Term Information

Effective Term	Autumn 2019

General Information

Course Bulletin Listing/Subject Area	Geography
Fiscal Unit/Academic Org	Geography - D0733
College/Academic Group	Arts and Sciences
Level/Career	Undergraduate
Course Number/Catalog	4103
Course Title	Introductory Spatial Data Analysis
Transcript Abbreviation	Intro Spatial Data
Course Description	An introduction to spatial data analysis in geography: the fundamental statistical and spatial analysis methods used in quantitative geographic research
Semester Credit Hours/Units	Fixed: 5

Offering Information

Length Of Course	14 Week
Flexibly Scheduled Course	Never
Does any section of this course have a distance education component?	No
Grading Basis	Letter Grade
Repeatable	No
Course Components	Recitation, Laboratory, Lecture
Grade Roster Component	Laboratory
Credit Available by Exam	No
Admission Condition Course	No
Off Campus	Never
Campus of Offering	Columbus

Prerequisites and Exclusions

Prerequisites/Corequisites	
Exclusions	
Electronically Enforced	No

Cross-Listings

Cross-Listings	

Subject/CIP Code

Subject/CIP Code	45.0701
Subsidy Level	Baccalaureate Course
Intended Rank	Sophomore, Junior, Senior

Requirement/Elective Designation

Required for this unit's degrees, majors, and/or minors

Course Details

Course goals or learning objectives/outcomes

- Develop "spatial thinking", the ability to understand and address special issues arising from the use of spatial data.

  Obtain a basic set of statistical tools for spatial data analysis.

Content Topic List

- Geographic data

  Descriptive (spatial) statistics

  Probability

  Sampling

  Hypothesis testing

  Analysis of variance

  Correlation

  Regression

  Modifiable areal unit problem

  Spatial autocorrelation

  Spatial pattern analysis

Sought Concurrence Yes

Attachments

- New GEOG4103 Syllabus.docx

  (Syllabus. Owner: Munroe,Darla Karin)

- geog 4103 concurrence.pdf

  (Concurrence. Owner: Munroe,Darla Karin)

- GIS BS Curriculum Map_updated December 2018.xlsx

  (Other Supporting Documentation. Owner: Munroe,Darla Karin)

Comments

- Apologies, we are not seeking to make this course a GE. *(by Munroe,Darla Karin on 01/02/2019 02:20 PM)*

- Is this course really requesting GE Data Analysis? The syllabus does not include the necessary GE language. Furthermore, the request does not include a GE rationale and a GE assessment plan. Please see pp. 59-62 https://asccas.osu.edu/sites/asccas.osu.edu/files/ASC_CurrAssess_Operations_Manual.pdf . The GE rationale for GE Data Analysis needs to address the specific coursework requirements outlined on pp. 61-62. (Did the concurrence to Stats specifically addressed the requested GE Data Analysis?) *(by Vankeerbergen,Bernadette Chantal on 12/21/2018 01:51 PM)*

Workflow Information

Status	User(s)	Date/Time	Step
Submitted	Munroe,Darla Karin	11/15/2018 10:03 AM	Submitted for Approval
Approved	Coleman,Mathew Charles	11/15/2018 11:22 AM	Unit Approval
Approved	Haddad,Deborah Moore	11/15/2018 11:26 AM	College Approval
Revision Requested	Vankeerbergen,Bernadette Chantal	11/16/2018 01:16 PM	ASCCAO Approval
Submitted	Munroe,Darla Karin	12/20/2018 10:07 AM	Submitted for Approval
Approved	Coleman,Mathew Charles	12/20/2018 09:55 PM	Unit Approval
Approved	Haddad,Deborah Moore	12/21/2018 08:38 AM	College Approval
Revision Requested	Vankeerbergen,Bernadette Chantal	12/21/2018 01:52 PM	ASCCAO Approval
Submitted	Munroe,Darla Karin	01/02/2019 02:20 PM	Submitted for Approval
Approved	Coleman,Mathew Charles	01/03/2019 07:31 AM	Unit Approval
Approved	Haddad,Deborah Moore	01/03/2019 09:41 AM	College Approval
Pending Approval	Jenkins,Mary Ellen Bigler Hanlin,Deborah Kay Oldroyd,Shelby Quinn Vankeerbergen,Bernadette Chantal Nolen,Dawn	01/03/2019 09:41 AM	ASCCAO Approval

