



Introduction to Statistics

QM-227 Introduction to Statistics, Spring 2024

Instructor	Dr. Ingrid Luffman
E-mail	il44@evansville.edu
Course Meeting Days and Time	Tuesday/Thursday 4:00 - 5:15PM
Required Experiential Learning Dates	none
Office Hours	Monday/Wednesday 11 AM - 12 PM

Catalog Description:

General purpose introduction to principles of analysis and inference under conditions of uncertainty. Focuses on the logic of statistical inference. Topics include probability, probability distributions, random variables, sampling and sampling distributions, estimation, hypothesis testing, and linear regression and correlation. Prerequisite: Proficiency in algebra at introductory level. Credit not given for both Quantitative Methods 227 and either Psychology 245 or Sociology 344.

Credit Hour Policy Statement:

This class meets the federal credit hour policy of 1 hour of class with an expected 2 hours of additional student work outside of class each week for approximately 15 weeks for each hour of credit, or a total of 45-75 total hours for each credit.

General Education Requirements:

This course meets the General Education requirements for Outcome 7

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Course Learning Objectives:

1. Learn terminology, concepts and methods of traditional and spatial statistics.
2. Learn how to analyze statistical data and properly interpret results.
3. Apply informal data analytic methods to develop testable hypotheses.
4. Select and conduct appropriate statistical analyses relevant to research hypothesis and data.
5. Explain differences between traditional and spatial statistical methods, and when each should be used.

Methods of Instructions:

This course introduces students to statistical concepts important for data analysis. The emphasis is on applying statistics appropriately to identify patterns in data. This course is very practice-oriented. We will explore various real-world data sets using statistical software packages (e.g., SPSS, GeoDa). This course combines lectures, reading material, and lab exercises. Lectures precede labs and focus on the utility and application of each concept. During labs, students will apply these concepts in practice. Students will also, throughout the course, develop a statistical reference notebook.

Textbooks and Required Reading:

Textbook: Rogerson 2019, Statistical Methods for Geography, 5th Edition, ISBN 9781526498809 (\$69 for paperback new, but used copies are likely available)

Required Software:

IBM SPSS Statistics 29.0 Grad Pack Standard (\$49 for 6 months access for two computers, purchase from an IBM distributor at <https://www.ibm.com/products/spss-statistics/gradpack#3065110>)

GeoDa latest version (v 1.20 currently). Free download from https://geodacenter.github.io/download_windows.html Select the correct version for your operating system (64- or 32-bit). Workbooks are available online:

- Installation and introduction: https://geodacenter.github.io/docs/Geoda_tour.pdf
- Spatial weights and autocorrelation: https://geodacenter.github.io/docs/geoda_1.8_2.pdf

Course Schedule:

Week	Topic	Lab
1: Jan 15-19	Course intro, probability vs. statistics	
2: Jan 22-26	Descriptive statistics	Lab 1 Descriptive statistics with SPSS
3: Jan 29-Feb 2	Probability distributions	Lab 2 Probability
4: Feb 5-9	Developing a hypothesis, p-values	
5: Feb 12-16	Comparing Groups - 2 groups	Lab 3 Comparing Groups
6: Feb 19-23	Comparing groups - 3 or more groups	
7: Feb 26-29	Review and Midterm Exam	
Mid-term break		



8: Mar 11-15	Correlation	Lab 4 Correlation
9: Mar 18-22	Linear regression, multiple linear regression	Lab 5 Regression
10: Mar 25-29	Logistic regression, Poisson regression	
11: Apr 1-5	Spatial Data Intro	Lab 6 Spatial neighborhoods
12: Apr 8-12	Spatial Autocorrelation	Lab 7 Spatial Autocorrelation
13: Apr 15-19	Spatial Regression	
14: Apr 22-25	Review and Final Exam	

Grading Criteria:

Lab assignments	40%
Notebook	20%
Midterm Exam	20%
Final Exam	20%
TOTAL	100%

Withdrawal and Attendance policies:

Harlaxton College expects regular class attendance by all students. Students are considered sufficiently mature to appreciate the necessity of regular and punctual attendance, to accept this personal responsibility and to accept the consequences of failure to attend. When absences occur due to emergency or medical reasons, students are expected to notify their instructors of the absence prior to class or to seek the assistance of the College nurse or a member of the Student Experience Team for help in notifying instructors.

Instructors have the authority to grant excused absences for medical, psychological, or personal reasons upon review of appropriate documentation and professional recommendation supporting such a request. In the event of long-term illness, reasonable accommodations will be made to allow a student to complete a course. In these cases, the Dean will need to approve the long-term nature of the accommodation.

The Dean of Harlaxton College has the authority to grant excused absences for medical, psychological, or personal reasons.

Each instructor is expected to maintain an attendance policy in keeping with the nature of the Harlaxton program and may consider it in evaluating performance in their courses.

Policy Governing Unexcused Absences:

Harlaxton College operates an attendance policy that is binding on all faculty and students. The number of unexcused absences that are allowed before incurring a penalty is related to the number of times a class meets each week. For courses which meet three times a week, students are allowed a maximum of three unexcused absences during the semester without attracting penalty points. For



courses meeting twice a week two such absences are permitted, and for courses meeting once a week a single absence is allowed. Additional unexcused absences will attract a grade penalty. The grade penalty for unexcused absences is a third-letter grade (A- to B+).

