Catalog Description
Design of simulation models using a high level simulation programming language. Applications
in production, inventory, queuing, and other models. Prerequisites: Stat 380 or IE 365 or OR
441 with a grade of C or better and knowledge of a programming language.

Textbook
(optional) Discrete-Event System Simulation, by Banks, Carson, Nelson, Nicol. Prentice Hall,

Course Outline and Topics

Chapter 1: Introduction to simulation
Chapter 2: Fundamental simulation concepts
Chapter 3: A guided tour through ARENA
Chapter 4: Modeling basic operations and inputs
Chapter 5: Modeling detailed operations
Chapter 6: Statistical analysis of output from terminating simulations
Chapter 7: Intermediate modeling and steady-state statistical analysis
Chapter 8: Entity transfer (optional)

Course Objectives

The primary objective of this course is to provide industrial engineering students with knowledge
and practices on how to use computer simulation methods in solving engineering problems that
arise in various systems such as inventory systems, manufacturing and warehouse facilities,
hospitals, service industries, computer networks, etc. A high-level simulation software package,
ARENA, will be used throughout the semester. Additional topics covered include fitting
distributions to data, random number generation, and statistical analysis of simulation output.

Students successfully completing this course will have the ability to:
1. Understand computer simulation (what it is, when to use it, how it works, what types of
   simulation, etc.)
2. Understand curve fitting and random number generation processes.
3. Model and program simulations using high-level commercial software SIMAN/ARENA
   for discrete event systems.
4. Interpret simulation data.

Any instructor should cover all of the material specified, additional sections are optional.