1. Introduction
   a. Course Logistics
   b. Definitions of Modeling and Simulation
   c. When to apply these techniques
   d. Applications
   e. Terminology & Components
   f. Discrete vs. Continuous time
   g. Process flow in simulation study

2. Simulation Examples
   a. Queuing systems
   b. Communications networks

3. General Principles
   a. Event-driven simulation
   b. World Views
   c. List processing

4. Simulation software
   a. History
   b. Selection process
   c. Simulation in High Level Language (C, C++, Pascal, Fortran)
   d. Simulation packages (Matlab/Simulink)
   e. Interpreted vs. compiled simulators
   f. Future trends

5. Statistical models
   a. Terminology and Concepts
   b. Useful Statistical Models
   c. Distributions

6. Queuing models
   a. Characteristics
   b. Performance Measures
   c. Steady-State Behavior
   d. Networks of Queues

7. Random Number Generation
   a. Properties of Random Numbers
   b. Generation of Pseudo-Random Numbers
   c. Testing for Randomness
   d. Pitfalls

8. Random Variate Generation
   a. Inverse Transform
   b. Direct Transform
   c. Convolution
   d. Accept-Reject

9. Input Modeling
   a. Collecting Data
b. Identifying Distribution
  c. Histograms
  d. Parameter Estimation
  e. Goodness-of-Fit
  f. Selecting Input Model without Data

10. Verification and Validation of Simulation Models
    a. Model Building, Verification, and Validation
    b. Verification of Simulation Models
    c. Calibration and Validation of Models

11. Output Analysis
    a. Types of Simulations with Respect to Output Analysis
    b. Stochastic Nature of Output Data
    c. Measures of Performance
    d. Output Analysis for Termination Simulations
    e. Output Analysis for Steady-State Simulations

12. Advanced Topics and Course Summary