MAT125 Intro. to Stats & Prob.

Spring 2026

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Office Hours: Tuesday/Thursday: 12:30 PM – 2:00 PM
Wednesday: 3:00 PM – 5:00 PM

Class Meeting Times/Days/Room

Day	Tuesday/Thursday
Time	11:00 AM – 12:15 PM
Room	UNA 162

ZOOM Link: Available on the course web page under Office Hours and Contact tabs.

Course Web Page: https://pengdsci.github.io/MAT125/

Course Logistics:

Textbook- *Not required.*

Calculator: A scientific calculator is sufficient for this class. If you have a graphing calculator, that is also great!

Free Tutoring: The new Mathematics Learning Center (MLC) located in Room 124 will offer free tutoring for math classes including statistics.

Course Description (from the Catalog):

Introduction to probability, statistics, and statistical inference. Concepts include: descriptive statistics, probability, probability distributions, sampling distributions, confidence intervals, hypothesis testing, along with a formal introduction to linear regression and categorical data analysis. Statistical software, including but not limited to SPSS and Excel, will be used to facilitate the understanding of important statistical ideas and for the implementation of data analysis in many areas of application.

Instructional Method: The course is primarily in-person but may include up to 25% of sessions delivered in an online format. Students will receive notification at least one week in advance if a specific class meeting will be conducted online.

Course Learning Outcomes:

1. Describe a dataset by producing appropriate graphs and calculating descriptive statistics.
2. Understand and apply proability rules and distributions.
3. Understand and apply the Central Limit Theorem.

4. Compute and interpret confidence intervals for population means, proportions, and differences in means and proportions.
5. Perform and interpret test of hypotheses test for means, proportions, the difference in means (independent and dependent samples), and proportions.
6. Perform a linear regression to determine the relationship between two quantitative variables and make predictions using the linear regression equation. Interpret the slope, correlation coefficient, and coefficient of determination.
7. Be proficient in all of the above using some type of technology.

Learning Resources
To enhance your learning experience, I created some engaging, supportive, and effective learning resources to cater to diverse needs and learning styles.

- *Comprehensive Course Web Site*:
  The course website provides an organized structure with weekly topics, self-contained lecture notes, online practice exercises, interactive learning apps, and exam-related information

- *Weekly Online Practice Exercises*:
  There are 10-15 multiple-choice questions designed to reflect the material covered during the week. Practicing these questions will reinforce key concepts and procedures, helping you prepare for the weekly assignments on D2L.

- *Interactive Statistics Learning Apps (ISLA):*
  I developed 17 interactive apps that cover most of the topics discussed in class. These apps primarily generate solutions to problems related to descriptive and inferential statistics, while some are designed to illustrate abstract concepts. You are encouraged to use these apps to enhance your understanding of the course material.

Evaluation Components:

- *Weekly Assignments: 25%.* **[SLO 1-7]**
  Since D2L does not have a dedicated Homework tab, I use the Quizzes section for weekly assignments. These assignments are typically posted on Thursdays at noon and close at midnight on Sundays. No make-up quizzes will be offered, as you have three and a half days to complete approximately 15 multiple-choice questions based on the week's material.

- *Attendance and participation: 10%.*
  Attendance at all scheduled classes is expected to ensure consistent progress in the course. Attendance will be taken randomly throughout the semester. If you need to be absent for valid reasons, such as illness, emergencies, or official university activities, please notify me in advance whenever possible and provide appropriate documentation. Undocumented absences will not be excused.

