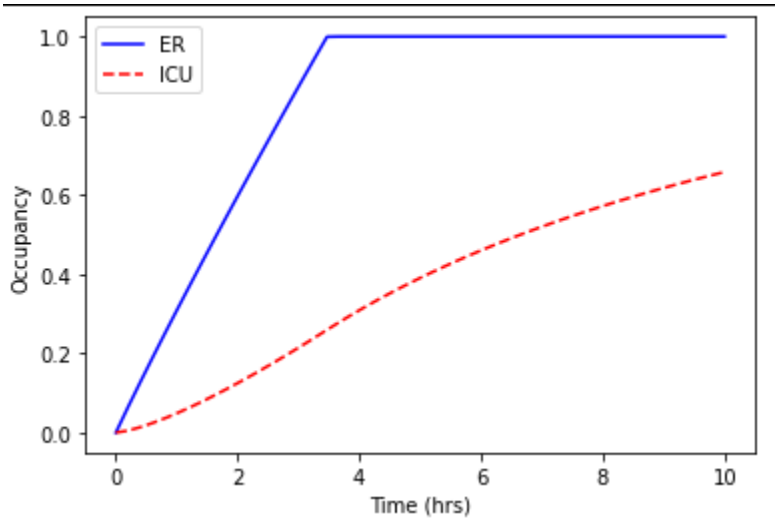
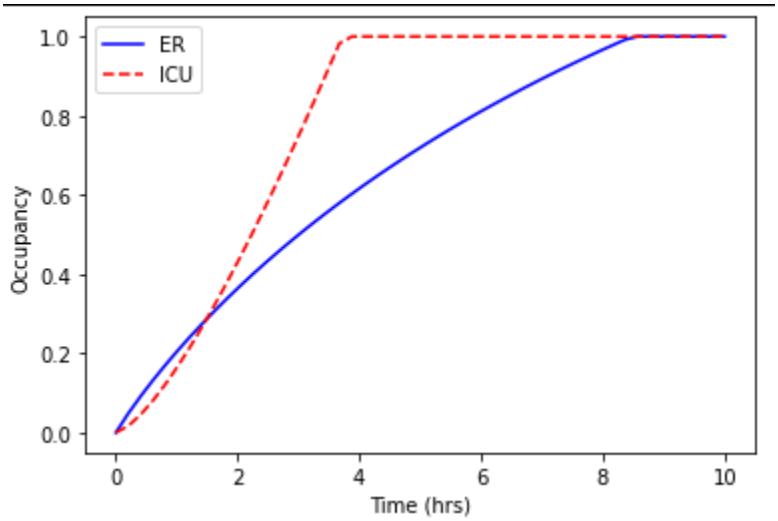
Hospital Emergency Room (ER) Model

The ER model attempts to simulate a hospital, more specifically the emergency room (ER) and intensive care unit (ICU). It starts off with patients entering the ER at a preset fixed rate. The ER has a maximum occupancy based on the number of beds; each bed has a preset number of nurses, doctors, and medical equipment. Patients that require intensive care are sent to the ICU, which is simulated as the function based off Bernoulli's equation for incompressible fluids: $q_{out1} = c_1\sqrt{h_1}$. Here, q_{out1} represents the rate of patients leaving the ER, h_1 represents the initial condition of ICU occupancy (can leave as 0 to assume that no one is in ICU), and c_1 is a multiplier that controls the rate magnitude. Patients that have either recovered or are clinically deceased from the ICU are also simulated using Bernoulli's equation: $q_{out2} = c_2\sqrt{h_2}$.

ERU Saturation



ICU Saturation



ER and ICU Satuartation