# Valid and Credible Models

2/5/2009

# Opening Discussion

- What did we talk about last class?

- Do you have any questions about the assignment?

- Minute essay comments

  - What are Monte Carlo simulations and how do they compare?

  - Are statistics fun?  Can statistics be fun?

  - A friend cuts my hair. Stats aren't part of Java standard libraries as far as I know.

  - An empty line will often reduce utilization.

# 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 any time left we might look at the structure of the newer code that I'm writing and discuss it.

- Now that you have more experience with what these should do you might be able to help me design it.

# Minute Essay

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