STAT 461/661: Probability Theory – Fall 2025

Tu/Th 12:00-1:15pm, PE 104

Instructor: Dr. Deena Schmidt
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Office Hours: Tuesday 10:50-11:50am, Thursday 2:30-3:30pm, or by appt
Course Website: WebCampus aka Canvas: unr.edu/webcampus

- **Course Catalog Description**: Probability space axioms; random variables; expectation, univariate and multivariate distribution theory, sequences of random variables, Chebychev inequality, law of large numbers, and central limit theorem.

- **Course Prerequisite**: Math 283 with a C or better.

- **Required Textbook and Course Materials**:

    - *An Introduction to Mathematical Statistics and Its Applications* by R.J. Larsen and M.L. Marx, 6th Edition, Prentice Hall.

- **Course Content**: Book chapters 1-4, and some additional material.

- **Class Procedure**: This course will be delivered in person. Students will be required to access the homework assignments via Canvas, and upload completed assignments to Canvas. The course schedule will be posted on Canvas and updated weekly, and announcements may be posted there periodically. Exams will be given in person during class. It is your responsibility to check the schedule each week, but I will start each class with announcements reminding you of upcoming deadlines. I will also hold extra office hours before each exam so please check Canvas for dates and times.

- **Student Learning Outcomes:** Upon completion of Math 461/661, students will be able to:

    - Demonstrate understanding of randomness and be able to use probability models to explain simple random phenomena.
    - Compute summaries of probability distributions (univariate and multivariate).
    - Compute measures of location, dispersion, and association, as well as probability of interest for many univariate and multivariate distributions.
    - Assess and make use of the asymptotic results provided by the Law of Large Numbers and the Central Limit Theorem and their connection to the estimates of quantities from data.

- **Course Conduct:** I request that all students work with me to foster a class culture based on open communication, mutual respect, and inclusion. I strive to create an open and welcoming classroom for all students. Any form of disruption or disrespect to other students or to the instructor will not be tolerated. Please be on time. All electronic devices need to be silent during class. If found texting or browsing the internet on a phone/tablet/computer during lecture, you will be asked to put it away.

- **Undergraduate vs. Graduate Work:** Homework and exams may differ for undergraduate (461) and graduate (661) students. I expect graduate students to attain a deeper understanding of the material and to show a higher level of maturity in the presentation of homework/exam solutions.

COURSE REQUIREMENTS

- **Homework**: Homework will be assigned weekly (most weeks) and will be due at 11:59pm on the listed due date (please upload a PDF file to Canvas – it can be handwritten and scanned or typed). Please write legibly or type using LaTeX or R Markdown. A subset of the assigned problems will be graded. Your solutions must show all relevant work and be a clear explanation of your reasoning. The same applies to exams. In addition to assigned homework, I expect students to read the book.

- **Exams**: There will be two in class midterm exams and a comprehensive final exam. See the tentative course schedule at the end of the syllabus for more details.

- **Final Exam**: (Optional) Thursday December 11, 2025 10:15am-12:15pm

  Prior to the Final Exam, a ***pre-final*** **score will be calculated that is 25% Homework, 75% Midterm Exams.** Near the end of the term, you will be given this pre-final score, along with the opportunity to opt out of the final exam and accept your pre-final score as your final grade for this course. This will be a one-time opportunity. You may not take the final and then request to use your pre-final score.

  If you decide to take the final, your grade for the course will be calculated after the final as:
  Homework: 25% **Midterm Exams: 50%** **Final Exam: 25%.**

- **Grading Scale:**

A	93.0 – 100%	C	73.0 – 76.9%
A-	90.0 – 92.9%	C-	70.0 – 72.9%
B+	87.0 – 89.9%	D+	67.0 – 69.9%
B	83.0 – 86.9%	D	63.0 – 66.9%
B-	80.0 – 82.9%	D-	60.0 – 62.9%
C+	77.0 – 79.9%	F	0 – 59.9%

Attendance: Students are strongly encouraged to attend all classes. *However, if you are sick with a contagious illness, please do not come to class*. If you must miss class due to illness, please contact me immediately to make arrangements for any missed work or lecture materials. I do post my lecture

notes on Canvas after each class, but please come to my office hours if you'd like to go over any material that you missed.

Make-up/Late Policy: Late homework will not be graded but may be turned in late to be graded on completion for a penalty. There will be no early or makeup exams, unless there is a compelling reason (medical/family emergency, university approved activity, religious holiday). Students participating in official university activities that interfere with exams must make arrangements with me at least two weeks prior to the exam in question. UNR policies are provided in UAM 3,020 and at https://med.unr.edu/shc/insurance/clinic-policies. Any student requiring accommodations through the DRC must schedule their exams on the same day as the in-class exam.

About Your Instructor: I have been teaching at UNR for over 10 years, and I love teaching probability! I have a PhD in Applied Mathematics, and my preferred name is Dr. Schmidt. I also do research which focuses on developing and analyzing mathematical models that can be applied to biological systems. I enjoy working with both undergraduate and graduate students on mentored research problems. Come chat with me if you're interested in learning more.

Preferred Names: If your preferred name is not the same as the name that appears on the university provided roster for the course, please let me know so that I can use your preferred name.

UNIVERSITY POLICIES

Academic Dishonesty: Cheating, plagiarism or otherwise obtaining grades under false pretenses constitute academic dishonesty according to the code of this university. Academic dishonesty will not be tolerated, and penalties can include canceling a student's enrollment without a grade, giving an F for the course or for the assignment. The University Academic Standards Policy defines academic dishonesty, and mandates specific sanctions for violations. See the University Academic Standards policy: UAM 6,502.

