ISE560 Course Overview

Hong Wan, Fall 2022

Basic Information

M/W: 1:30 pm – 2:45 pm

Location: 2207 Engineering Building 3

Hong Wan,

hwan4@ncsu.edu, 4325 Fitts-Woolard Hall.

Course Information

I. Probability Tools: characterizing uncertainty using probabilities and random variables.
II. Decision Modeling under Uncertainty: models for decision making under uncertainty:
decision trees, utility theory, the value of information, Bayes rule.
III. Stochastic Modeling: characterizing uncertainty over time and space using:

A. Discrete Time Markov Processes: Markov Chains & Markov decision processes

B. Continuous Time Markov Processes: Birth & Death Processes, Poisson Processes, and Queueing Theory

C. Probabilistic Inventory Models

IV. Computational Analysis and Simulation of stochastic processes.

Flavor of the course

Less theory, more methodology

Prefer you to know the few key concepts than teach a lot with few intuitive understandings.

Learning by doing

Computational thinking.

Textbook and Classnotes

Textbook:

Introduction to Stochastic Models in Operations Research, Ninth Edition, Hillier and Lieberman, 1990.Publisher: McGraw-Hill. (Selected Chapter in Library Course Reservation)

Introduction to modeling and analysis of stochastic systems V.G. Kulkarni. Kulkarni, Vidyadhar G.
New York : Springer, c2011. 2nd ed. Accessible online for free at NC State University library.

The little book of probability (Related material will be on slides and notes, great for prepare for the midterm)
https://www.amazon.com/Little-Book-Probability-Essentials-Stochastic/dp/1452882924

Class Notes: slides and hand-written notes

Homework/Project Group

Homework: assignments are due on ***Fridays at 11:59 pm***; the assignment will be posted at least one week ahead. **You will work in groups of two** and ***turn in one assignment for your group*** *with the names of the group members clearly indicated*. Homework groups *must remain the same* throughout the semester (see below)

NO LATE HOMEWORK WILL BE ACCEPTED WITHOUT A DOCUMENTED LEGITIMATE REASON. Your lowest two grades of homework and exercises will be dropped.

Assignment Groups: Please notify me using the google doc by ***Sept 9th***. If you are looking for a homework group, please indicate this on the google doc by ***Sept 2nd***.

Survey and Homework 0 are individual assignment for everyone*; each person should turn in their own assignment.*

Project

Posting date: Will post by Sept 15th.

Deliverable 1: I will discuss with each group and make sure that your approach is on the right track.

Presentations

Final reports

Grades

Homework and Exercises	25%
Project	25%
Midterm	20%
Final Exam (Take home)	30%
Total	100%

Exercises including in-class exercises, reading assignments with questions, and labs.

Extra credit: participants/attendance/forum discussions/good questions

Midterms and Finals

Written parts: in-class.

Computational parts: take home. You will have 24 hours to complete.

Finals: Take home, comprehensive.

Lectures

- In-class
- Video recordings
- Hand-on experience with labs in class
- Other resources posted on Moodle

Academic Integrity

Cheating is serious.

Students commit academic dishonesty will receive a failing grade for the course and be reported to the Dean of Student Office.

No use of website like Chegg (neither searching or posting)

WWW.DESPAIR.COM

INDIFFERENCE

It Takes 43 Muscles to Frown and 17 to Smile,
but it Doesn't take Any to Just Sit There with a Dumb Look on Your Face.

BLAME

THE SECRET TO SUCCESS IS KNOWING WHO TO BLAME FOR YOUR FAILURES.