2020 & 30 Jan 2020 - Welcome to the World of Maps

Week 3, 4 Feb 2020 & 6 Feb 2020 - Projections and Coordinate Systems

Week 4, 11 Feb 2020 & 13 Feb 2020 - Vectors

Week 5, 18 Feb 2020 & 20 Feb 2020 - Rasters

Week 6, 25 Feb 2020 & 27 Feb 2020 - Georeferencing

Week 7, 3 Mar 2020 & 5 Mar 2020 - Adv Topics & Midterm

The midterm will be held on 5 Mar 2020 in class.

Week 8, 10 Mar 2020 & 12 Mar 2020 - SPRING BREAK

Week 9, 17 Mar 2020 & 19 Mar 2020 - GIS and History

- Stanley L. Engerman and Kenneth L. Sokoloff (1994). “Factor Endowments: Institutions, and Differential Paths of Growth Among New World Economies: A View from Economic Historians of the United States.” *NBER Historical Working Paper* 66
- Melissa Dell (2010). “The Persistent Effects of Peru’s Mining Mita.” *Econometrica* 78.6, pp. 1863–1903
- Nathan Nunn and Leonard Wantchekon (2011). “The Slave Trade and the Origins of Mistrust in Africa.” *American Economic Review* 107.7, pp. 3221–3252

Week 10, 24 Mar 2020 & 26 Mar 2020 - Broader Applications of GIS

Note: we will have a guest lecture on 24 Mar 2020 and a video presentation on 26 Mar 2020. Readings will be assigned before this week

Week 11, 31 Mar 2020 & 2 Apr 2020 - GIS and Ethnicity

- Stelios Michalopoulos (2012). “The Origins of Ethnolinguistic Diversity.” *American Economic Review* 102.4, pp. 1508–1539
- Naomi Ichino and Noah L. Nathan (2013). “Crossing the Line: Local Ethnic Geography and Voting in Ghana.” *American Political Science Review* 107.2, pp. 344–361
- Kimuli Kasara (2007). “Tax Me If You Can: Ethnic Geography, Democracy, and the Taxation of Agriculture in Africa.” *American Political Science Review* 101.1, pp. 159–172
- Alberto Alesina, Stelios Michalopoulos, and Elias Papaioannou (2016). “Ethnic Inequality.” *Journal of Political Economy* 124.2

Week 12, 7 Apr 2020 - GIS and Conflict

- David Yanagizawa-Drott (2014). “Propaganda and Conflict: Evidence from the Rwandan Genocide.” *The Quarterly Journal of Economics* 129.4, pp. 1947–1994
- Jan H. Pierskalla and Florian Hollenbach (2013). “Technology and Collective Action: The Effect of Cell Phone Coverage on Political Violence in Africa.” *American Political Science Review* 107.2, pp. 207–224
- Melissa Dell (2015). “Trafficking Networks and the Mexican Drug War.” *American Economic Review* 105.6, pp. 1738–1779

Note: There will be no class on 9 Apr 2020

Week 13, 14 Apr 2020 & 16 Apr 2020 - GIS and Economic Development

- Timothy G. Conley and Christopher R. Udry (2010). “Learning about a New Technology: Pineapple in Ghana.” *American Economic Review* 100.1, pp. 35–69
- Robin Burgess et al. (2015). “The Value of Democracy: Evidence from Road Building in Kenya.” *American Economic Review* 105.6, pp. 1817–1851
- Thushyanthan Baskaran, Brian Min, and Yogesh Uppal (2015). “Election Cycles and Electricity Provision: Evidence from a Quasi-experiment with Indian Special Elections.” *Journal of Public Economics* 126, pp. 64–73

Note: We will have a guest lecture on 14 Apr 2020.

Week 14, 21 Apr 2020 & 23 Apr 2020 - Poster Presentation 1

Week 15, 28 Apr 2020 & 30 Apr 2020 - Poster Presentation 2

Final take home exam due on 13 May 2020 (at 5pm)