

Lecture 9—Probability and Statistics (Ch. 3)

Monday January 28th

- Review: the axioms of probability theory
- Independent events
- Counting events - examples
- Statistical distributions

Reading: All of chapter 3 (pages 52 - 64)

*****Homework 3 due Fri. Feb. 1st*****

**Assigned problems, Ch. 3: 8, 10, 16, 18,
20**

**Homework assignments available on
web page**

The axioms of probability theory

1. $p_i \geq 0$, i.e. p_i is positive or zero
2. $p_i \leq 1$, i.e. p_i is less than or equal to 1
3. For mutually exclusive events, the probabilities for compound events, i and j , add

$$P_{(i+j)} = P_i + P_j$$

- Compound events, $(i + j)$: this means either event i occurs, or event j occurs, or both.
- Mutually exclusive: events i and j are said to be mutually exclusive if it is impossible for both outcomes (events) to occur in a single trial.

The axioms of probability theory

1. $p_i \geq 0$, i.e. p_i is positive or zero
 2. $p_i \leq 1$, i.e. p_i is less than or equal to 1
 3. For mutually exclusive events, the probabilities for compound events, i and j , add
- In general, for r mutually exclusive events, the probability that one of the r events occurs is given by:

$$p = p_1 + p_2 + \dots + p_r$$