GEOG 4103: Introductory Spatial Data Analysis

Instructor:

Desheng Liu
Office Hours:
Office Location: Derby 1189
Phone: 614-247-2775
e-mail: liu.738@osu.edu

Class Times:

Days: Tuesday & Thursday
Time: 12:45-2:05 PM
Location: Derby 135

Course Description:

This course provides an introduction to statistical analysis of spatial data emphasizing spatial thinking. In this course fundamental statistical methods are presented in the context of geographic sciences. Students will develop a fundamental understanding of statistical concepts and the tools geographers use to solve statistical problems. Lectures will introduce students a range of fundamental statistical and spatial analysis methods used in geographic problem solving. Labs will help students develop skills to analyze and interpret spatially referenced data using computer software. This course emphasizes hands-on experience and practical understanding. Real-world examples from a variety of topical areas in geography will be used in the lectures and labs.

There are no prerequisites for this course. This is intended to be an introductory course in statistical methods in geographic sciences.

Course Learning Outcomes:

By the end of this course, students should:

1. Develop "statistical literacy," a working understanding of statistics that can help you to critically evaluate data-driven results in the discipline of geography.
2. Obtain a basic set of statistical tools for spatial data analysis, with an understanding of how to choose which tool to use, how to implement it in statistical software, and how to interpret results.
3. Develop "spatial thinking", the ability to understand and address special issues arising from the use of spatial data.
4. Use computer software to make graphs and maps, and to implement descriptive statistics, conduct hypothesis tests about sample means, and compute regression analysis.
5. Understand the research design process and how this relates to statistical analysis – from forming a research question, to collecting data, deciding how to statistically analyze these data by stating a hypothesis, conducting a statistical analysis and reporting results.
6. Develop "scientific literacy," the ability to convey statistical results to a lay audience.

Required Materials:

Statistical Methods for Geography: A Student's Guide, 4th edition by P.A. Rogerson. 2015, Sage Publications.

This book is very reasonably priced and is ***required.*** Having good access to the book will be essential to success in this class. Readings will be assigned from the book weekly. Lectures will roughly parallel the assigned readings. There will be a few additional readings available via PDF on the Carmen course website. These are also required and may be discussed in class.

Grading:

Your final course grade will be based on the following weighting of assessment components:

Class exercises   15%
Homework   15%
Labs   30%
Midterm Exam: 15%
Final Exam: 25%

Class exercises will be frequently given throughout the semester. They are designed to help students understand the lectures and do well in exams. Students will receive credits by showing efforts in class but no make-ups will be given for absence.

All assignments should be turned in on time. Late submissions will be penalized by 10% per day late.

There will be a midterm exam during the semester as well as a final exam. Students must take all exams to receive credits. No make-up exams will be given unless legitimate documents for medical or personal emergency are presented prior to the exams.

Final course grades will be assigned based on the following grading scale:

A: 93–100 | **A-**: 90–92 | **B+**: 87–89 | **B**: 83–86 | **B-**: 80–82 | **C+**: 77–79

C: 73–76 | **C-**: 70–72 | **D+**: 67–69 | **D**: 60–66 | **F**: below 60

Attendance:

Attendance in all classes is mandatory. Consistent attendance is absolutely crucial to success in this class. Attendance will be taken at the beginning of each class session. Excused absences require documented evidence (doctor's note, etc.). **Note that after 1 unexcused absence, your final grade will begin to drop by a percentage point per unexcused absence!**

Faculty Feedback and Response time:

When writing and email, please allow 1-2 business days for a response. For weekly assignments, you can expect they will be graded (generally) within 7 days. The TA and professor will reply to messages in the discussion boards daily. If you're having computer problems (e.g., using Carmen,

etc.), remember you can call 614-688-HELP at any time. It is unlikely that the TA or Professor can trouble shoot those types of issues.

Etiquette Guidelines:

I expect everyone to be respectful of class colleagues, the instructor and TA. Cell phone use (aside from a calculator) will not be tolerated in class. Online interactions (discussion boards, etc.) should be civil and productive – remember that sarcasm and other nuanced speech don't convey very well online.

University Policies:

Disabilities:

The University strives to make all learning experiences as accessible as possible. If you anticipate or experience academic barriers based on your disability (including mental health, chronic or temporary medical conditions), please let me know immediately so that we can privately discuss options. To establish reasonable accommodations, I may request that you register with Student Life Disability Services. After registration, make arrangements with me as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion. SLDS contact information: **slds@osu.edu**; 614-292-3307; **slds.osu.edu**; 098 Baker Hall, 113 W. 12th Avenue.

