

# GEOG 364: SPATIAL ANALYSIS

**LECTURE:** Monday | Wednesday 12:20-1.10pm EST, Walker Building 012

**LAB-1:** Tuesday 10:10 - 12:05, Walker Building 208

**LAB-2:** Wednesday 15:35 - 17:30, Walker Building 208

**LAB-3:** Friday 8-9.55, Walker Building 208

## Your Professor

**Dr Helen Greatrex**

Assistant Prof, Geography & Statistics

Pronounced: "Great - Rex"

Pronouns: She/hers

**Contact:** [Canvas message please](#)  
(this is the fastest way of getting response, normally within 1 working day)

**Office:** Walker 201

**Ask me about:** Anything at all! No question too small or big

**Office hours:** To be determined

## Your Graduate TA

**Harman Singh**

PhD Candidate, Geog

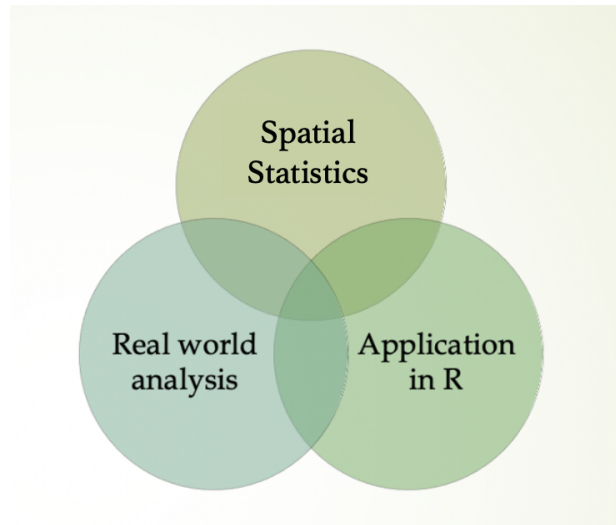
Pronounced: "Har" - man  
(as in Harm - ann)

Pronouns: She/hers

**Contact:** [Canvas message please](#)

**Ask me about:** Anything about the labs

**Office hours:** On Canvas Office hour page:



We are living in a world of big, spatial, data. From understanding the spread of COVID, to mapping firefly populations, geospatial analysis allows us to identify and understand patterns in space and time. It allows us to make and test theories, assess how likely results would have occurred simply by chance, or to predict new outcomes.

Impactful spatial analysis also goes beyond maths. We need to understand the ethics of data analytics, to understand who is being "data-ed" and the stories are being told. Finally we need to be able to communicate those stories effectively and creatively.

GEOG-364 contributes to the certificate in Geospatial Big Data

## Prerequisites

**STATS 200, or the equivalent.**

Students who do not meet these prerequisites [may be disenrolled according to Administrative Policy C-5](#) if they do not have the proper prerequisite override. Students who add the course after being disenrolled according to this policy are [in violation of Item 15 on the Student Code of Conduct: <https://studentaffairs.psu.edu/support-safety-conduct/student-conduct/code-conduct>](#).

## **Course Objectives**

1. Discuss why spatial data needs special treatment that goes beyond standard statistical approaches and evaluate how common spatial fallacies influence geostatistical analysis.
2. Define, describe and apply core geo-statistical techniques and calculate the significance of results using hypothesis tests and Monte Carlo simulation.
3. Identify when it is appropriate or ethical to use geo-statistics in messy real-world situations across research and current affairs.
4. Write analysis and workflows in an open-source programming language to apply geostatistical techniques to real world data.
5. Work through exercises to reduce statistics anxiety and to prepare for senior level quantitative courses.

## **Learning outcomes**

By the end of this course, you will be able to:

1. Identify and discuss a variety of core-geostatistical techniques, explaining where the technique comes from, how it is applied and any relevant spatial fallacies that should be taken into account.
2. Critique how geo-statistics has been applied in a variety of real-world situations, across research and current affairs.
3. Create code in a open-source geostatistical programming language to explore core spatial fallacies and spatial relationships (interactions and patterns) within the human and natural world.
4. Create an effective spatial analysis workflow on real-world data, identifying the most relevant techniques for exploratory analysis, assessing autocorrelation, pattern or process assessment, formally testing the significance of results, then professionally communicating outcomes.

