(1) Develop a model for the spread of a disease.

- *People* that currently have the disease are contagious and called *infected*.
- *People* who are healthy and have never had the disease are susceptible to getting the disease.
- *People* who have *recovered* from the disease are not contagious and will never again get the disease.

We are given the following information:

- The total size of the population is 45,000 *people* (the disease only affects undergrads at UBC). Of these 5 are *infected* on *day* 0 and the remaining *people* are *susceptible*.
- The average recovery time is 3 *days*.
- Each student contacts approximately 100 other *people* (students) in a *day*.
- 1% of contacts between susceptible *people* and infected *people* result in the susceptible *people* becoming *infected*.

Write down and initial-value system of differential equations!

Hints:
- Give names to the dependent variables and determine which should be proportional.
- Use the date to determine the proportionality and make sure the *units* balance for each equation.
- What happens with the total number of *people*?