Today:

1. Uniform Distribution
2. Normal Distribution

In Class Exercises:

1. An insurance policy is written to cover a loss, $X$, where $X$ has a uniform distribution on $[0, 1000]$.
   At what level must a deductible be set in order for the expected payment to be 25% of what it would be with no deductible? (S#56)

2. A driver and a passenger are in a car accident. Each of them independently has probability 0.3 of being hospitalized. When a hospitalization occurs, the loss is uniformly distributed on $[0, 1]$. When two hospitalizations occur, the losses are independent. Calculate the expected number of people in the car who are hospitalized, given that the total loss due to hospitalizations from the accident is less than 1. (S#139)
3. A company manufactures a brand of light bulb with a lifetime in months that is normally distributed with mean 3 and variance 1. A consumer buys a number of these bulbs with the intention of replacing them successively as they burn out. The light bulbs have independent lifetimes.

What is the smallest number of bulbs to be purchased so that the succession of light bulbs produces light for at least 40 months with probability at least 0.9772? (S#83)

4. For Company A there is a 60% chance that no claim is made during the coming year. If one or more claims are made, the total claim amount is normally distributed with mean 10,000 and standard deviation 2,000.
For Company B there is a 70% chance that no claim is made during the coming year. If one or more claims are made, the total claim amount is normally distributed with mean 9,000 and standard deviation 2,000.
Assume that the total claim amounts of the two companies are independent.
What is the probability that, in the coming year, Company B’s total claim amount will exceed Company A’s total claim amount? (S#42)