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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