EXAM 2 INFORMATION

MATH 262, Spring 2026

Exam 2 will consist of an in-class portion on April 17 and a short take-home portion, distributed on April 15 and due at the exam time on April 17. The exam will test your knowledge of concepts, definitions, and theorems, as well as your ability to solve problems involving discrete and continuous random variables, from Sections 2.1–2.7 and 3.1–3.4 in the textbook.

Take-Home

The take-home portion of the exam will contain a few problems similar to the homework problems in this course. All the probability distributions that we have studied through Section 3.4 are fair game for this part of the exam. For this part of the exam, you may refer to your own notes, materials that the professor has posted on the course web site, the textbook, and computational technology (e.g., *R*, *Mathematica*, *Wolfram Alpha*, a calculator). **Do not consult other people, web sites, etc.** The St. Olaf Honor Code applies to this exam.

In-Class

Books, notes, and internet-capable devices will not be permitted during the in-class exam. You should know the foundational concepts of probability distributions, such as how to use and interpret a pmf, pdf, and cdf. You should know and be able to explain what types of scenarios are modeled by each of the probability distribution that we have studied so far. Be sure to know the following properties of these common distributions:

- **Binomial distribution:** For $\text{Bin}(n, p)$, know the pmf, mean, and variance.
- **Poisson distribution:** For $\text{Poisson}(\mu)$, know the pmf, mean, and variance.
- **Uniform distribution:** For $\text{Unif}[a, b]$, know the pdf and mean.
- **Exponential distribution:** For $\text{Exp}(\lambda)$, know the pdf and mean.

You should also know the definitions and basic properties of the moment-generating functions for discrete and continuous random variables. You do not need to memorize formulas for mgfs of specific distributions. You should also understand and be able to explain concepts such as Chebyshev's law and the memoryless property.

Calculators will be allowed on the in-class exam, but probably not very useful. You should know how to evaluate derivatives and integrals of polynomial and exponential functions. You will not be required to simplify arithmetic.

Problems to Review

Consider the following problems for practice, especially those printed in ***bold****.*

- The *Supplementary Exercises* at the end of each chapter in the book.
  - Section 2.9: #**147**, 149, 151, 153, 154, **156**, **157**, 158, **159**, 160, 163, **164**, **165**, **166**, 167, 168 (pages 140 – 145)
  - Section 3.9: #**140**, **141**, 142, **143**, 144, **145**, 146, 150, **151**, 152, **153**, **156**, 157, **159**, 162, 166 (pages 230 – 237)
- All problems assigned in the homework (note that solutions are on the course web site).