Policy Governing Excused Absences.

- Excused absences are not given to facilitate student travel independent of College-sponsored travel.
- Students may be permitted to miss class because of participation in academic field trips.
- Instructors must co-ordinate and confirm academic fieldtrips with the Dean, prior to the commencement of the Semester to ensure their inclusion in the Semester timetable.
- Where authorization for an academic fieldtrip is requested after the commencement of the semester, the request must be submitted to the Dean.

The following information is required:

- Purpose and brief description of the official Harlaxton event or academic fieldtrip.
- Dates, location, and times (as applicable).
- Alphabetical list of students involved [Last Name/First Name] along with their student identification number.

If approval is granted:

- Instructors affected will be notified at least one week prior to the class period during which absence is anticipated, or as soon as possible.
- Missed class time due to student participation is to be considered an excused absence.
- The grade of a student may not be lowered in any class due to excused absences.
- It is the student's responsibility - to take the initiative by consulting with their instructors before the absence occurs, and - to do what is required by the instructor to make up all missed assignments and/or examinations.
- Instructors are required to assist students in these occasional situations of excused absences.

Honor Code:

All students at the University of Evansville agree to the University honor code: *I will neither give nor receive unauthorized aid, nor will I tolerate an environment that condones the use of unauthorized aid.*

AI may be used only with prior permission or direction by the instructor.

- All work submitted in this course must be your own.
- The use of generative AI composition tools, such as those offered by ChatGPT, Google Bard etc. is prohibited in this course except for specific assignments and subject to the instructor's guidelines.
- Work generated by such tools without proper attribution is plagiarism and, thereby, a breach of the University's Plagiarism and Academic Honesty policy.

Disability Policy:



It is the policy and practice of the University of Evansville to make reasonable accommodations for students with properly documented disabilities. Students should contact Disability Services within the Office of Counseling Services by calling 812-488-2663 to seek services or accommodations for disabilities. Written notification to faculty from Disability Services is required for academic accommodations.

The University of Evansville Disability Services office will share the request for academic accommodations with the Academic Support team at Harlaxton College. Staff members at Harlaxton will meet individually with students to discuss needs and provide additional information related to examinations or other assessments.

Students from partner institutions should provide the appropriate letter of accommodation from their institution to the Academic Support team at Harlaxton College.

Non-Discrimination Statement

The University of Evansville expects all members of its community to treat each other with respect and civility. Harassing behaviors directed towards any member of our community will not be tolerated. As part of its commitment to non-discrimination, the University specifically prohibits harassment based on any other characteristics set forth in its nondiscrimination statement as follows: including race, color, gender, gender identity and expression, sexual orientation, creed or religion, national origin, age, disability, veteran status and all federally protected groups/classes. Any form of harassment undermines the mission of the University and negatively impacts the University community as a whole.

Prohibited Conduct and Confidentiality

The University of Evansville is committed to fostering an atmosphere free from harassment and discrimination. This commitment includes identifying problems that may lead to sexual harassment and misconduct, as well as other forms of harassment and discrimination, by creating an atmosphere in which the entire University community is sensitive to preventing prohibited conduct. Additionally, the University is committed to providing support and resources to individuals who have experienced prohibited conduct. This commitment includes effectively responding when a student, visitor, guest or program participant is the victim of prohibited conduct.

All campus employees, students, and guests are required to abide by the Title IX and Other Sexual Harassment and Misconduct Policy, the Harassment and Discrimination Policy, and the Consensual Sexual or Romantic Relationships Between Employees and Students Policy. Violation of these policies could result in disciplinary action, up to and including expulsion for students and termination for employees.



Faculty members at the University of Evansville are considered “Responsible Employees” under the applicable federal guidelines and the University’s policies. This means that I am unable to offer you confidentiality if you report any incidence of prohibited conduct to me as defined by Title IX statute. If I am made aware of a violation, I am required to report any known information to the Office of Institutional Equity.

You may choose to report the violation yourself the following ways:

Email: · Annie Sills, Assistant Director of Institutional Equity and Title IX Coordinator: cs175@evansville.edu ·

Keith Gehlhausen, Executive Director of HR and Institutional Equity: kg77@evansville.edu ·

Title IX: titleix@evansville.edu

Phone: 812-288-5261

Online: <https://www.evansville.edu/safety/report.cfm>

You may also choose to speak with a Confidential Resource. Confidential Resources are required to maintain confidentiality and cannot report violations to the Office of Institutional Equity:

University of Evansville

- Counseling Services: counselingservices@evansville.edu, 812-488-2633
- Health Center Professionals: healthcenter@evansville.edu, 812-488-2033
- University Chaplain: chaplain@evansville.edu, 812-488-5262

Harlaxton College

- College Nurse: Lesley Selby, RGN, +44 01476 403027, lseyby@harlaxton.ac.uk
- Counselling Services: counselling@harlaxton.ac.uk