## **Attendance - In Person course**

**This course is in person - see attendance policy below for more**

## **Course expectations:**

On average, most students spend eight to ten hours per week working on course reading and assignments. Your workload may be more or less depending on your study habits, your background, and your abilities. If you start to find yourself getting overwhelmed or falling behind, please talk to Dr Greatrex - we can absolutely make a plan to help you through.

## **Course Copyright**

All course materials students receive or to which students have online access are protected by copyright laws. Students may use course materials and make copies for their own use as needed, but unauthorized distribution and/or uploading of materials without the instructor's express permission is strictly prohibited. University Policy AD 40, the University Policy Recording of Classroom Activities and Note Taking Services addresses this issue. Students who engage in the unauthorized distribution of copyrighted materials may be held in violation of the University's Code of Conduct, and/or liable under Federal and State laws.

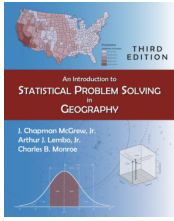
For example, uploading completed labs, homework, or other assignments to any study site constitutes a violation of this policy.

## **Masks and COVID**

We will follow appropriate penn state policies here.

## Recommended Textbooks

### THERE IS NO MANDATORY TEXTBOOK



McGrew, Chapman; Lembo, Arthur; Monroe, Charles.

### An Introduction to Statistical Problem Solving in Geography,

Waveland Press  
Print ISBN: 9781478611196,  
1478611197

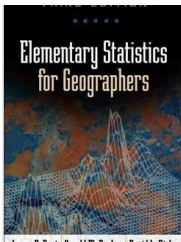
#### To access a physical version:

1. Class office copies for 1 week loans.
2. You can buy a physical second hand copy for ~\$30, or a new copy for ~\$50
3. Penn State Library:  
<https://catalog.libraries.psu.edu/catalog/12557865>

#### To access an online version:

From the publisher ~ \$30 for the semester:

<https://www.vitalsource.com/products/an-introduction-to-statistical-problem-solving-in-mcgrew-chapman-lembo-v9781478611196>



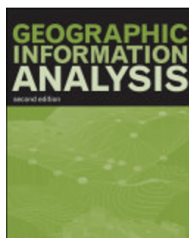
Burt, J. E., Barber, G. M., & Rigby, D. L. (2009). *Elementary statistics for geographers.*

3rd Ed. ISBN: 978-1572304840

#### Physical version:

1. Class office copies for 48hr loan
2. Penn State Library:  
<https://catalog.libraries.psu.edu/catalog/4929357>

To access an online version: I don't think it exists but have heard rumors of pdfs.



O'Sullivan, D., & Unwin, D. J. (2010). *Geographic Information Analysis.*

2nd Ed. ISBN: 978-0470288573

#### Physical version:

1. Class office copy for 48hr loan
2. Penn State Library:

<https://catalog.libraries.psu.edu/catalog/6935717>

Online version: FREE PDF AT LIBRARY LINK

## Assistance with Textbooks

Penn State honors and values the socioeconomic diversity of our students.

If you require assistance with the costs of textbooks for this course, contact the Office of Student Care and Advocacy (120 Boucke Building, 863-4926, <http://studentaffairs.psu.edu/studentcare>).

If you are suffering financial hardship, please also visit <http://sites.psu.edu/projectcahir>.

Remember, that you can always access free food and care at <https://thelionspantry.psu.edu/>

## Software: Why is this course in R?

**I do not assume any prior knowledge in R before starting the course.**

There are many different types of software one can use to analyze spatial data. We're going to focus on the R programming language because:

1. It's free and open source.
2. It's very powerful, mixing GIS & Stats.
3. It's a good introduction to programming, which is great for your resume.

We are also going to use RMarkdown to communicate your results. This is an interactive document where you can combine your report and your code in one place.

If your computer isn't good enough to run R, there are many other options. This is not a big deal - so talk to Dr Greatrex!

