

MATH 3160 Section 002 - Probability - Spring 2022

<https://alexander-teplyaev.uconn.edu/math-3160-spring-2022/>

- **Instructor:** Alexander (Sasha) Teplyaev,
<http://teplyaev.math.uconn.edu/>

We follow “Reopening UConn” dashboard

<https://covid.uconn.edu/>

<https://reopen.uconn.edu/>

<https://uconn.edu/public-notification/coronavirus/>

- **Office hours:** MoWeFr 12:30pm–1:20pm (please send me an email if the meeting is important). Office: MONT 429, email: teplyaev@uconn.edu
- **Textbook:** No purchased textbook is required. The essential material for the course will be available at <http://probability.oer.math.uconn.edu/3160-oer/>. Other sources of the material are open source textbooks, such as **Introduction to Probability** by Charles M. Grinstead and J. Laurie Snell. There are many published textbooks, such as *A First Course in Probability*, 7th/8th/9th Ed., by Sheldon Ross.
- **Quizzes, Tests and Exams:**
 - * There will be take-home quizzes every week.
 - * There will be 3 mid-term tests.
 - * Final Exam during the final exam week (it is optional according to the policy below)
- **Grades:** The grades will be computed as the **maximum** of the following two columns:

| | | |
|-----------------------|-------------|-------------|
| quizzes (take-home) → | 10% | 10% |
| Midterm Test 1 → | 30% | 10% |
| Midterm Test 2 → | 30% | 10% |
| Midterm Test 3 → | 30% | 10% |
| Final Exam → | optional | 60% |
| <i>total</i> | <i>100%</i> | <i>100%</i> |

No make-up quizzes or tests will be offered.

If you can not come to class, please provide an explanation by email, preferably in advance.

- **Homework:** Assignments will be posted on the webpage <https://alexander-teplyaev.uconn.edu/math-3160-spring-2022/>
All assigned problems are subject to appear in the quizzes and/or the exams.
The HW will not be collected and graded.
- **Look at the [Academic Calendar](#)** for all the important dates in the semester.
- **Prerequisites:** Calculus, up to and including series, limits, partial differentiation, and multiple integration. Recall that MATH 2110Q, 2130Q or 2143Q are strictly enforced as a prerequisite for MATH 3160.

The **final exam date** will be announced by the registrar a few weeks into the semester. You **MUST** contact the [Dean of Students Office \(DSO\)](#) regarding any conflict with the scheduled final exam times by the end of the third-from-last week of the semester. Please note that vacations, previously purchased tickets or reservations, social events, misreading the exam schedule and over-sleeping are not viable excuses for missing a final exam. If you think that your situation warrants permission to reschedule, please contact the DSO with any questions. Once the DSO grants permission to reschedule your final exam, they will notify me, and I will confirm an alternate arrangement.

No make-up exams will be offered unless under the most extreme and well documented circumstances, such as a serious illness or family emergency. If you anticipate such circumstances, please notify me in advance.

- **Course preparation:** To keep up with the course, you will need to spend 2+ hours studying on your own for each class meeting. Work on the corresponding homework problems: this is especially important in the last 2/3 of the course, where the *new material builds upon the previous material*.
- **The Student Code:** Everyone is expected to read and abide by the [UConn Student Code](#), especially [Appendix A: Academic Integrity in Undergraduate Education and Research](#). Any academic misconduct will be dealt with under this policy.

Standard syllabus for Math 3160 Probability:

- **Combinatorics:** product rule and permutations; combinations. Axioms of Probability: sample spaces, events and set operations; probability axioms. Conditional Probability and Independence: conditional probability and Bayes rule; probability trees; independent events.
- **Discrete Random Variables:** probability mass function (PMF), cumulative distribution function (CDF); expectation; variance, moments, moment generating function (MGF). Uniform, Bernoulli, Binomial, Poisson, Geometric, Hypergeometric distributions; expectation, variance, MGF of these RVs.
- **Continuous Univariate Random Variables:** probability density function (PDF), CDF, expectation, variance, moments, MGF. Uniform, Exponential, Gamma, Normal distributions; expectation, variance, MGF of these RVs. Transformations (functions) of continuous RVs.
- **Jointly Distributed Random Variables:** joint PMF/PDF, and CDF; marginal distributions; conditional PMF/PDF; conditional expectation and variance; covariance and correlation coefficients.
- **Limit Theorems:** Weak Law of Large Numbers, Central Limit Theorem, Normal approximations.