

COSC150: Explorations in System Modeling with Vensim: Laboratory 7 April 2020

By the end of the lab explorations today, or on your own time, you will have:

- a) Downloaded and installed Vensim PLE on your home computer (use EDU to register), if needed OR if you do not have a computer capable of running Vensim, then learning about InsightMaker for chromebooks and tablets.
 - b) Built (or re-built) a simple Disease Model (Susceptible → Infected) producing a graph and a table
 - c) Modified your simple Disease Model to add social distancing
 - d) Modified your simple Disease Model to add Recovered, or downloaded pre-built model to explore fuller SIR (Susceptible → Infected → Recovered) model in epidemiology
 - e) Downloaded pre-built model to add more realism (Exposure) producing SEIR model.
 - f) Downloaded pre-built model to explore Dosing Model in pharmacology
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1. Download and install Vensim PLE. If you have not already done so, google “Vensim free” and follow the instructions to download and install Vensim PLE for your personal computer.
 2. Follow the instructor to build a simple Disease Model. Record all steps needed to reproduce the procedure for any other model expressed as a difference (differential) equation or set of coupled equations. Include building/modifying a graph and a table.
 3. Modify your simple model to include effect of social distancing. CLASS MODEL:
<http://shodor.org/~rpanoff/COSC150/VensimModels/ClassSImodel-Social-Distancing.mdl> (make sure you capture the whole link)
 4. Build or Download: <http://shodor.org/~rpanoff/COSC150/VensimModels/SIR.mdl>
 - a. Develop some driving questions and
 - b. Use the model to investigate the answers
 - c. Record your observations
 - d. Reflect upon your observations
 5. Make a copy of your simple SIR model and modify it to add EXPOSED or download:
<http://shodor.org/~rpanoff/COSC150/VensimModels/SEIR.mdl>
 - a. Develop some driving questions and
 - b. Use the model to investigate the answers
 - c. What strategies could you use to minimize how the disease spreads?
 - d. Record your observations
 - e. Reflect upon your observations
 6. Download: <http://shodor.org/~rpanoff/COSC150/VensimModels/Pharma.mdl>
 - a. Develop some driving questions and
 - b. Use the model to investigate the answers
 - c. Record your observations
 - d. Reflect upon your observations
 - e. How would you change the drug characteristics or dosage to achieve an effective treatment that only requires no more than 2 doses per day?