

## **INSY 3400: Stochastic Operations Research**

### **3 Credit Hours**

**Instructor:** Alexander Vinel

**Course Textbook:** Ross, S., Introduction to Probability Models, 12th Edition. Academic Press.

- Reference Books-
  - Hillier and Lieberman, Introduction to Operations Research, McGraw Hill, 8th edition
  - W.L. Winston, Operations Research: Applications and Algorithms, 4th edition

### **Course Content:**

- Description- Modeling and analysis of decision-making and operations subject to randomness including decision analysis, Bayes methods, conditioning, Markov chains, and queuing theory.
- Prerequisite- STAT 3600
- Class is Required

### **Course Goals:**

- Objectives: This course is intended as an introductory class in stochastic operations research for undergraduate students in industrial engineering or related fields. We will discuss how probability and statistics can be used in analytics, decision making and mathematical modeling. The course is also a prerequisite for more advanced classes in operations research and industrial engineering on manufacturing systems and simulation.

### **Topics to be Covered:**

Probability

Discrete Random Variables

Continuous Random Variables

Continuous Distributions

Bivariate Distributions

Normal Distribution

Functions of Random Variables

Monte Carlo Simulation

Point Estimation