Generative AI Use is Allowed for Certain Purposes/Assignments: This course assumes that all work submitted by students - which includes all process work, drafts, brainstorming artifacts, final works – will be generated by the students themselves, working individually or in groups as directed by course assignment instructions. This policy indicates the following constitute violations of academic honesty and "cheating": any unauthorized use of generative AI tools (such as ChatGPT), as outlined in UNR Academic Integrity Policy (UAM 6,502).

My guiding principle for distinguishing between appropriate and the inappropriate/unauthorized use of generative AI tools are (1) that these tools are useful, but not fool proof, and should be used with critical oversight; and (2) that there is a crucial difference between use for the goal of learning the course material versus how you might use generative AI outside of class towards other goals (e.g., a statistical analysis at work). Thus, your use of generative AI in this course (prohibited for exams) should be a more restricted set of activities, and should facilitate learning. Most use cases are covered by treating AI tools as classmates and asking "Would it be appropriate for me to get this assistance from a classmate?" **If you use AI in this course, you must include a statement summarizing how it was used in your submitted work.** Please reach out to me if you have any questions or concerns.

Student Compliance with University Policies: In accordance with section 6,502 of the University Administrative Manual, a student may receive academic and disciplinary sanctions for failure to comply with policy, including this syllabus, for failure to comply with the directions of a University Official, for disruptive behavior in the classroom, or any other prohibited action. “Disruptive behavior" is defined in part as behavior, including but not limited to failure to follow course, laboratory or safety rules, or endangering the health of others. A student may be dropped from class at any time for misconduct or disruptive behavior in the classroom upon recommendation of the instructor and with approval of the college dean. A student may also receive disciplinary sanctions through the Office of Student Conduct for misconduct or disruptive behavior, including endangering the health of others, in the classroom. The student shall not receive a refund for course fees or tuition.

CAMPUS RESOURCES

Academic Success Services: Your student fees cover usage of the Math Center (775) 784-4422, Tutoring Center (775) 784-6801, and University Writing Center (775) 784-6030. These centers support your classroom learning; it is your responsibility to take advantage of their services. Keep in mind that seeking help outside of class is the sign of a responsible and successful student.

Disability Services: Any student with a disability needing academic adjustments or accommodations is requested to speak with the Disability Resource Center (Pennington Achievement Center Suite 230) as soon as possible to arrange for appropriate accommodations.

This course may leverage 3rd party web/multimedia content, if you experience any issues accessing this content, please notify your instructor.

Student-created recordings: Surreptitious or covert video-taping of class or unauthorized audio recording of class is prohibited by law and by Board of Regents policy. This class may be videotaped or audio recorded only with the written permission of the instructor. In order to accommodate students with disabilities, some students may have been given permission to record class lectures and discussions. Therefore, students should understand that their comments during class may be recorded.

Instructor-created recordings: Class sessions may be audio-visually recorded for students in the class to review and for enrolled students who are unable to attend live to view. Students who participate with their camera on or who use a profile image are consenting to have their video or image recorded. If you do not consent to have your profile or video image recorded, keep your camera off and do not use a profile image. Students who un-mute during class and participate orally are consenting to have their voices recorded. If you do not consent to have your voice recorded during class, keep your mute button activated and only communicate by using the "chat" feature, which allows you to type questions and comments live.

Maintaining a Safe Learning and Work Environment: The University of Nevada, Reno is committed to providing a safe learning and work environment for all. If you believe you have experienced discrimination, sexual harassment, sexual assault, domestic/dating violence, or stalking, whether on

or off campus, or need information related to immigration concerns, please contact the University's Center for Civil Rights and Equal Access at 775-784-1547. Resources and interim measures are available to assist you. For more information, please visit the Center for Civil Rights & Equal Access page.

Campus Closures or Delays:
In the event of class cancelations or delays caused by inclement weather conditions, fire/smoke conditions, or other unforeseen emergencies, the safety and well-being of students are the University's top priority. Official notifications will be disseminated through the University website and other official channels with details related to any campus delays or closures.

In the event of a campus closure, you will be informed as to whether the class will be offered remotely or if it will be canceled. If the class is cancelled, you will receive information on how to address any missed course content.

Students facing significant impacts due to these events are encouraged to communicate with their instructor for potential accommodations.

CLASS SCHEDULE (tentative)

	Monday	Tuesday	Wednesday	Thursday	Friday
August	25	26 2.2	27	28 2.2, 2.3	29
September	1 **Labor Day**	2 2.3	3	4 2.4	5
	8	9 2.4, 2.5	10	11 2.5, 2.6	12
	15	16 2.6	17	18 2.7	19
	22	23 3.1, 3.2	24	25 3.2, 3.3	26
	29	30 3.3	1	2 3.4	3
October	6	7 3.4, 3.5	8	9 3.5, Review	10
	13	14 **EXAM 1**	15	16 3.6, 3.7	17
	20	21 3.7	22	23 3.7, 3.8	24
	27	28 3.8	29	30 3.9	31
November	3	4 3.10, 3.11	5	6 3.12	7
	10	11 Veteran's Day (No class)	12	13 4.2	14
	17	18 4.2	19	20 4.4, 4.5, 4.6	21
	24	25 4.6, 4.3	26	27 **Thanksgiving** **(No class)**	28
December	1	2 4.3, Review	3	4 **EXAM 2**	5
	8	9 R demos, Review	10 Prep Day	11 **Final Exam** **(optional)** **10:15-12:15**	