
CREDITS: 3

COURSE DESCRIPTION: Simulation as a problem-solving technique; models, analysis and languages for simulation; data collection; random variate generation; verification and validation; output analysis; optimization of systems. Prerequisites: CS-244 Data Structures and STAT-332 Probability & Mathematical Statistics II

Simulation with Visual Slam and Awesim, 1st Ed., by Pritsker (adopted Spring 1997)

COURSE OBJECTIVES:
Upon completion of this course a student should be able to:
1. Understand how simulation modeling can be utilized in solving various real world problems and improving the performance of existing systems.
2. Identify which problems are best suited to simulation modeling.
3. Design and implement a system model using a simulation language, as well as select the appropriate analysis method.
4. Understand the randomness in a system and how to model it.
5. Demonstrate their ability to solve real-life problems by using simulation.
6. Realize the importance of using input and output analysis of simulation models.
Graduate students should further be able to:
7. Demonstrate a broader understanding of the theoretical aspects and basics of simulation modeling, by developing two large simulation projects.

COURSE OUTLINE:
1. Basic Simulation Modeling
2. Modeling Complex System
3. Simulation Languages for Modeling
4. Valid and Credible Simulation Models
5. Data Collection and Analysis
6. Random-Numbers and Random-Variate Generation
7. Output Data Analysis
8. Simulation (Model Experimentation) and Optimization