**Course content**

Labs	45%	7 labs available Lowest grade will be dropped	There will be an OPTIONAL make up project if you want to replace a poor exam or lab result (as well as the drops)
Exams	30%	Mid-term: 15% (semi-open book) Final: 15% (semi-open book) Lowest will be dropped as long as you take them	
Participation Weeks 1-4	6%	<b>I guarantee there will be at least 50 for each section</b> (e.g. you only need 80% of them to get full credit)  SEE BELOW  <b>There will be no way to make these up, unless we have discussed IN ADVANCE why you might not be able to participate for a while</b>	
Participation Weeks 1-4	6% (40 points for full marks)		
Participation Weeks 1-4	6% (40 points for full marks)		
Participation Weeks 9-13	7% (40 points for full marks)		

**Lectures**

These will be held on Mondays and Wednesdays. These will be overwhelmingly in person, but the occasional lecture will be online to allow for interactive R-demos.

**7 Labs (drop lowest)**

There are 7 labs throughout the semester for you to learn how to apply regression analysis to real world data. Most early labs will be every week, with later labs being 2 weeks long. The lowest lab will be dropped.

This semester is going to be hard. If the whole class starts to struggle due to COVID pressures or anything else, I will consider adjusting this ONLY in a way that makes it easier.

**2 Exams**

There are 2 exams during the semester. There will be an option for a retake (or similar) if it goes wrong. You will complete a final project in R Markdown.

## Participation points

In previous years, students wanted more structure and worked problems. Plus, a huge amount of evidence shows consistent engagement leads to higher grades, so I want to reward you for engagements. We are going to do this using a points system with some grace to drop points

Section of course	Points needed to score “full participation	Points available
Week 1-4	40	At least 50
Week 5-8	40	At least 50
Week 9-12	40	At least 50
Week 13-end	40	At least 50

There are many ways to earn participation points. These are described on Canvas and include things like

- “Graded on effort” homeworks (see below)
- Taking part in discussion boards
- Booking an office hour (1 each)
- Completing a micro quiz (1 each)
- Class minute cards (1 each)
- Programming activities (varied)
- Answering someone’s lab question on teams (1 each)

### **Homeworks:**

There are six stats theory homeworks and five life skills homeworks.

#### **Homeworks are graded on effort**

5 points: Everything meaningfully attempted, even if you get every answer wrong  
*If you don’t know the answer to a question, try google! Try jotting down a few bullet ideas! Try telling me which lecture you think it’s in... This must be your own work, but you can work in teams*

3 points: You did some of it, but left a lot blank

1 point: You submit ANYTHING, even a comment to say you were hungover this week and didn’t bother. I want to see which students have stopped engaging, so you can get course credit LITERALLY for saying hi.

**If you submit ANY response (even a note saying you didn’t forget this week), I will provide the worked answers.**

*HINT THESE REALLY HELP WITH THE EXAMS AND I ALSO RESPOND TO SUBMISSION COMMENTS*

**Because there are so many opportunities to participate, I will not accept late homeworks for credit** (although I will still send the worked answers if you submit late).

But! **You can drop 10 participation points every 4 weeks..** so if you don’t manage to submit them all, that’s fine and you don’t need to tell me a reason why.

## Tentative Course calendar

Week	Date	Monday Lecture	Wednesday lecture	Lab	Homeworks		Week	
					Theory	Life skills		
1	22-Aug						1	
2	29-Aug	LABOR DAY		Lab 1	HW1		2	
3	5-Sep			Lab 2		HW2	3	
4	12-Sep			Lab 3	HW3		4	
5	19-Sep			Lab 4	HW5	HW4	5	
6	26-Sep					6		
7	3-Oct			revision lab		HW6	7	
8	10-Oct		Likely midterm			8		
9	17-Oct			Lab 5	HW7		9	
10	24-Oct			Lab 6	HW9	HW8	10	
11	31-Oct					11		
12	7-Nov			Lab 7	HW11	HW10	12	
13	14-Nov					13		
14	21-Nov	Thanksgiving				Thanksgiving	14	
15	28-Nov						15	
16	5-Dec			revision lab		share lifeskills project	16	
17	12-Dec	Exams week						17

## Grading Scale:

F: <60	D: 60	C: 70	C+: 77	B-: 80	B: 83	B+: 87	A-: 90	A: 93
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There will be no grade curving.

There will be no re-grading of homework, labs, or exams unless a mistake has been made by the teaching staff

- For the final grade the instructor may throw out poor exam questions, adjust the percentages that homework and exams count, and/or adjust the grading scale above.
- **This will be done in the same way for all students and only done in such a way as to help each student's overall course grade.**

## I'm struggling, what do I do?

University is hard and my job is to help you learn this material. We can work out flexible assignments, or plan to make up assignments later if you are struggling. But I can't help if I don't know you're having problems.

