

MAT 221: Elementary Probability and Statistics I

M802 — Summer Session I 2025

Instructor Information

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Office Hours: TuTh 11:30AM – 12:30PM via Zoom

Class Information

Dates: May 19 – June 26
Time: MoTuWeTh 9:00AM – 11:25AM
Instruction Mode: Online Synchronous

Course Description

This course is the first course in the Quantitative Skills sequence MAT 221-222. The primary objective of MAT 221 is to provide students with knowledge of elementary probability and statistics. Students will learn the basic concepts of descriptive statistics, design of experiments, probability theory, sampling distributions, and estimation of parameters. Students continuing to MAT 222 will learn how to use statistics to make various decisions.

Mathematics Prerequisite

Algebra competency.

Shared Competency

MAT 221 fosters the shared competency (Syracuse University's university-wide learning goals for undergraduate students): "Scientific Inquiry and Research Skills".

Course Objectives

After this course, students should be able to:

- Demonstrate understanding of the key principles of descriptive statistical analyses.
- Summarize data numerically and graphically.
- Recognize particular sampling and statistical experimental designs, as well as their usage and purpose.
- Demonstrate understanding of basic concepts of mathematical probability.
- Compute probabilities and work with key random variable distributions based on specific contexts and using various rules.
- Demonstrate understanding of the importance of the Central Limit Theorem and the associated approximations.
- Demonstrate understanding of basic statistical inference procedures (confidence intervals and statistical test of hypotheses).

Textbook and Calculator

Textbook: *Introduction to the Practice of Statistics* by D.S. Moore, G.P. McCabe, and B.A. Craig, 10th edition. Chapters 1- 6 will be covered in MAT 221. Your course materials will be provided through Orange Inclusive Access (OIA). You are automatically enrolled, and your required course material will be accessible via Blackboard. All you need to do is log in to the Blackboard course page and follow the instructions. If you opt out of participation, you are still responsible for obtaining the materials elsewhere.

Calculator: You will need a calculator to do the computations that will arise throughout the course. No specific calculator is required, but TI 84 or TI 83 calculator is recommended. Using statistical functions on calculators for exams and quizzes is not allowed.

Course Supervisor

Please inform your instructor of any problems you have with this course. Problems not satisfactorily resolved with your instructor could be brought to the attention of the course supervisor:

Prof. Leonid Kovalev, lvkovale@syr.edu

Homework

The key to success in this course is to master the homework. Homework will be assigned everyday in class. Homework will be done online using WeBWorK, an open-source homework system. The number of attempts is unlimited. Problems can be done in any order. You do not have to do them all at once. If you need or desire an extension on any homework for any reason, contact the instructor in a timely fashion before the due time, as permitted by the need.

WEBWORK ACCESS INFORMATION:

- Visit https://webwork.syr.edu/webwork2/MAT_221_Summer_2025_Jia/ to start.
- Username: Use your netid, omitting “@syr.edu” and ensure it is in **all lowercase letters**. Be cautious as browsers may auto-capitalize the first letter.
- Initial Password: Your 9-digit numeric SU-ID number. If your physical ID card shows a 10th digit past a dash, do not include it in the password.
- Password Reset: If you have previously used WeBWorK, note that your password will be reset at the start of this course.
- Enrollment: You will be manually enrolled by the course administrator, as automatic enrollment is not available.
- Support: This site is not managed by Syracuse University ITS. For password reset and access queries, please contact your course instructor directly.

Homework will be worth 20% of your final grade.

Quizzes

There will be a weekly quiz on Blackboard. Each quiz will test your understanding of this week's lectures and should take no more than 25 minutes. There will be NO make-up quizzes. More details

will be announced before the first quiz.

Quizzes will be worth 15% of your final grade.

Exams

There will be two midterm exams, totally accounting for 40% of your final grade. There will be NO make-up exams. Unexcused absence from an exam counts as zero. If the absence is excused, your grade on the relevant portion of the final exam will be used to replace the missed exam.

The final exam is comprehensive and accounts for 20% of the final grade. All students must take the final exam at the scheduled time during our last day of classes on Thursday, June 26, 2025. Instructions will be provided closer to the exam dates.

It is your responsibility to make all necessary preparations for the exams (check internet connection, charge a laptop/ipad/calculator, check the light in your room, choose quiet room, etc.). Exams are tentatively scheduled as follows:

Exam 1	Monday, June 2, 2025
Exam 2	Monday, June 16, 2025
Final Exam	Thursday, June 26, 2025

Attendance and Participation

You are expected to attend and participate in every class. Attendance could be checked during each class and you will lose some points for participation if you miss the attendance check without an excused absence in advance. Make sure to register with your real name (listed in the roster) as the instructor will be checking your attendance based on it. Should you need to miss a class for any reason, you are to contact the instructor in a timely manner, and it is your responsibility to obtain a copy of the lecture notes from another student. You are also responsible for any announcements about changes to the course schedule, the exam schedule, or the course requirements made during that class.

