DSCI 5210 Summer 8W2 2021
Model-Based Business Intelligence

INSTRUCTOR: Dr. Hakan Tarakci
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CLASS HOURS and LOCATION: M W 6:30-9:20 PM in my Zoom Personal Meeting Room
OFFICE HOURS: None
PREREQUISITE: DSCI 5010 or equivalent (Also check UNT Graduate Catalog, 2020-2021)
COURSE WEB SITE: canvas.unt.edu

COURSE DESCRIPTION:
The primary aim of this course is to develop skills for solving complex business problems with the aid of management science techniques and with the use of decision technology. The management science techniques emphasized can be broadly categorized under *Optimization, Simulation* and *Decision & Risk Analysis.* Course topics include the use of mathematical and conceptual models that are embedded in a business environment for dealing with both structured and semi-structured decision problems. The course will help you identify opportunities and problems for which the use of modeling enhances a decision maker's chance of success. Further, the course will introduce state-of-the-art decision support technology required to solve real problems, (which generally involve data management and analysis) primarily using spreadsheets. Overall, through a combination of case studies, lectures, in-class exercises, and videos, the course introduces powerful tools and techniques, reviews current trends, and highlights key managerial issues.

BROAD COURSE OBJECTIVES:
1. Understand the modeling process and be able to apply it to problems in key functional areas of business such as marketing, finance and operations as well as to public sector and at the strategic to operational level of decision making hierarchies.

2. Implement model-based decision support systems using spreadsheets and other stand-alone state-of-the-art software.
(I will be using MS Excel 2019. It is available in the COBA labs. If you wish to use an earlier version of MS Excel, you can do so, assuming that a comparable analysis of the problem is possible. The COBA labs *may* have installed the new "Analytic Solver Platform" (ASP), which we might use from time to time OR they may have specially designated laptops that you can check out. If needed, I might provide you with a code for a personal installation of the ASP – **see canvas.unt.edu for details**.)

REQUIRED MATERIAL:
Text
Optimization Modeling with Spreadsheets, 3rd Edition, published 2015, (includes CD-ROM)
Author: Kenneth Baker; ISBN: 978-1-118-93769-3
(It is OK if you get the 2nd Edition ISBN: 978-0-470-92863-9 **– just make sure the problems, readings and cases are congruent with the new edition)**

COURSE POLICIES:

Class Attendance:

Regular class attendance (which includes watching the recorded lectures if you miss a class) is expected. Unexcused and/or excessive absences could cause you to be automatically dropped from the course with a grade of W.

Code of Conduct and Ethics:

The policies stated here were derived from the University of North Texas Student Guidebook. **You are responsible for information published by the university in its official publication.** What appears below is primarily to give you an idea about the code of conduct and ethics.

Scholastic integrity must be exhibited in your academic work, conduct, and methods. Academic work for which you receive an individual grade must be your original, individual effort unless it is a group case/project. If, in my opinion, any evidence exists that all or part of the work you submit for grading is that of another person, you (and the other person) will be given a zero for the assignment. This is one form of scholastic dishonesty. A second incident of academic misconduct will result in a grade of F in this course. You (and anyone involved with you) will be given an F in this course, if you are found to have cheated on an exam, or collaborated on an assignment with another student. Further action on incidents of scholastic misconduct will be referred to the Dean of Students.

Students with Disabilities:

If a student has a disability that has been documented by the Office of Disability Accommodations, it is the student's responsibility to notify me with a Special Accommodation Request (SAR) form. If a student with a disability needs additional time to take the exam/quiz/assignment, or needs to take the exam/quiz in the Office of Disability Accommodations, the student must give three (3) days notice to me before the date of the exam/quiz. For more information about ADA compliance and allied topics, contact the Office of Disability Accommodations at UNT.

Miscellaneous Policies:

IMPORTANT DATES: Dates of drop deadlines, exams, final exams, etc., are published in the university catalog and schedule of classes. It is your responsibility to be informed with regard to these dates.