**If you are struggling or simply finding it tough (for any reason), tell Dr Greatrex BEFORE the deadline and we can work out a plan. Before the deadline we can be very flexible about your assignments and workload. But even if not, come and talk with me**

**Remember you are able to drop your lowest lab, your lowest exam, 20% participation and there are many opportunities to make up credit**

I am also happy to work with you on a custom 'reduced work' path in exchange for a lower grade, and I'm flexible about hearing your creative ideas on ways to prove you have completed the learning objectives

## Late policy

### Homeworks:

Don't panic! You are allowed to drop participation points Because you are able to drop multiple homeworks, late homeworks will be graded zero (unless it's a few minutes past a deadline at my discretion). However, if you submit late, I will still send the worked answers which will help with your course progress

### Labs

Remember you are able to drop your lowest lab grade. Lab solutions will be posted regularly. Once a solution is up, you will not be able to submit that assignment and will receive a zero. There will be no warning of when solutions go up – even one hour past the deadline is fair game.

If you are habitually late, you will receive a written warning. If you continue then late assignments will be penalized. There will be a linear decay penalty for the grades of late reports, with a loss of 5% of the grade for every 24 hours the report is late, and with time delay measured from date/time when you were supposed to turn in the report until it is time-stamped by Canvas

*E.g. You are meant to turn in the lab at 3:00 PM Friday but instead you submit it at 11:00 AM Monday, then  $T_{\text{late}} = 68$  hours and  $10\% \times t_{\text{late}} / (24 \text{ hours}) = 0.28$ , so you will only get  $(100 - 28) = 72\%$  of the credit you would otherwise have received.*

## Attendance policy

Regular attendance is critical for building the skills and knowledge developed throughout the class. Students who participate have a more complete understanding of the material presented and are more likely to succeed in the class.

The University recognizes that, on exceptional occasions, students may miss a class meeting to participate in a regularly scheduled university-approved curricular or extracurricular activity (such as field trips, debate trips, choir trips, and athletic contests), or due to unavoidable or other legitimate circumstances such as illness, injury, military service, family emergency, religious observance, participation in local, state, and federal government elections, or post-graduate, career-related interviews when there is no opportunity for students to re-schedule these opportunities (such as elections or employment and graduate school final interviews). In all cases, you should inform me in advance, when possible.

Missing class, even for a legitimate purpose, may mean there is work that cannot be made up, hurting your grade in this class. Students who encounter serious family, health, or personal situations that result in extended absences should contact the Office of the Assistant Vice President for Student Affairs (AVPSA) and Student Care and Advocacy for help: <http://studentaffairs.psu.edu/studentcare>. You should be prepared to provide documentation for participation in University-approved activities, as well as for career-related interviews. You should submit to the instructor a Class Absence Form: [https://undergrad.psu.edu/aappm/class\\_absence\\_v3.pdf](https://undergrad.psu.edu/aappm/class_absence_v3.pdf), at least one week prior to the activity.

**You are not required to secure the signature of medical personnel in the case of illness or injury** and should use your best judgment on whether you are well enough to attend class or not; the University Health Center will not provide medical verification for minor illnesses or injuries.

## Academic Integrity:

All Penn State and Eberly College of Science policies regarding academic integrity apply to this course. Academic integrity—scholarship free of fraud and deception—is an important educational objective of Penn State. To learn more about academic integrity at Penn State, please visit the Penn State Academic Integrity site. Academic dishonesty can lead to a failing grade or referral to the Office of Student Conduct.

Academic dishonesty includes  
BUT IS NOT LIMITED TO:

- cheating,
- plagiarism,
- fabrication of information or citations,
- facilitating acts of academic dishonesty by others,
- unauthorized prior possession of examinations,
- submitting the work of another person or work previously used without informing the instructor and securing written approval,
- tampering with the academic work of other students,
- sharing any course materials (e.g., assignments with or without answers; quizzes; exams) via personal communication or websites other than those communications used as a part of the course
- copying from other students, answer keys, or solutions sets, and
- having a tutor complete an assignment

Warning: Ignorance is not a valid defense for plagiarism.

For detail, see

<https://science.psu.edu/current-students/integrity>

If you are unsure, see PSU's "Plagiarism Tutorial for Students."