Participation will be worth 5% of your final grade.

Grading

The course grade is determined by the following components:

Homework	20%
Quizzes	15%
Two Midterm Exams	40%
Final Exam	20%
Participation	5%

Grades and important announcements will be posted on Blackboard. Please check Blackboard regularly to ensure the grades have been recorded correctly.

Grade Scale

Final grades will be given according to the following scale:

Raw Grade x	Letter Grade	Raw grade	Letter Grade
$93 \leq x \leq 100$	A	$77 \leq x < 80$	C+
$90 \leq x < 93$	A-	$73 \leq x < 77$	C
$87 \leq x < 90$	B+	$70 \leq x < 73$	C-
$83 \leq x < 87$	B	$60 \leq x < 70$	D
$80 \leq x < 83$	B-	$0 \leq x < 60$	F

Important Dates

Wednesday, May 21, 2025	Last day to add a class or to change a section
Tuesday, May 27, 2025	Last day to drop a class (no mark on transcript)
Monday, June 23, 2025	Last day to withdraw (WD mark on transcript)

Tentative Schedule

Week	Dates	Topic	Notes
Week 1	May 19–22	§§ 1.1–1.4, §§ 4.1–4.3	
Week 2	May 27–29	§§ 4.4–4.5, Review	May 26: No class
Week 3	June 2–5	§§ 2.1–2.4, §§ 3.1–3.3	June 2: Exam 1
Week 4	June 10–12	§§ 5.1–5.3, Review	
Week 5	June 16–18	§§ 6.1–6.2a	June 16: Exam 2; June 19: No class
Week 6	June 23–26	§§ 6.2b–6.3, Review	June 26: Final Exam

Students with Disabilities

Syracuse University values diversity and inclusion; we are committed to a climate of mutual respect and full participation. There may be aspects of the instruction or design of this course that result in barriers to your inclusion and full participation in this course. I invite any student to contact me to discuss strategies and/or accommodations (academic adjustments) that may be essential to your success and to collaborate with the Center for Disability Resources (CDR) in this process.

If you would like to discuss disability-accommodations or register with CDR, please visit their website at <https://disabilityservices.syr.edu>. Please call (315) 443-4498 or email disabilityservices@syr.edu for more detailed information. The CDR is responsible for coordinating disability-related academic accommodations and will work with the student to develop an access plan. Since academic accommodations may require early planning and generally are not provided retroactively, please contact CDR as soon as possible to begin this process.

Academic Integrity

As a pre-eminent and inclusive student-focused research institution, Syracuse University considers academic integrity at the forefront of learning, serving as a core value and guiding pillar of education. Syracuse University's Academic Integrity Policy provides students with the necessary guidelines to complete academic work with integrity throughout their studies. Students are required to

uphold both course-specific and university-wide academic integrity expectations such as crediting your sources, doing your own work, communicating honestly, and supporting academic integrity. The full Syracuse University Academic Integrity Policy can be found by visiting class.syr.edu, selecting, “Academic Integrity,” and “Expectations and Policy.”

Upholding Academic Integrity includes the protection of faculty's intellectual property. Students should not upload, distribute, or share instructors' course materials, including presentations, assignments, exams, or other evaluative materials without permission. Using websites that charge fees or require uploading of course material (e.g., Chegg, Course Hero) to obtain exam solutions or assignments completed by others, which are then presented as your own violates academic integrity expectations in this course and may be classified as a Level 3 violation. All academic integrity expectations that apply to in-person assignments, quizzes, and exams also apply online.

Students found in violation of the policy are subject to grade sanctions determined by the course instructor and non-grade sanctions determined by the School or College where the course is offered. Students may not drop or withdraw from courses in which they face a suspected violation. Any established violation in this course may result in course failure regardless of violation level.

Artificial Intelligence

All generative-AI tools are prohibited in this course because their use inhibits achievement of the course learning objectives. This policy applies to all stages of project and writing processes including researching, brainstorming, outlining, organizing, and polishing. Do not use Generative-AI tools to create any content (i.e., images and video, audio, text, code, etc.). If you have any questions about a feature and whether it is considered Generative-AI, ask your instructor.

Religious Observances Policy

Syracuse University's religious observances policy, found at <https://chapel.syracuse.edu/spiritual-life/religious-observances-policy/>, recognizes the diversity of faiths represented in the campus community and protects the rights of students, faculty, and staff to observe religious holy days according to their traditions. Under the policy, students are given an opportunity to make up any examination, study, or work requirements that may be missed due to a religious observance, provided they notify their instructors no later than the academic drop deadline. For observances occurring before the drop deadline, notification is required at least two academic days in advance. Students may enter their observances in MySlice under Student Services/Enrollment/My Religious Observances/Add a Notification.