Course Specific Concerns:

If any student has a problem directly related to the course, he or she needs to speak to me first. Only if the issue is unresolved after reasonable effort, communication and attempts at resolving it, he or she may take the issue to Dr. Leon Kappelman, Chair of the ITDS Dept., (Phone: 565-3110).

Suggested Readings & Problems Etc.:

From time to time I might upload or suggest readings from the text or other sources and suggest problems for practice. It is your responsibility to go through the handouts and suggested material and contact me with questions, if any.

Introducing Yourselves: I will have a discussion thread on Canvas where you can briefly introduce yourselves. I'll give you 40 points for doing that.

Quizzes:
I will hold (online at canvas.unt.edu) **six quizzes** that cover important concepts from various topics that we discuss in this course. The quizzes will be multiple choice and will likely be short in terms of number of questions (at most 10) and time (at most 30 minutes). These will be worth **360 points** so please make sure you can take them. All of the quizzes will be unlimited attempts.

Exams: There will be one mid-term Exam around the middle of the term and one final Exam at the end of the semester. Both of these exams will be online, open book and open notes. I plan to provide sample exams and hold review sessions before each exam.

Extra Credit: I plan to provide extra credit opportunities throughout the semester.

GRADING POLICY:

6 Quizzes (60 points each) …… ……	360 points
Introducing Yourselves…….…….……	40 points
Mid-term Exam…….....	250 points
Final Examination…….……..……	350 points
Total……	1000 points

Letter Grade Allocation
900 & above - **A;** 800 & above (<900) – **B;** 700 & above (<800) – **C;** 600 & above (<700) – **D;** Below 600 - **F**.

SPOT (Student Perceptions of Teaching):
SPOT is a requirement for all organized classes at UNT. This short survey will be made available to you at the end of the semester, providing you a chance to comment on how this class is taught. I am very interested in the feedback I get from students, as I work to continually improve my teaching.

(The outline below is TENTATIVE and subject to change at my discretion. We will not *rush* a topic simply because the syllabus indicates the last day of its exposition. "TCase" indicates a case that is available in the textbook and corresponding to the chapter that is being covered. We may likely *not get* to these TCases in class due to time limitations, but I leave the option open of assigning them for Homework)

DATE	TOPICS	Readings/Activities
Jun 2	**Introduction and Course Policies** **Introduction to Spreadsheet Models for Optimization (Ch. 1)**	
Jun 7	**Introduction to Spreadsheet Models for Optimization (Ch. 1)** **Graphical Methods for Linear Programming (Apdx. 2)** **Allocation Covering and Blending Models (Ch. 2)**	**Quiz 1 due Jun 8**
Jun 9	**Allocation Covering and Blending Models (Ch.2)**	**TCase: Flora Farmer's Gladiolus Bulbs** **Quiz 2 due Jun 13**
Jun 14	**Network Models (Ch. 3)**	
Jun 16	**Network Models (Ch. 3)** **Sensitivity Analysis (Ch. 4)**	**TCase: Hollingsworth Paper Company** **Quiz 3 due Jun 20**
Jun 21	**Sensitivity Analysis (Ch. 4)**	**TCase: Cox Cable and Wire Company**
Jun 23	**Mid-term Exam Review**	
Jun 28		

Mid-term Exam, online, 100 minutes, open-book and open-notes, only on Jun 28th.

DATE	TOPICS	Home-Work /Readings/Activities
Jun 30		
	Integer Programming – Binary Choice Models (Ch.6)	**Quiz 4 due Jul 4**
Jul 5		
	Integer Programming – Binary Choice Models (Ch.6) **Integer Programming – Logical Constraints (Ch. 7)**	
Jul 7		
	Integer Programming – Logical Constraints (Ch. 7)	**Quiz 5 due Jul 11**
Jul 12		
	Special Topic: Decision and Risk Analysis	
Jul 14		
	Nonlinear Programming (Ch. 8)	**TCase: Delhi Foods** **Quiz 6 due Jul 18**
Jul 19		
	Review for Final Exam	
Jul 21		
	No class; you can use this time to prepare for the final exam.	
Jul 23		
	******* FINAL EXAM ******** **(Online, 140 minutes, only on Jul 23rd)**	