## Academic Integrity examples:

As described by Penn State's Dr Kregenow, here are some specific examples (though not a complete list) to help clarify how to honestly approach this class.

**Honest behavior:** You discuss concepts and ideas with the professor, TAs, and other students in the class. Talking about course concepts and homework questions with others is a great way to help one another learn. But be sure to write up any work and select / submit answers on your own. Be sure you can explain everything in your own words. All work submitted by you should be an honest reflection of what you yourself personally know, understand, and can do without assistance.

**Dishonest behavior:** Any action whereby a student fails to do all the assigned work on their own. This includes, but is not limited to: Relying on the written work of anyone else. Getting answers from any source other than your own thinking. Using unauthorized sources of information for tests. Obtaining test questions in advance. Having someone else take your test or complete work on your behalf. Submitting a minute paper under somebody else's name, or submitting more than one minute paper. Falsifying or exaggerating an excuse for late or missed work. Misrepresenting any information to the instructor.

Written work submitted for this class may be analyzed with plagiarism detection software, so be sure that any writing you do for this course, no matter what length, is completely in your own words except where otherwise cited.



**Disabilities:**

Penn State welcomes students with disabilities into the University's educational programs. Every Penn State campus has an office for students with disabilities. Student Disability Resources (SDR) website provides contact information: (<http://equity.psu.edu/sdr/disability-coordinator>).

For further information, please visit Student Disability Resources website <http://equity.psu.edu/sdr/>. In order to receive consideration for reasonable accommodations, you must contact the appropriate disability services office at the campus where you are officially enrolled, participate in an intake interview, and provide documentation: See documentation guidelines (<http://equity.psu.edu/sdr/guidelines>).

If the documentation supports your request for reasonable accommodations, your campus disability services office will provide you with an accommodation letter.

**Please share this letter with your instructors and discuss the accommodations with them as early as possible.** You must follow this process for every semester that you request accommodations.

**Reporting Bias-Motivated Incidents and Educational Equity Concerns**

Penn State takes great pride to foster a diverse and inclusive environment for students, faculty, and staff.

Acts of intolerance, discrimination, or harassment due to age, ancestry, color, disability, gender, gender identity, national origin, race, religious belief, sexual orientation, or veteran status are not tolerated (<https://policy.psu.edu/policies/ad29>)

They can be reported through Educational Equity via the [Report Bias webpage](#).

**Diversity, Inclusion, and Respect**

**No matter who you are or what your background is, you are welcome, valued and belong in this class.**

I am a Rainbow EMS Lab member:

[www.ems.psu.edu/diversity/ems-rainbow-network](http://www.ems.psu.edu/diversity/ems-rainbow-network)

In EMS, inclusivity is one of our core values. We prioritize fostering a diverse and equitable community in which each member knows that they belong here and is inspired to succeed. We encourage everyone in our EMS community to be actively engaged with fostering this ideal, and all members of this class should contribute to a respectful, welcoming, and inclusive environment and interact with civility. Our commitment to inclusivity is in alignment with Penn State's values and policies.

To learn more, visit the EMS Educational Equity website <https://www.ems.psu.edu/diversity>. Here, you will find information about the EMS ALLWE initiative, the Rainbow EMS Network, Anti-Racism, active ally-ship, bystander intervention, and much more. The site also has resources for where to turn if you need assistance, as well as links to University references. Also, contact your EMS department's Associate Head for DEI for more information about department initiatives.

**I feel uncomfortable**

**If you feel uncomfortable at any time and for any reason**, please know you can reach out to Dr Greatrex, your TA, other department staff (For example Dr Matt Beckman, head of stats undergrad, or Dr Kristen Finch ECOS Assoc. Dean of Equity) or any of these resources

- If you feel in danger, call 911
- <https://studentaffairs.psu.edu/report> this has a handy help page to get you to the right place
- Many resource here: <https://redfolder.psu.edu>

Penn State is "committed to creating an educational environment which is free from intolerance directed toward individuals or groups and strives to create and maintain an environment that fosters respect for others" as stated in Policy AD29 Statement on Intolerance. All members of this class are expected to

contribute to a respectful, welcoming and inclusive environment and to interact with civility.

