Business Analytics

Quantitative approaches to decision making. Modeling, linear programming, decision theory, and simulation.

22-QA-**380**H001, 4 Undergraduate Credit Hours
Fall Quarter, **2009**
Tuesday and Thursday, **2-3:45pm.**
218 Carl H. Lindner Hall

Instructor: ***Michael Magazine, Professor and Ohio Eminent Scholar***
522 Carl H. Lindner Hall (513)556-7191 ***mike.magazine@uc.edu***
http://www.business.uc.edu/Michael-Magazine
Office Hours: By appointment.

Grader:

Grading Policy: See below

Course Objectives:
1. Develop skill in recognizing situations where quantitative analyses are a valuable modeling tool.
2. Develop skill in formulating, analyzing & interpreting commonly encountered math models.
3. Develop a solid background in the basics of linear & integer programming, transportation & transshipment modeling, personnel assignment, simulation, & decision analysis.
4. Acquaint the student with currently available software packages for analyzing mathematical models. Microsoft EXCEL Solver will be employed for problem solving.

Required Text: Anderson, David R., Sweeney, Dennis J., Williams, Thomas A., and Martin, Kipp ***An Introduction to Management Science: Quantitative Approaches to Decision Making***, Twelfth Edition, South-Western, Thomson Learning, ISBN 0-324-20231-8,Mason,OH,**2005**.
(*Note-I plan to go over several problems in the text. Many of these problems are in earlier editions but not all. In addition, I will assign problems from the text. There is also a student CD that is included in the text that is helpful and also contains software needed for the course. This CD is loaded onto the CoB student network)*

Optional Texts: Anderson, David R., Sweeney, Dennis J., and Williams, Thomas A., ***Study Guide for An Introduction to Management Science: Quantitative Approaches to Decision Making***, Eleventh Edition, South-Western, Thomson Learning,

Class Participation Policy

Attendance is not required or recorded. When in class I believe we get great benefit from participating. In any case, participating in non-class activities is strongly discouraged and will be noted.

Information Resources and Communication

Extensive use of Blackboard will be used to access documents and communications.

Notification of Grades

Grades will not be given over email or telephone for any circumstances nor will they be posted. Secretaries are not authorized to release any grades. I do not release final grades personally to you if you find me in my office. The only way to get your final grade is through an official UC process such as the UC on-line computer services at One Stop.

Make-Up Examinations

Make-up examinations will not be given under normal circumstances.

Grade Improvement

Grades will be earned for the required work only. No additional work will be accepted for "extra credit" or "grade improvement".

Incomplete Policy

The university policy will be followed regarding the awarding of an I grade, i.e., the I grade will be given only if a student is unable to complete the course and has an excused absence from the final. Students receiving an I grade must contact Dr. Magazine during the first week of the immediately following quarter to arrange a method for completing the course. If you will not be able to schedule a meeting during the first week of the immediately following quarter then prior arrangements should be made regarding when you will be able to meet at the time an I grade is requested. Unless an acceptable reason exists to postpone completing the course during the next academic quarter, all work necessary to change an I grade must be finished during the immediately following quarter or your grade will be converted to an F.

Withdrawal Policy

The university policy will be followed regarding the awarding of a W grade, i.e., the W grade will be given only if a student withdraws before the officially stated university deadline. According to UC policy you may withdraw until ***5:00 P.M., Thursday, November 19, 2009.*** After this date, the W grade is no longer an option.

Absences

While absences from class are extremely discouraged, sometimes exceptional circumstances arise that require missing a class. In the event that you do miss a class, it is the student's responsibility to contact someone in the class, or the professor to obtain handouts, additional course

policies and procedures, homework assignments, and to determine the material that was covered. Please note that the professor will be pleased to assist you in identifying any material that you have missed or to answer specific questions regarding missed materials. However, a repeat or detailed synopsis of the missed lecture will not be performed.

Special Needs Policy and Disability Services

Some students utilize the resources available from Disability Services. If this results in any changes of usual procedures for any examination, project, or homework, please notify the professor and process the required paperwork immediately. A copy of the paperwork must be given to the professor. For all such cases, the end of the second week of the quarter is the deadline for processing paperwork from Disability Services. If paperwork from Disability Services is pending, please discuss the situation with the Professor before the end of the second week of the quarter.

Academic Integrity Policy

The University Rules, including the ***Student Code of Conduct***, and other documented policies of the department, college, and university related to academic integrity will be enforced. Any violation of these regulations, including acts of plagiarism or cheating, will be dealt with on an individual basis according to the severity of the misconduct. Please refer to the ***Student Code of Conduct*** at ***http://www.uc.edu/studentlife/conduct/conduct.html***.

It is expected and encouraged that students should discuss readings, homework assignments, and case reports with each other unless otherwise specified. When doing homework and cases, try on your own, ask for help from anyone, and get the work completed. However, getting an exercise or case worked through to a solution is not necessarily learning. Make sure you know what the problem is, what the solution is, and what the solution implies. Merely copying someone's work will not guarantee this.

Examinations are to be the sole work of individual students. A grade of F for the course will be assigned to anyone receiving assistance or assisting another during any in-class or take-home examinations. Furthermore, any other academic misconduct during an in-class or take-home examination will result in immediate dismissal and a course grade of F. Academic misconduct for an in-class examination includes, but is not limited to, inappropriate behaviors such as: talking; passing any physical thing(s) such as notes, calculators, or writing devices; scanning the room and your classmates and potentially their work; peering at another individual and/or their work; communication of any type with a classmate; and behavior disruptive to the examination. Further disciplinary action for any academic misconduct may be taken that could result in dismissal from the university.

A grade of F for the course will be given to anyone receiving assistance from or assisting another individual or group for assignments for which the work is to be that of each individual student or group. Integrity of take-home assignments is of paramount importance. Should there be an indication that any take-home assignment or examination is to be performed by an individual or limited number of participants, violating this policy will be determined as academic misconduct and a grade of F will be assigned for the course.

Tentative Course Outline

Topic	***Topic***	***Reading***
1.	Course Introduction; Introduction to Business Analytics Problem: Grade determination	Chapter 1
2.	Linear Programming Formulation; Graphical Solutions of LP	Chapter 2
3.	Computer Solutions; Sensitivity Analysis	Chapter 3
4.	LP Formulation	Chapter 4
5.	Network LP Models	Chapter 6
6.	Integer LP	Chapter 7
7.	Nonlinear Optimization	Chapter 8
8.	Goal Programming	Chapter 14
9.	Simulation	Chapter 12
10.	Decision Analysis	Chapter 13
11.	Game Theory	Chapter 5

Grade Determination

Our first problem is to formulate how your grade will be given. Like other problems we will see this quarter, this is a decision problem. Naturally, before we determine your grade we need to know the rules associated with grading.

Let's start with the objective function. What is our goal? Are there multiple objectives and are they in conflict with each other. This is quite common. Next, we need to decide what the variables are in the problem. Naturally, some of these are controllable and some, like the weather, are not. Finally, we need to see what constraints are imposed. Many of these will be for practical reasons.