IE515x Markov Decision Processes

Course Description
Introduces the fundamentals of discrete sequential models when outcomes are uncertain; covers formulation and analysis of stochastic dynamic programs; develops and enhances solution algorithms; discuss applications in the area of inventory control, maintenance and resource allocation; introduce and develop approximate solution techniques.

Prerequisite
STAT231 and IE312, or permission of the instructor.

Instructor
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Office Hours: by appointment

Lecture
M/W/F 2:10-3PM, 1308 Beyer Hall

Textbook
Puterman, Martin L. *Markov Decision Processes*, J. Wiley and Sons, New York, NY. (Hardcover or paperback)

Reference

Topics Covered
Introduction to Dynamic Programming, Deterministic Dynamic Programs, Finite Horizon MDPs, Backward Induction, Structured Policies, Infinite Horizon MDPs, Discounted MDPs, Value Iteration, Policy Iteration, LP formulation of MDPs, Stochastic Shortest Path Problems.
Grading
Components of the course grade are weighted as follows:

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<th>Percentage</th>
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<td>30%</td>
<td>Homework</td>
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<td>Midterm exam</td>
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<td>Course Projects</td>
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Policies
No make-up exams without prior arrangements.

Academic Honesty Statement
The IMSE Department has an expectation that all students will be honest in their actions and communications. Individuals suspected of committing academic dishonesty will be directed to the Dean of Students Office as per University policy. For more information regarding Academic Misconduct see http://www.dso.iastate.edu/ja/academic/misconduct.html

Professionalism Statement
The IMSE Department has an expectation that all students will behave in a professional manner during all interactions with fellow students, faculty, and staff. Treating others with respect and having constructive communications are examples of being professional.

Student Disabilities or Special Accommodations
Please address any special needs or special accommodations with the instructor at the beginning of the semester or as soon as you become aware of your needs. Those seeking accommodations based on disabilities should obtain a Student Academic Accommodation Request (SAAR) form from the Disability Resources (DR) office (515-294-6624). DR is located on the main floor of the Student Services Building, Room 1076.