

OR/MATH 442 – Stochastic Operations Research – Fall 2014

George Mason University

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Office Hours: TBA (and by appointment)

Class Room: Planetary Hall 120

Class Hours: Friday 10:30am–1:10pm

Course Website: Course material will be continually updated on Blackboard at <http://mymason.gmu.edu>.

Note: The course Blackboard page will include the syllabus, lecture notes, assignments, and other important information. Information may change during the course of the semester so check regularly.

Prerequisites: STAT 346, or MATH 351, or equivalent.

Course Text: Winston, *Operations Research: Application and Algorithms*, 4th edition, 2004, Thompson, ISBN 0-534-38058-1.

- Two copies of the text are on reserve at the Johnson Center Library. It may be borrowed for 2 hours at a time. To borrow the book, you will need the call number: T57.6 .W645 2004.

Course Objectives:

- Develop models for decision making under uncertainty
- Analyze the concepts of random variables, mean, variance and covariance
- Identify and apply the probability distributions accurately to applications
- Develop and formulate decision problems using decision trees
- Measure the value of perfect and sample information
- Identify and describe a stochastic process
- Apply the stochastic process in the form of Markov chains and queuing models to practical settings
- Characterize dynamic decision problems as Markov decision process
- Implement methods for forecasting and inventory management

Summary of Specific Topic Areas:

- Probability Theory
- Decision Making Under Uncertainty
- Markov Chains
- Poisson Processes
- Continuous Time Markov Chains
- Queueing Theory
- Markov Decision Processes
- Inventory Theory
- Forecasting Methods

Important Note:

We will move at a fast pace. The rate of introduction of new concepts is quite high in this course. Do not delay understanding the early material. Put office hours to good use. The homework is very important for understanding; do it conscientiously.

Grading:

There will be regular homework assignments, which will carry 25% of the total grade. All assignments are due at the beginning of class on the due date with a 20% reduction in the grade for each day late (up to a maximum of 3 days late after which the grade will be zero). Homework Assignments are to be done individually and what you submit should be solely your own work; however, problem discussion with classmates is encouraged outside of class. Assignments are to be submitted in hardcopy format or in Blackboard. There will be a midterm exam that will count for 25% of the total grade. There will be a course project on modeling and solving a real-world problem that will be 15% of the total grade. The Final Exam carries 25% of the total grade (make-up exams will only be given for students with [University-approved absences](#)). 10% of the grade will be based on in-class participation and in-class assignments. In-class assignments can be done in groups of no more than 3 students. In summary the breakdown is:

Homework Assignments: 25%
Midterm Exam: 25%
Course Project: 15%
In-Class Assignments and Participation: 10%
Final Exam: 25%

You have one week, after receiving a grade for a test or assignment, to appeal the grading. You will need to submit the re-grade request in writing. The entire assignment/test will be re-graded.

Using the overall weighted average accumulated on all assignments, midterm, course project, in-class participation and final exam, the final course grade will be determined as follows:

$97 \leq A+ \leq 100$	$93 \leq A < 97$	$90 \leq A- < 93$
$87 \leq B+ < 90$	$83 \leq B < 87$	$80 \leq B- < 83$
$77 \leq C+ < 80$	$73 \leq C < 77$	$70 \leq C- < 73$
$67 \leq D+ < 70$	$63 \leq D < 67$	$60 \leq D- < 63$
	$F < 60$	

Academic Integrity Policy:

GMU is an Honor Code university; please see the Office for Academic Integrity for a full description of the code and the honor committee process. The principle of academic integrity is taken very seriously and violations are treated gravely. Dishonesty is unfair to everyone, especially those who do their work honestly. Academic dishonesty will be fully prosecuted. All work turned in with your name is assumed to be only your own work (including homework assignments). If what you turn in duplicates others, then it is cheating (regardless of who copied who). When in doubt (of any kind) please ask for guidance and clarification.

Disability Accommodations

If you have a documented learning disability or other condition that may affect academic performance you should: 1) make sure this documentation is on file with Office of Disability Services (SUB I, Rm. 4205; 993-2474; <http://ods.gmu.edu>) to determine the accommodations you need; and 2) talk with me to discuss your accommodation needs.

Email Communication

Students must use their Mason email account to receive important University information, including messages related to this class.

Technology in the Classroom

Regarding electronic devices (such as laptops, tablets, cell phones, etc.), please be respectful of your peers and your instructor and do not engage in activities that are unrelated to class. Such disruptions show a lack of professionalism as well as respect, and will affect your participation grade.

Homework Assignment Information:

Include the following in your homework assignments:

- Your name and the assignment number
- Legibly written answers
- Problem Definition
- Assumptions made
- Results and Conclusions in words

Note: The numerical “answers” you get are important but the focus of the grading is on the approach to the solution and your understanding of the fundamental theory that underlies the solution. Therefore you must show all of your work leading up to the final solution. Points are allocated for each step of the solution process.