In this lecture, we introduce and develop the concept of independence between events. The general idea is the following. If I tell you that a certain event A has occurred, this will generally change the probability of some other event B. Probabilities will have to be replaced by conditional probabilities.

But if the conditional probability turns out to be the same as the unconditional probability, then the occurrence of event A does not carry any useful information on whether event B will occur. In such a case, we say that events A and B are independent.

We will develop some intuition about the meaning of independence of two events and introduce an extension, the concept of conditional independence. We will then proceed to define the independence of a collection of more than two events. If, for any two of the events in the collection we have independence between them, we will say that we have pairwise independence.

But we will see that independence of the entire collection is something different. It involves additional conditions. Finally, we will close with an application in reliability analysis and with a nice puzzle that will serve as a word of caution about putting together probabilistic models.