Abstract: Infectious diseases continue to pose a serious threat to public health. It is therefore important to understand how epidemics spread through populations, how the population structure influences the spread, and what disease control measures are effective. A natural way to model population structure mathematically is through a network (graph) where the vertices of the graph represent individuals and edges represent potential infectious contacts. A natural way to represent dynamics of a disease spreading on the graph is by a Markov chain model. In this lecture, we will discuss some examples of epidemic models, and what is known about their behaviour in large populations.