For additional information, see:

- [Penn State Affirmative Action non-discrimination statement](#)
- [Policy AD 85 Sexual and gender-based harassment and misconduct, Title IX](#)
- [Policy AD91 Discrimination and Harassment, and Related inappropriate Conduct](#)
- [Penn State Statement on Diversity, Equity, and Inclusive Excellence](#)
- [Penn State Values](#)
- [Penn State Principles](#)
- [All In at Penn State: A Commitment to Diversity and Inclusion](#)

## Mandated Reporting Statement

Penn State's policies require me, as a faculty member, to share information about incidents of sex-based discrimination and harassment (discrimination, harassment, sexual harassment, sexual misconduct, dating violence, domestic violence, stalking, and retaliation) with Penn State's Title IX coordinator or deputy coordinators, regardless of whether the incidents are stated to me in person or shared by students as part of their coursework.

For more information regarding the University's policies and procedures for responding to reports of sexual or gender-based harassment or misconduct, please visit Penn State's [Office of Sexual Misconduct Prevention & Response](#) website.

Additionally, I am required to make a report on any reasonable suspicion of child abuse in accordance with the [Pennsylvania Child Protective Services Law](#).

## Deferred grades

If you are prevented from completing this course within the prescribed amount of time for reasons that are beyond your control, it is possible to have the grade deferred with the concurrence of the instructor, following Penn State Deferred Grade Policy 48-40 (<http://senate.psu.edu/policies-and-rules-for-undergraduate-students/47-00-48-00-and-49-00-grades/#48-40>).

To seek a deferred grade, you must submit a written request (by e-mail or U.S. post) to the instructor describing the reason(s) for the request.

Non-emergency permission for filing a deferred grade must be requested before the beginning of the final examination period. It is up to the instructor to determine whether or not you will be permitted to receive a deferred grade. If permission is granted, you will work with the instructor to establish a communication plan and a clear schedule for completion. If, for any reason, the course work for the deferred grade is not complete by the assigned time, a grade of "F" will be automatically entered on your transcript.

## Sexual Harassment Policy

The university's code of conduct states that all students should act with personal integrity, respect other students' dignity, rights, and property, and help create and maintain an environment in which all can succeed through the fruits of their efforts. Violations of this principle can result in a range of sanctions, from a warning to expulsion. Note that Title IX makes it clear that violence and harassment based on sex and gender is a civil rights offense subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race or national origin..

Sexual harassment of faculty, staff, or students is prohibited and will not be tolerated. It is the policy of the University to maintain an academic and work environment free of sexual harassment. Sexual harassment violates the dignity of individuals and impedes the realization of the University's educational mission. The University is committed to preventing and eliminating sexual harassment of faculty, staff, and students through education and by encouraging faculty, staff, and students to report any concerns or complaints about sexual harassment. Prompt corrective measures will be taken to stop sexual harassment whenever and wherever it occurs. See Policy [AD-85 - Sexual Harassment](#)

If you need help or need to help a friend, please see <https://titleix.psu.edu/>

### Additional resources

- PSU Sexual Assault & Relationship Violence Hotline, 800-560-1637
- National Domestic Violence Hotline: 800-799-7233
- National Sexual Assault (RAINN) Hotline: 800-656-4673
- Penn State Sexual Assault & Relationship Violence: 800-560-1637 or 866-714-7177 (TTY)

## Military Personnel

Veterans and currently serving military personnel and/or spouses with unique circumstances (e.g., upcoming deployments, drill/duty requirements, disabilities, VA appointments, etc.) are welcome and encouraged to communicate these, in advance if possible, to the instructor in the case that special arrangements need to be made.

## Zoom Recording Policy

This class may use Zoom as a teaching tools. Any recorded class sessions is designed for viewing by other members of the class. By entering these sessions, you consent to be recorded and agree to adhere to PSU's class conduct policies.

You are not allowed to share such recordings outside the class without the express written permission of Dr Greatrex.

You do not have to have your camera on during class if you do not wish to be seen, You can engage through the text box, through speaking and through polls.

## Class Conduct & Disruptive Behavior

Behavior that disrupts normal classroom activities will not be tolerated, in accordance with the [Student Code of Conduct](#).

All students are expected to behave with respect in classes, no matter the format or delivery mode of the class. Your instructor may speak to you about your behavior. If your behavior does not change, you may be asked to leave the class.

If your behavior continues to be disruptive, a report will be filed with the Office of Student Conduct and your behavior will be responded to through the conduct process.

