Course Name:

Simulation

Course Number: 20-564	**Credit:** 3
Program: Graduate	**Course Type:** Technical Selective
Prerequisite: -	**Corequisite:** -

Course Description (Objectives):

The main objective of this course is to familiarize students with the principles of models and methods for simulating discrete event systems in decision-making analysis. This course helps students analyze and solve complex decision-making problems using simulation techniques.

Course Content (outline):

- Chapter 1: Definition and applications of simulation in planning
- Chapter 2: Overview of probability theory
- Chapter 3: Basic queue models, basic inventory models
- Chapter 4: Random number generation
- Chapter 5: Random variable generation
- Chapter 6: Input models
- Chapter 7: Overview of simulation software
- Chapter 8: Model validation, assessing model reliability
- Chapter 9: Output analysis, system comparison
- Chapter 10: Overview of advanced techniques in system simulation, variance reduction
- Chapter 11: Monte Carlo simulation
- Chapter 12: Optimization and simulation
- Chapter 13: Examples of system simulations, agent-based simulation

References:

- Discrete-Event System Simulation,4 th Edition, Banks, Carson, Nelson & Nicol, Prentice Hall, 2005.
- Simulation Modelling & Analysis, 4th Edition, Averill, M. Law, McGrew-Hill Series in Industrial Engineering & Management Science, 2007.
- Simulation with ARENA, 4th Edition, Kelton, Sadowski & Sturrock, McGrew-Hill Series in Industrial Engineering & Management Science, 2007.