University of North Texas at Dallas

SYLLABUS

DSCI 3870-090: Management Science 3 Hours Fall 2015			
Department of	Business	**School of**	Business

Instructor Name:	Daniel D. Friesen, Ph.D.
Office Location:	Founders Hall (Building 2), Room 236
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Office Hours:	M 11 am – 1 pm; Tue 1 pm – 6 pm W 11a – 1p; 3-6 pm; and by appointment. There will be some Saturdays that I am on campus for study sessions. Please coordinate with me before attending.
Virtual Office Hours:	N/A

Classroom Location:	Founders Hall, Room 242
Class Meeting Days & Times:	T 7:00 pm – 9:50 pm

Course Catalog Description:	Introduction to operations research for business decision making. Spreadsheet methods are used to evaluate the following: deterministic models, allocation problems, linear programming, sequencing and scheduling, and network models.

Prerequisites:	DSCI 2710 or consent of instructor; ACCT 2010 and ACCT 2020 with "C" or better; ECON 1100 and ECON 1110; MATH 1100; MATH 1190 or equivalent; 2.7 UNT GPA or better (transfer GPA if this is first UNT class).
Co-requisites:	None

Required Text and Resources:	1. Barlow, John F., *Excel Models for Business and Operations Management*, 2nd Edition, © 2005 John Wiley and Sons, ISBN-10: 0470015098, ISBN-13: 9780470015094. 2. Business or scientific calculator; must be able to perform at least the following functions: square, square root, raise to n^{th} power, extract n^{th} root, logarithms. The lack of a calculator does not excuse the student from making math errors on exams.

Recommended Text and References:	None

Access to Learning Resources:	UNT Dallas Library:
	    phone: (972) 780-3625;
	    web: http://www.unt.edu/unt-dallas/library.htm
	UNT Dallas Bookstore:
	    phone: (972) 780-3652;
	    e-mail: 1012mgr@fheg.follett.com

Course Goals or Overview:
The goal of this course is to provide the student with a working knowledge of management science/operations research techniques for use in business. This will be achieved by using a real-world problem-oriented approach, and using examples that emphasize the multi-disciplinary nature of business problems. Spreadsheets will be used to strengthen students' ability to make business decisions. The course uses case studies and assignments that require communication and interaction. Techniques covered will include (but are not limited to) linear, integer, and non-linear programming, simulation, contingency analysis, and implementation issues.

	Learning Objectives/Outcomes: At the end of this course, the student will have developed a sound conceptual understanding of the role that management science plays in the decision-making process. The sub-goals that support this overarching goal include:
Ch. 1 All pages	1. Be able to explain how management science models contribute to the following business disciplines: manufacturing, finance and cost accounting, marketing, production, inventory control, quality control, logistics, and project management. 2. Be able to describe the hierarchical levels of management along with the requisite types of decisions and information used at each level. 3. Be able to describe the overall systems view of business. Explain why such a view might be useful.
Ch. 2 All pages	1. Be able to describe the decision making process and to define the stages therein. 2. Be able to describe and apply the steps in model-building. 3. Be able to define the three classes of decision problems. 4. Be able to formulate and solve linear programming problems and other constrained optimization problems 5. Be able to use Excel to make explanatory charts and graphs. 6. Be able to define the maximax, maximin, and minimax decision criteria. 7. Be able to formulate and execute simple monte carlo simulation models using Excel. 8. Be able to use the Excel Functions in Model-Building. 9. Be able to discuss and apply the linear programming technique to make decisions.
Ch. 3 55-67; Excel func	1. Be able to describe and interpret Balance Sheets and Profit and Loss reports. 2. Be able to describe Ratio Analysis. 3. Be able to define NPV and evaluate using Excel. 4. Be able to formulate computer models for the purposes of appraising investments and managing portfolios.
Ch. 4 89-100; Excel func	1. Be able to define, describe, and evaluate risk preferences. 2. Be able to use the Markowitz model in simple portfolio analysis. Especially, be able to construct the efficient frontier.
Ch. 6 167-185; 190-196; Excel func	1. Be able to describe marketing data using graphical and numerical means. 2. Be able to formulate simple linear regression models. 3. Be able to forecast values using time series and exponential smoothing approaches. 4. Be able to assess a forecast's accuracy using MAD and MSE. 5. Be able to formulate and interpret goal programming models.
Ch. 8 Overview, 263-264, 269-275	1. Be able to describe TQM. 2. Be able to use Excel to construct a p-chart. 3. Be able to describe the use and creation of control charts.
Ch. 9 Overview, Glossary, 304-307; Excel func	1. Be able to simulate inventory control models and use them to make decisions.
Ch. 10 324-339; Excel func	1. Be able discuss the important issues in logistics models as well as define some of the important activities. 2. Be able to formulate and solve transportation, transshipment, assignment, and network flow models.
Ch. 11 Overview, 392-396	1. Be able to formulate simulation models for project management and to use them to make decisions.

