Homework Jan-17: Model Equations
15 points total

By 9am on Wednesday, January 17, please upload a Word document with your file to the corresponding Canvas assignment. Please follow the naming convention:
HW_Jan17_ModelEquations_LastName_FirstName.doc/docx

Assignment details:

- Write out the system of differential equations that defines your model. *(10 points)*
- Include a legend that clearly identifies all state variables and parameters that are included in your equations. *(5 points)*

Example:

$$\frac{dS_{juv}}{dt} = bS_{adult} - \mu S_{juv} - \beta I S_{juv} - \omega S_{juv}$$

$$\frac{dS_{adult}}{dt} = \omega S_{juv} - \mu S_{adult} - \beta I S_{adult}$$

$$\frac{dE}{dt} = \beta I S_{adult} + \beta I S_{juv} - \mu E - \sigma E$$

$$\frac{dI}{dt} = \sigma E - \mu I - \alpha I - \gamma I$$

$$\frac{dR}{dt} = \gamma I - \mu R$$

State Variable
S_{juv} = juvenile susceptible rats
S_{adult} = adult susceptible rats
E = exposed rats
I = infectious rats
R = recovered (immune) rats

Parameters
b = birth rate
ω = aging rate
β = transmission coefficient
σ = incubation rate
γ = recovery rate
μ = background mortality rate
α = infection-induced mortality rate
γ = recovery rate