Religious observances:

Campus policy regarding religious observances requires that faculty make every effort to deal reasonably and fairly with all students who, because of religious obligations, have conflicts with scheduled exams, assignments or required attendance. Please let me know if you need to miss class for religious purposes.

Classroom Etiquette:

Students and faculty each have responsibility for maintaining an appropriate learning environment. Those who fail to adhere to such behavioral standards may be subject to discipline. The Ohio State University affirms the importance and value of diversity in the student body. Our programs and curricula reflect our multicultural society and global economy and seek to provide opportunities for students to learn more about persons who are different from them. We are committed to maintaining a community that recognizes and values the inherent worth and dignity of every person; fosters sensitivity, understanding, and mutual respect among each member of our community; and encourages each individual to strive to reach his or her own potential. Discrimination against any individual based upon protected status, which is defined as age, color, disability, gender identity or expression, national origin, race, religion, sex, sexual orientation, or veteran status, is prohibited.

Academic Misconduct:

It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term "academic misconduct" includes all forms of student academic misconduct wherever committed;

illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487). For additional information, see the Code of Student Conduct http://studentlife.osu.edu/csc/.

Your Mental Health:

As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce a student's ability to participate in daily activities. The Ohio State University offers services to assist you with addressing these and other concerns you may be experiencing. If you or someone you know are suffering from any of the aforementioned conditions, you can learn more about the broad range of confidential mental health services available on campus via the Office of Student Life's Counseling and Consultation Service (CCS) by visiting ccs.osu.edu or calling 614-292-5766. CCS is located on the 4th Floor of the Younkin Success Center and 10th Floor of Lincoln Tower. You can reach an on call counselor when CCS is closed at 614-292-5766 and 24 hour emergency help is also available through the 24/7 National Suicide Prevention Hotline at 1-800-273-TALK or at suicidepreventionlifeline.org.

Weekly Topics:

A tentative outline of weekly topics is given below. Students should check the course website frequently for updates.

Week	Topics	Readings
1	Introduction	[R] 1
2	Geographic data	[R] 1.7, 2.1
3	Descriptive (spatial) statistics	[R] 2
4	Probability (I)	[R] 3
5	Probability (II)	[R] 4
6	Sampling and spatial sampling	[R] 5.7
7	Estimation	[R] 5.1~5.2
8	Midterm Exam	
9	Hypothesis testing (I)	[R] 5.3~5.6
10	Hypothesis testing (II)	[R] 5.3~5.6
11	Analysis of variance	[R] 6
12	Correlation	[R] 7
13	Regression	[R] 8, 9
14	Modifiable areal unit problem	[R] 11
15	Spatial autocorrelation	[R] 10
16	Spatial pattern analysis	[R] 10

Ohio State Department Course Review Concurrence Form

The purpose of this form is to provide a simple system of obtaining departmental reactions to proposed new courses, group studies, study tours, workshop requests, and course changes. A letter may be substituted for this form.

Academic units initiating a request which requires such a reaction should complete Section A of this form and send a copy of the form, course request, and syllabus to each of the academic units that might have related interests in the course. Initiating units should allow at least two weeks for responses.

Academic units receiving this form should response to Section B and return the form to the initiating unit. Overlap of course content and other problems should be resolved by the academic units before forwarding this form and all other accompanying documentation to the Office of Academic Affairs.

A.   Information from academic unit *initiating* the request:

Initiating Academic Unit: **Geography**   Date:

Registrar's Listing:

Course Number: **4103**   Level: U ☑ P ☐ G ☐   Credit Hours: **5**

Course Title:

Type of Request: ☑ New Course   ☐ Group Studies   ☐Workshop ☐Study Tour ☐Course Change

Academic Unit with related interests asked to review the request (use a separate form for each unit while requesting concurrences from multiple units):   **Statistics**

Date responses are needed:
                        12/7/18

B.   Information from academic units *reviewing* the request:

☐   The academic unit *supports* the proposal
☐   The academic unit *does not support* the proposal.
Please explain:

_____

_____

☐   The academic unit suggests:

_____

_____

_____

Signature of Department Chair   Signature of Graduate Studies Chair (if applicable)