In the first lecture, we introduced probabilities as a way of describing our beliefs about the likelihood that a given event will occur. But our beliefs will in general depend on the information that we have. Taking into account new information leads us to consider so-called conditional probabilities. These are revised probabilities that take into account the new information.

Conditional probabilities are very useful whenever we want to break up a model into simpler pieces using a divide and conquer strategy. This is done using certain tools that we will develop and which we will keep applying throughout this course in different guises. They are also the foundation of the field of inference. And we will see how they arise in that context.

Then, in the second lecture of this unit, we will consider a special case where one event does not convey useful information about another, a situation that we call independence. Independence usually describes a situation where the occurrence or non-occurrence of different events is determined by factors that are completely unrelated. Independence is what allows us to build complex models out of simple ones. This is because it is often the case that a complex system is made up of several components that are affected by unrelated, that is, independent sources of randomness. And so with the tools to be developed in this unit, we will be ready to calculate probabilities in fairly complex probabilistic models.