- *Midterm Exams (15% each) 45%* **[SLO 1-7]**
  - Exam #1: Thursday, 2/12/2026 [SLO1-2]
  - Exam #2: Thursday, 10/9/2025 [SLO 3-4]
  - Exam #3: Thursday, 11/13/2025[SLO 5-7]

- *Final Exam 20%* (The schedule is tentative. The final schedule will be available in week 13) [SLO 1-7]

Date	5/5/ 26
Time	10:30 AM – 12:30 PM
Room	UNA 162

Important Class Policies:

- **Make-up Policies**
    - **No make-up weekly assignments (a.k.a. weekly quizzes on D2L)** will be allowed under any circumstances, as you are given **three and a half days** to complete each problem set. If you can provide documented proof that you were unable to complete the work, I will adjust the assignment grade calculation at the end of the semester.
    - **No make-up exams** (midterm or final) will be offered unless:
        1. You provide a university approved **documented proof** that your absence was unavoidable, and
        2. You communicate with me **before** the scheduled exam.
      If both conditions are met, the make-up exam must be completed **within the following week**.
    - **The final cumulative exam is mandatory for all students**. Failure to take it will result in a **failing grade**, regardless of your performance on midterms, weekly assignments, or attendance.
- **Attendance Policies:** Your learning depends on participation in class activities. Attendance is mandatory and will account for 10% of your course grade. You are expected to attend every class meeting unless you are ill or have a valid reason.

Final Course Grade Scale: A letter grade will be assigned based on performance in the course according to the following scale.

Grade	Quality points	Percentage equivalents	Interpretation
A	4.00	93-100	Excellent
A-	3.67	90-92	
B+	3.33	87-89	Superior
B	3.00	83-86	
B-	2.67	80-82	
C+	2.33	77-79	Average
C	2.00	73-76	
C-	1.67	70-72	
D+	1.33	67-69	Below Average
D	1.00	63-66	
D-	0.67	60-62	
F	0	< 60%	Failure

Refer to the Undergraduate Catalog for a description of NG (No Grade), W, Z, and other grades.

Use of D2L:

- Weekly assignments, called "Weekly Quizzes," will be administered via D2L.
- All printed course materials will be posted on the course webpage, which is also linked to your D2L front page. You are expected to check the course webpage regularly for updates.

IMPORTANT NOTE: The following list of tentative topics is subject to change as the semester progresses if it will enhance student learning and the overall quality of the course.

Tentative Course Schedule-Subject to Change

Topic 1	• Course outline and logistics
	• Frequency tables and charts
	• Numerical measures- raw data
	   o Central tendency
	   o Variation (spread)
	   o Location: Z-score and Quantile
	   o Boxplot and IQR

Topic 2	• Probability concepts
	• Additive probability rules
	• Concepts of Random Variables
	   o Characterizing discrete random variables
	   o Characterizing continuous random variables

Topic 3	• Discrete distributions
	   o General characterization
	   o Bernoulli and Binomial distributions
	   o Poisson distribution

Topic 4	• Standard Normal Distribution
	   o Given two z-scores to find the probability
	   o Given one z-score and the probability of finding the other z-score
	• Normal Distribution
	   o z-score transformation
	   o Two basic problems of normal distributions
	• Exponential Distribution

Topic 5	• CLT and Sampling Distribution of Sample Means
	   o The case of normal populations
	   o In the case of a large sample
	   o The case of A small sample
	• Sampling distribution of sample proportions
	   o The CLT for sample proportions

Topic 6	• The concept of confidence interval (CI) for the mean
	   o Terms of the confidence interval
	   o Steps for constructing a confidence interval
	• Normal confidence intervals for μ and *p*
	   o The case of large sample (CLT)
	   o The case of proportion: *np>5 and n(1-p)>5*

Topic 7	• T-distribution
	  o Use of t-table to find critical values
	• t-confidence interval for μ.
	  o Steps for constructing t-confidence intervals

Topic 8	• Conceptual Framework of Hypothesis Testing
	  o The logic of hypothesis testing
	  o The components and terms of hypothesis testing
	• Normal Tests – Critical value and p-value methods
	  o Large sample test for population μ
	  o Testing p when $np >5$ and $n(1-p) >5$

Topic 9	• t-test – Critical value method only (for this class)
	  o small normal sample with unknown σ
	• Testing two dependent population means: paired tests
	  o Dependent populations: before and after designs

