Stat 230 - Probability **Fall 2016**

Lecture 5: September 19, 2016

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5.1 Probability-Counting Techniques

- $n^{(}k) = {}_nP_k = P_k^n = \frac{n!}{(n-k)!}$
- $C_k^n = {}_nC_k = \frac{n!}{k!(n-k)!} = \frac{n^{(}k)}{k!}$

5.2 Combinations

Any Unordered (order does not matter) sequence of k objects taken from a set of n distinct objects is called a combinations of size k of the objects denoted

$$C_k^n = \binom{n}{k} = \frac{n!}{k!(n-k)!} = \frac{n^{(k)}}{k!}$$

5.3 Number of Arrangements When Some Symbols are Alike

To determine the number of arrangements of a set of n objects when certain of the objects are indistinguishable (are alike) from each other, the numeber of outcomes is denoted by :

$$\binom{n}{n_1}\binom{n-n_1}{n_2}\cdots\binom{n_k}{n_k} = \frac{n!}{n_1!n_2!n_3!\ldots n_k!}$$

Lecture 5 was spent mostly going over examples, thus not much was covered