Course Outline: This schedule is subject to change by the instructor. Any changes to this schedule will be communicated during class.

DATE	TOPICS	ASSIGNMENT
8/25	Syllabus, Introduction to Course, MS Excel, Chapter 1.	• Quiz 1 on Chapter 1; due by 9/1 • Quiz 2 on Chapter 2 pp 17-22; due by 9/8 • Quiz 3 on Syllabus; due by 9/8
9/1	Chapter 2 Discussion Chapter 2 Examples: problem 2.1 Chapter 2 HW	• Homework 1: problem __, due by 9/8.
9/8	Chapter 2 Discussion: problem 2.2 & sensitivity Chapter 2 Examples: problem 2.7 Chapter 2 More HW	• Homework 2: custom problem due by 9/15. • Quiz 4 on Chapter 3 pp 55-61, due by 9/15.
9/15	Chapter 3 Discussion Chapter 3 Examples: problems 3.1, 3.4, 3.8 Chapter 3 HW: problem ___	• Homework 3: problem __ due by 9/22. • Quiz 5 on Chapter 4 pp 89-100, due by 9/22.
9/22	Chapter 4 Discussion Chapter 4 Examples: problems 4.2 & 4.3 Chapter 4 HW	• Homework 4: custom problem due by 9/29. • Quiz 6 on Chapter 6 pp 167-185, due by 9/29.
9/29	Chapter 6 Discussion over pp 167-185 Chapter 6 Examples: problems 6.2, 6.4, 6.5 Chapter 6 HW: problem __	• Homework 5: problem ___ due by 10/6. • Quiz 7 on Chapter 6 pp 190-196, due by 10/6.
10/6	Chapter 6 Discussion over pp 190-196 Chapter 6 Examples: problems 6.8, 6.10 Chapter 6 HW: problem __.	• Homework 6: problem __ due by 10/13.
10/13	Mid-term Preparation Mid-term	• Quiz 8, on Chapter 8 Overview +pp 263-264, 269-275, due by 10/20.
10/20	Chapter 8 Discussion over Overview + pp 263-264 + pp 269-275 Chapter 8 Examples Chapter 8 HW	• Quiz 9 on Chapter 9 pp 304-307 + overview, due by 10/27. • Homework 7: custom problem due by 10/27.
10/27	Chapter 9 Discussion Chapter 9 Examples: problems 9.8 & 9.9 Chapter 9 HW	• Homework 8: problem ___ due by 11/3. • Quiz 10 on Chapter 10 pp 324-339, due by 11/3.
11/3	Chapter 10 Discussion Chapter 10 Examples: problems 10.1, 10.2 Chapter 10 HW: problem _____	• omework 9: Problem _____ due by 11/10. • Quiz 11 on Chapter 11 pp 392-396 & pp 370-371, due by 11/10.
11/10	Chapter 11 Discussion Chapter 11 Examples: problem 11.5 Chapter 11 HW: problem __	• Homework 10: custom problem due by 11/17.
11/17	Special Cases and Catch-up	• Homework 11: custom problem due by 11/24.
11/24	Special Cases and Thought Problem	• Thought Problem due by 12/2
12/1	Preparation for Final Exam and Catch-up	
12/8	Final Exam: 7:30 – 9:30 pm, comprehensive	

Typical Class Structure:

7 – 7:15 p   **Practice Test Problem; Questions**
7:15 – 7:45 p   **Thought Problem**
7:45-8:50 p   **Call Roll, Take up HW**
                  Lecture over Chapter du jour.