Topic 10	• Two-sample independent Tests
	  o Testing population means: two-sample t-test
	  o Testing population means: two-sample normal test

Topic 11	• Correlation coefficient
	• Least-square regression line
	• Inference of Linea Regression
	  o Coefficient of Determination
	  o Hypothesis Testing on the Slope Parameter

Topic 12	• Concepts of goodness of fit test o Observed and null tables • Chi-square test of independence

ACADEMIC & PERSONAL INTEGRITY

It is the responsibility of each student to adhere to the university's standards for academic integrity. Violations of academic integrity include any act that violates the rights of another student in academic work, that involves misrepresentation of your own work, or that disrupts the instruction of the course. Other violations include (but are not limited to): cheating on assignments or examinations; and plagiarizing, which means copying any part of another's work and/or using ideas of another and presenting them as one's own without giving proper credit to the source; selling, purchasing, or exchanging of term papers; falsifying of information; and using your own work from one class to fulfill the assignment for another class without significant modification. Proof of academic misconduct can result in the automatic failure and removal from this course. For questions regarding Academic Integrity, the No-Grade Policy, Sexual Harassment, or the Student Code of Conduct, students are encouraged to refer to the Department Undergraduate Handbook, the Undergraduate Catalog, the Ram's Eye View, and the University website.

ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES

West Chester University is committed to providing equitable access to the full WCU experience for Golden Rams of all abilities. Students should contact the Office of Educational Accessibility (OEA) to establish accommodations if they have had accommodations in the past or if they believe they may be eligible for accommodations due to a disability, whether or not it may be readily apparent. There is no deadline for disclosing to OEA or for requesting to use approved accommodations in a given course. However, accommodations can only be applied to future assignments or exams; that is, they can't be applied retroactively. Please share your letter from OEA as soon as possible so that we can discuss accommodations. If you have concerns related to disability discrimination, please contact the university's ADA Coordinator in the Office of Diversity, Equity, and Inclusion or 610-436-2433.

EXCUSED ABSENCES POLICY

Students are advised to carefully read and comply with the [University-Excused Absences Policy](), including absences for university-sanctioned events, contained in the WCU Undergraduate Catalog. In particular, please note that the "responsibility for meeting academic requirements rests with the student," that this policy does not excuse students from completing required academic work, and that professors can require a "fair alternative" to attendance on those days that students must be absent from class in order to participate in a University-Sanctioned Event.

REPORTING INCIDENTS OF SEXUAL VIOLENCE

West Chester University and its faculty are committed to assuring a safe and productive educational environment for all students. In order to comply with the requirements of Title IX of the Education Amendments of 1972 and the University's commitment to offering supportive measures in accordance with the new regulations issued under Title IX, the University requires faculty members to report incidents of sexual violence shared by students to the University's Title IX Coordinator. The only exceptions to the faculty member's reporting obligation are when incidents of sexual violence are communicated by a student during a classroom discussion, in a writing assignment for a class, or as part of a University-approved research project. Faculty members are obligated to report sexual violence or any other abuse of a student who was, or is, a child (a person under 18 years of age) when the abuse allegedly occurred to the person designated in the University Protection of Minors Policy. Information regarding the reporting of sexual violence and the resources that are available to victims of sexual violence is set forth on the WCUPA Sexual Misconduct website.

INCLUSIVE LEARNING ENVIRONMENT AND ANTI-RACIST STATEMENT

Diversity, equity, and inclusion are central to West Chester University's mission as reflected in our Mission Statement, Values Statement, Vision Statement, and Strategic Plan: Pathways to Student Success. We disavow racism and all actions that silence, threaten, or degrade historically marginalized groups in the U.S. We acknowledge that all members of this learning community may experience harm stemming from forms of oppression including but not limited to classism, ableism, heterosexism, sexism, Islamophobia, anti-Semitism, and xenophobia, and recognize that these forms of oppression are compounded by racism.

Our core commitment as an institution of higher education shapes our expectation for behavior within this learning community, which represents diverse individual beliefs, backgrounds, and experiences.