## Counseling and Psychological Services

Many students at Penn State face personal challenges or have psychological needs that may interfere with interfere with their academic progress, social development, or emotional wellbeing. The university offers a variety of confidential services to help you through difficult times, including individual and group counseling, crisis intervention, consultations, online chats, and mental health screenings.

These services are provided by staff who welcome all students and embrace a philosophy respectful of clients' cultural and religious backgrounds, and sensitive to differences in race, ability, gender identity and sexual orientation.

- [Counseling and Psychological Services at University Park \(CAPS\)](#): 814-863-0395
- Counseling and Psychological Services at [Commonwealth Campuses](#)
- Penn State Crisis Line (24 hours/7 days/week): 877-229-6400
- Crisis Text Line (24 hours/7 days/week): Text LIONS to 741741

## Change in Normal Campus Operations:

Campus emergencies, including weather delays, are announced on [Penn State Live](#) (<http://news.psu.edu/>) and communicated to cellphones, email, the Penn State Facebook page, and Twitter via PSUAlert (to sign up, please see [Sign up at: https://psualert.psu.edu/psualert/](#)).

**I WILL ANNOUNCE COURSE CHANGES BY CANVAS ANNOUNCEMENT**

## Penn State E-mail Accounts

All official communications from Penn State are sent to students' Penn State e-mail accounts or communicated on Canvas.

Be sure to check your Penn State account regularly, or forward your Penn State e-mail (see [https://pennstate.service-now.com/sp?id=kb\\_article\\_vie&sys\\_kb\\_id=76e0cebc1bff90d413b599ba234bcbe](https://pennstate.service-now.com/sp?id=kb_article_vie&sys_kb_id=76e0cebc1bff90d413b599ba234bcbe)) to your preferred e-mail account, so you don't miss any important information.

## **Safety**

In the case of emergency, we will follow the College of Earth and Mineral Sciences Critical Incident Plan [https://www.ems.psu.edu/sites/default/files/documents/about/cip\\_july\\_2021-june\\_2022.pdf](https://www.ems.psu.edu/sites/default/files/documents/about/cip_july_2021-june_2022.pdf)).

In the event of an evacuation, we will follow posted evacuation routes and gather at the Designated Meeting Site. Evacuation routes for all EMS buildings are available at <http://www.ems.psu.edu/resources-faculty-and-staff/safety-and-emergency-information>. For more information regarding actions to take during particular emergencies, please see the [Penn State Emergency Action Guides](#).

## **Syllabus and Paper Acknowledgement Forms**

In week 1, you will be asked to complete a [Syllabus Acknowledgement Form](#) ([http://facdev.e-education.psu.edu/sites/default/files/files/Syllabus acknowledgement form.doc](http://facdev.e-education.psu.edu/sites/default/files/files/Syllabus%20acknowledgement%20form.doc)).

## **Technical Requirements**

For this course, we recommend the minimum technical requirements outlined on the Dutton Institute Technical Requirements page (<https://www.e-education.psu.edu/techspecs>), including the requirements listed for same-time, synchronous communications. If you need technical assistance at any point during the course, please contact the ITS Help Desk (<http://itservicedesk.psu.edu>).

## **Netiquette**

The term "Netiquette" refers to the etiquette guidelines for electronic communications, such as e-mail and bulletin board postings. Netiquette covers not only rules to maintain civility in discussions, but also special guidelines unique to the electronic nature of forum messages. Please review some [general Netiquette guidelines](#) that should be followed when communicating in this course.

## **Syllabus Disclaimer**

Please note that the specifics of this Course Syllabus can be changed at any time, and you will be responsible for abiding by any such changes. Changes to the syllabus shall also be given to the student in written (paper or electronic) form.

# Topics list

Statistical Inference Foundations  
Simple Linear Regression (SLR) Model Assumptions, Evaluation, Prediction & Estimation  
SLR Evaluation  
SLR Assumptions, Estimation & Prediction  
Multiple Linear Regression (MLR) Model & Evaluation  
MLR Assumptions, Estimation & Prediction  
Transformations & Interactions  
Categorical Predictors  
Influential Points  
Regression Pitfalls  
Model Building  
Logistic, Poisson & Nonlinear Regression  
Geographic Weighted Regression

See here for more: <https://online.stat.psu.edu/stat462/>