

## Chapter 5

### 5.1 Randomness, Probability, and Simulation

**DEFINITION: Random process, Probability**

**DEFINITION: Law of large numbers**

**DEFINITION: Simulation**

## Performing a Simulation

### 5.2 Probability Rules

#### **DEFINITION:** Sample space, probability model

**DEFINITION: Event**

**DEFINITION: Equally Likely Outcomes**

**DEFINITION: Complement of an event  $A^c$**

**DEFINITION: Mutually exclusive (disjoint)**

**Basic Probability Rules**

## General Addition Rule for Two Events

## DEFINITION: Venn Diagrams

## DEFINITION: Intersection $\cap$

## DEFINITION: Union $\cup$

## 5.3 Conditional Probability and Independence

### **DEFINITION: Conditional probability**

### **Calculating Conditional Probabilities**

**DEFINITION: Independent events**

**General Multiplication Rule**

**DEFINITION: Tree diagram**

## **How to Draw a Tree Diagram**

## **Multiplication Rule for Independent Events**



## Connection Between Mutually Exclusive and Independent