

**OMGT/INEG 5443 Online  
Decision Models  
Summer 8W1 2019**

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**Required Textbook:**

Parnell, G., Bresnick, T., Tani, S., & Johnson, E., **Handbook of Decision Analysis**, Wiley & Sons, 2013.

**Prerequisites:** Undergraduate probability or statistics course.

**Course Description:** Focus on quantitative and qualitative decision models and techniques for technical and managerial problems. Emphasis on application and interpretation of results. Topics include decision trees, influence diagrams, weighting methods, value of information, Analytic Hierarchy Process, Bayes' Theorem, Monte Carlo simulation, utility theory, risk analysis, group decision making and expert systems.

**Course Strategy:** The course begins with an introduction to decision analysis, decision making challenges, the axioms of decision analysis, and decision processes. The course then follows the decision analysis process outlined in the text. The course project has the student develop both a deterministic and probabilistic decision model for an operations management. The project is submitted in phases throughout the course and culminates with a briefing and summary paper.

**Course Objectives: Upon completion of the course**

1. Understand the challenges of individual and organizational decision making
2. Understand the mathematical foundations and axioms of decision analysis
3. Be able to develop and implement a decision process using the appropriate decision models in a public or private organization
4. Understand and apply the techniques of qualitative decision analysis to frame the decision problem
5. Be able to develop decision objectives and value measures for a decision problem
6. Understand the need for a divergent-convergent strategy generation process and be able to design creative alternatives
7. Develop deterministic single and multiple objective decision models, perform analysis and identify decision insights
8. Understand decision making traps and avoid cognitive and motivational biases
9. Be able to identify key uncertainties and quantify uncertain knowledge with probability
10. Perform probabilistic single and multiple objective decision analysis and develop decision insights using influence diagrams, decision trees, and Monte Carlo simulation
11. Develop a decision model and perform a decision analysis on a *significant* professional decision
12. Effectively communicate the problem frame, decision insights, and decision recommendation

**Grading:**

<b>Coursework</b>	<b>Points</b>	
Homework Problem Sets	180	
Problem Set #1		20
Problem Set #2		20
Problem Set #3		35
Problem Set #4		35
Problem Set #5		35
Problem Set #6		35
Examinations	400	
Mid-Term Exam		200
Final Exam		200
Class Project	400	
Project Proposal		10
Framing, Objectives, Value Model, Alternatives		60
Deterministic Model		90
Probabilistic Model		80
Quality of the Excel Models		80
Project Briefing and Paper		80
Discussion Boards/Class Participation	20	
<b>TOTAL</b>	<b>1000</b>	

- Grading Scale:**
- A: 90% and above
  - B: 80% to 89%
  - C: 70% to 79%
  - D: 60% to 69%
  - F: below 60%

**Weekly Assignments:** Assignments are due by 11:59 PM on the dates shown on the course schedule. Your assignments must be submitted to Blackboard directly. E-mailed assignments will be accepted only for valid reasons (e.g., course web page inaccessible due to down time or software problems). I have no problem with your discussing homework problems with each other, particularly if you are struggling. That said, I expect each of you to submit your own work – no copying and pasting others’ solutions!

**Discussion Forums:** There are several Discussion Boards dealing with topics that emphasize the course material. The discussion board is a place for all of us to meet online, express ideas and learn from each other. Think of these forums as an ongoing classroom discussion. I will start the discussion with a question or a comment and you will join the discussion during the week. Your discussion posts should be meaningful and relevant to the topic. There are several Discussion Boards that are posted for the sole purpose of your helping each other with homework. The discussion board contribution grade is given at my discretion, based on your participation in the forum. Posts with meaningful and relevant content carry more weight than frivolous ones. For each discussion, I should see at least three meaningful posts per student. The first should respond directly to the discussion topic. The second two should be reply posts that support or comment on a classmate’s post, and they are both due by last day of the class week by 11:59 p.m. You may post as many times as you like.

