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Spring 2024

IE 440-102, HM2: Stochastic Models in Oper Research

Layek Abdel-Malek

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IE 440   Stochastic Models in Operations Research

Instructor: Layek Malek

Spring 2024

 Recommended TEXT: Hillier & Lieberman: Introduction to *Operations Research,* 11th Edition

Office Hours: Room Mech 302; Thursday 4:30-5:30, and by appointment

*Week	**Topic**
1.	Introduction to Stochastic Processes, Review of Probability
2.	Introduction to Inventory Theory, Components of Inventory Models
3.	Deterministic Models in Inventory Models
4.	Stochastic Models in Inventory Theory
5.	Markov Chains and classification of their states
6.	Long-Run Properties of Markov Chains, and application of Markov Chains
7.	Introduction to Queuing Theory, Birth and Death Process
8.	**Midterm Exam**
9.	M/M/1/∞ System, M/M/C Systems and M/G/I System
10.	Application to Queuing Theory
11.	Tandem, Queues and Markovian queuing network
12.	Introduction to Reliability
13.	Reliability Structural Function, Parallel Series Systems, Redundancy
14.	Term project presentation
15.	**Final Exam**

Grading :   Midterm   33%
                 Final   33%
                 Class work   34%

*Approximate