Courteous and respectful behavior, interactions, and responses are expected from all members of the University. We must work together to make this a safe and productive learning environment for everyone. Part of this work is recognizing how race and other aspects of who we are shape our beliefs and our experiences as individuals. It is not enough to condemn acts of racism. For real, sustainable change, we must stand together as a diverse coalition against racism and oppression of any form, anywhere, at any time.

Resources for education and action are available through WCU's Office for Diversity, Equity, and Inclusion (ODEI), DEI committees within departments or colleges, the student ombudsperson, and centers on campus committed to doing this work (e.g., Dowdy Multicultural Center, Center for Women and Gender Equity, and the Center for Trans and Queer Advocacy).

Guidance on how to report incidents of discrimination and harassment is available at the University's Office of Diversity, Equity, and Inclusion.

EMERGENCY PREPAREDNESS

All students are encouraged to sign up for the University's free WCU ALERT service, which delivers official WCU emergency text messages directly to your cell phone. To report an emergency, call the Department of Public Safety at 610-436-3311.

ELECTRONIC MAIL POLICY

It is expected that faculty, staff, and students activate and maintain regular access to university-provided e-mail accounts. Official university communications, including those from your instructor, will be sent through your university e-mail account. You are responsible for accessing that mail to be sure to obtain official University communications. Failure to access will not exempt individuals from the responsibilities associated with this course.

University Resources

COMMUNICATION VIA NAVIGATE

- West Chester University uses Navigate as a communication tool between faculty, students, and student support offices. Throughout the term, you may receive text messages and/or WCU emails from Navigate regarding your academic progress. These messages will have information to promote your success and direct you to support services that will best fit your needs—please open and read them. Additionally, Navigate has useful features such as your course schedule, campus resources with contact and location information, and a feature called Study Buddies that lets you connect with other students in your class sections who are interested in studying together outside of class.
- To access Navigate, you will need to download the Student App to your phone by visiting the Navigate website (use the QR code).
- For technical assistance visit the Help Desk. For additional Navigate documentation, visit the Navigate Training Site.

TECHNICAL SUPPORT
- The [IS&T Help Desk](#) is the central point of contact for all technology-related hardware, software, and system support such as Office 365 and D2L at West Chester University. Located in Anderson Hall 119, the Help Desk provides first-level customer support for students and employees in locations such as administrative offices, classrooms, residence halls, remote sites & satellite campuses using ServiceNow.
- ***Submit a support ticket***: [Login to ServiceNow](#) ***Phone***: 610-436-3350
- Hours for support may vary. Check the website for times of operation.

ACADEMIC SUPPORT
- The [Academic Support Resources](#) website is a good place to start looking for academic support services.
- The [Learning Assistance and Resource Center](#) provides tutoring services for free, but availability is limited.
- [WCU Library](#) resources are available remotely.
- You are strongly encouraged to review the [Navigating Digital Learning](#) Orientation D2L module (in the Orientation tab of your My Courses page).

STUDENT SUPPORT
- The [WCU Student Support Center](#) is a good place to start looking for support services.
- [WCU Counseling & Psychological Services](#) offers counseling, referrals, and emergency resources.
- In the event of a health-related absence, the Health and Wellness [Student Assistance](#) webpage can help you notify instructors.
- Need a Laptop? Loaner equipment may be available; see the [Laptop and Equipment Loaner Program](#).

APSCUF
- APSCUF (The Association of Pennsylvania State College and University Faculties) is the union that represents the faculty and coaches who have devoted themselves to providing quality higher education for Pennsylvania students at the ten universities in the Pennsylvania State System of Higher Education, including West Chester University. To learn more about APSCUF, see [www.apscuf.org](#).

WRITING CENTER
- The West Chester University Writing Center provides tutoring **free of charge** for any student on any writing project. To learn more about the WCU Writing Center and to make an appointment, go to [www.wcupa.edu/writingcenter](#).