**Exams:** Exams will consist of problems, short answer questions and multiple choice. Exams are closed book with one page of notes (hand-written or typed) on both sides. Collaboration is not permitted on exams. Midterm and final exams will be taken online and proctored using Proctor U. Exams will be available over a period of 5-6 days. Your exam time must be scheduled in advance with Proctor U, and you will have 2 hours to complete the exam once you've entered it.

**Class Project (operations management/engineering decision):** The class project is an individual application of decision analysis to a real-life operations management/engineering decision that is of interest to you. Project deliverables will be due as shown on the schedule. The project capstone is both a video presentation of your findings as well as an executive-level briefing aimed at your decision maker. Project deliverables include submission of an Excel decision model, a 5-minute video presentation to your decision maker, and a 5-page type-written report to your decision maker (including an executive summary). Grades will be based on depth, accuracy, and quality of analysis and presentations.

**Assignments/Discussion Posts:** Please treat the due dates in this class as professional obligations. I understand that many of you work full time, travel for business and/or deploy, however, your registration in the class is your commitment to meeting the requirements of the course. That being said, I will work with you on an individual basis to accommodate unanticipated conflicts.

- An assignment will receive an approximately 10% deduction from the total point count for each day it is late.
- Late assignments will not be accepted more than three days after the original due date/time.
- Late discussion board posts do not contribute to the discussion and therefore will receive no credit.
- Deviations from this policy will be made only if the student receives approval from me at least 24 hours prior to the homework due date/time.

I understand there are emergencies and extenuating circumstances, which I will certainly consider. Whenever possible, I expect you to plan ahead.

**Grading Questions:** All graded material will be posted on Blackboard for you to see my comments. Once a graded item has been posted, you have 48 hours to challenge the grade. **To challenge a grade, you must submit a typed description of the grading error (attached to the graded item) to me.** Your description must include your name and e-mail address. I will respond to your challenge within 48 hours of its receipt.

### **Course Policies:**

**Communication** - Students should check their University and BlackBoard e-mails daily. Class announcements including unexpected cancellations will be posted on BlackBoard. A course web page is located on UA's Blackboard <https://learn.uark.edu/>. This web page will be used for course-related email and discussion lists, dissemination of materials and access to on-line grades

### **Academic Integrity Policy:**

- As a core part of its mission, the University of Arkansas provides students with the opportunity to further their educational goals through programs of study and research in an environment that

promotes freedom of inquiry and academic responsibility. Accomplishing this mission is only possible when intellectual honesty and individual integrity prevail. Each University of Arkansas student is required to be familiar with and abide by the University's '[Academic Integrity Policy](#)' at [honesty.uark.edu](http://honesty.uark.edu). Students with questions on these policies apply to this course or assignment should immediately contact their instructor

- Plagiarism is often misunderstood. It can be defined as submitting someone else's work as your own. It is not permissible to "cut and paste" and then just cite another's work. In writing for homework or projects, you should read and learn, process through your mind, relate ideas, and then express what you learned **in your own words**. Cite the references where you found your information. If you do use someone else's words, you must use quotation marks **and** cite. You should not overuse quotes – save them for a rare occurrence.

A complete statement of the U of Arkansas's Academic Integrity Policy is available in the UA Student Handbook and the UA Graduate Catalog.

### **Family Educational Rights and Privacy Act (FERPA)**

The *Family Educational Rights and Privacy Act* (FERPA) protects a student's academic and other educational records from unauthorized access. This protection extends to email correspondence between a student and the University of Arkansas faculty and staff.

To provide reasonable assurance that emails are from the student, all university or class related emails must be sent from the student's uark.edu email account. Additionally, university or class related emails must be sent to the student's uark.edu email account.

This means that I cannot acknowledge emails sent from your personal or work email accounts, and I cannot send emails to your personal or work email accounts.

### **University of Arkansas Academic Policy Series 1520.10**

*University of Arkansas Academic Policy Series 1520.10 requires that students with disabilities are provided reasonable accommodations to ensure their equal access to course content. If you have a documented disability and require accommodations, please contact me privately at the beginning of the semester to make arrangements for necessary classroom adjustments. Please note, you must first verify your eligibility for these through the Center for Educational Access (contact 479-575-3104 or visit <http://cea.uark.edu> for more information on registration procedures).*