PROFESSOR: In Chapter 3, we will study epidemiological models, which describe the spread of an infection and then the recovery from that infection in a population.

And the traditional epidemiological models that we will study for populations, and also adapt to indoor spaces, involve keeping track of compartments or subgroups of populations, such as the number of susceptible people, the number of infected, exposed, and recovered.

So for example, an infected person can expose a susceptible, and then the exposed person can themselves become infected, or they may eventually recover.

And there are various rates for these different processes.

And this leads to a set of nonlinear differential equations that describe the evolution and growth, and then ultimately decay, of an epidemic.