MATH 3160 **Probability** **Spring, 2026**

Three credits. Prerequisite: MATH 2110Q, 2130Q or 2143Q.

Instructor: Venu G Menon (venu.menon@uconn.edu)

Office Hours

In Person Office Hours: Mondays & Wednesdays: By Appointment

Online Office Hours via WEBEX: By Appointment – Please send me an email for appointment.

Free Online Textbook is available at https://probability.oer.math.uconn.edu/3160-oer/

All the material for the course should be accessed through HUSKY CT. There are two sets of problems that can be found in HUSKY CT:

1. **Exercises: These are problems for you to practice at home; if you have any questions about any of these problems, we can discuss them in class.**

2. **Homework: These are problems you need to do and hand them in by the specified due date.**

   Homework will be accepted up to 2 days after the due date with 10% penalty.
   Due dates will not be extended.

Grade will be based on Homework (25%) and three tests (75%)

Test 1 – February 18 Test 2 – March 30 Test 3 – April 29

A comprehensive final exam will be offered for those who wish to improve their grade

No notes, books, cell phones or graphing calculators will be allowed on tests.
You may use a (non-graphing)scientific calculator

The topics covered include

- **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.

Academic integrity

"A fundamental tenet of all educational institutions is academic honesty. Academic work depends upon respect for and acknowledgement of the research and ideas of others. Misrepresenting someone else's work as one's own is a serious offense in any academic setting and it will not be condoned." A student who knowingly assists another student in committing an act of academic misconduct shall be equally accountable for the violation, and both shall be subject to the sanctions and other remedies.

See the UConn Student Code, Appendix A.

Contacting me

I can be reached by email (venu.menon@uconn.edu)

How to succeed in this course

The most important thing is not to get behind; you need to keep up with the material covered in the class on a regular basis. We will be assuming that you know all the material already covered and use that material in the class. Also, if you have any doubts about what is done in the class, clarify them immediately – don't wait for another day.

Student Responsibilities and Resources:

As a member of the University of Connecticut student community, you are held to certain standards and academic policies. In addition, there are numerous resources available to help you succeed in your academic work. Review these important standards, policies and resources.