

# Valid and Credible Models

2-7-2011

# Opening Discussion

- What did we talk about last class?
- Minute essay comments
  - What should you use to analyze stats?
- Lots of stuff moved back.

# Verification, Validation, and Credibility

- Verification is determining if the program that was created actually does what the original design intended.
- Validation is determining if the original design mirrors the system in question.
- Credibility is if people believe the simulation results.
- These three don't always go together, but the ideal simulation study should have all three.

# Level of Detail

- Models should have the proper level of detail to answer the relevant questions.
- Too much detail increases cost and computation time. Too little won't let you answer the proper questions.
- Subject-matter experts (SMEs) can help to determine what is needed.
- Extra detail sometimes required for credibility.

# Verification Techniques

- Do unit testing.
- Code reviews. Pair-programming would work well too.
- Check logical consistency using different inputs.
- Trace the simulation.
- Run a “toy” model.

# More Techniques

- View an animation.
- Compare generated random variables to what they should be.
- Use a simulation package.

# Code?

- With the remaining time let's look at what I have added to the in-class simulation code.

# Minute Essay

- How are you going to verify the code for your project?