Lec# 1 : What is Probablistic Modeling

**Part 1**

**Probob Model :**

Quantitative description of situation, phenomenon or expereimrnt who outcome is uncertain

**Involves Two Steps**

1. Possible outcomes ? **Sample Space**
2. Probability Laws ? rules to assign outcomes --- Basic Laws/properties to be staisfy : **Axioms e.g** probs cant be negative

**Note :** there will be very few axioms, but they are powerful, and we will see that they have lots of consequences. We will see that they imply many other properties that were not part of the axioms.

**1. 2: What is Sample space**

**Sample Space :** description of possible outcomes

**Set/ Sample Space (Denoted With Omega) ,** which has a more formal mathematical meaning. (List of all possible outcomes e.g Coin **-2**, Dice -Rolls 1 time then we have **6.**

**Properties**

* Mutually Exclusive. – No more than 2 outcomes happened in the end
* Collectively Exhaustive. – No matter you will be able to point one of outcome and say that is occurred

**Summarize :** this set should be such that, at the end of the experiment, you should be always able to point to one, and exactly one, of the possible outcomes and say that this is the outcome that occurred.