8:30 – 8:45 p   **Break**
8:45 – 9:50 p   **Homework**

Course Evaluation Methods: This course will utilize the following instruments to determine student grades and proficiency of the learning outcomes for the course.

    Exams – There will be two examinations during the semester, each worth 125 points. (See section on Grading). All exams will consist of a combination of multiple choice and problem formulation/analysis. **The exams will be open book, open notes**. **Laptop computers and/or "programmable" calculators will not be allowed during an examination**. Students are responsible for providing their materials on an exam. There will be no loaning or sharing of books, calculators, or other items/information among students while taking the exam. If the student fails to bring his or her required materials, he or she must perform the exam to the best of his or her ability without them. Students are encouraged to collect the exams when they are returned. I reserve the right to swap performance on exam 2 for that of exam 1 if the student benefits.

    Class Participation – A portion of your total grade will derive from attendance / participation. The student is expected to attend each class session. In terms of accepting homework, quizzes, and exams, I will honor excuses on the following grounds: personal illness or injury, pre-emptive school functions, or officially-designated severely inclement weather.

        In awarding points for participation, the following items will be considered: engagement with class proceedings and general preparedness during each class session. There are 14 non-exam meetings. Full participation credit will be awarded for 13 attendances. Fewer attendances will receive a prorated portion of the available points.

    Assignments – Problems will be assigned as the course progresses although many problems are already assigned in the "Course Outline." Students are welcome to see me if they have difficulty solving any of the assigned problems.

    Thought Question – I am assigning this question for you to provide a generalizable Excel solution and to provide a written explanation of your solution. I will accept questions on this item during every class meeting, during the designated time.

  Grading Matrix:

Instrument	Value (points or percentages)	Total
Exams	2 exams at 125 points each	250
Class Participation/ Attendance	25 points	25
Quizzes and Homework	10 points each	225
Thought Question	26 points	26
Total:		**526**

Grade Determination:
The following percentage scale shall be used in evaluating the students' performance, and assignment of the letter grade:

A	90% and up	Superior work
B	80% to < 90%	Good quality of work.
C	70% to < 80%	Average level of work.
D	60% to < 70%	Below average level of work.
F	Less than 60%	Unacceptable quality of work.

Policies and Procedures

Complaints/Concerns: If any student has a problem directly related to my teaching or grading procedures, s/he needs to speak to me first about the problem. If the problem is unresolved, he or she may take the issue to Dr. K Shumway (Dean of School of Business).

Grade Appeals: The student may appeal any grade that s/he receives. I am happy to check for grading and recording errors. To appeal the final grade, the student must use the formal procedure listed in the UNT Undergraduate Catalog.

Students with Disabilities (ADA Compliance): The University of North Texas Dallas faculty is committed to complying with the Americans with Disabilities Act (ADA). Students with documented disabilities are responsible for informing faculty of their needs for reasonable accommodations and providing written authorized documentation. For more information, you should visit the Student Life Office (Student Support Services), Founders Hall, Suite 200. The person to contact is Ms. Rosemary Meredith at 972-338-1777 or rosemary.meredith@untdallas.edu.

Assignment Policy: Due dates are assigned. Late submission may be penalized.

Exam Policy: Exams should be taken as scheduled. No makeup examinations will be allowed except for documented emergencies and acceptable excuses.

Academic Integrity: Academic integrity is a hallmark of higher education. You are expected to abide by the University's code of conduct and Academic Dishonesty policy. Suspicions of academic dishonesty (i.e., cheating or plagiarism) will be handled in accordance with the University's policies and procedures. You will be required to agree to the following statement on all submitted work: *On my honor, I have not given, nor received, nor witnessed any unauthorized assistance that violates the UNTD Academic Integrity Policy.*

Bad Weather Policy: On those days that present severe weather and driving conditions, a decision may be made to close the campus. In case of inclement weather, search for postings on the campus website www.unt.edu/dallas. Students are encouraged to update their Eagle Alert contact information, so they will receive this information automatically.

Attendance and Participation Policy: Class attendance and participation is expected because the class is designed as a shared learning experience and because essential information not in the textbook may be discussed in class. Attendance and participation in all class meetings is essential to the integration of course material. Students are responsible for notifying me if they are missing class and for what reason. Students are also responsible to make up any work covered in class. It is recommended that each student coordinate with a student colleague to obtain missing class notes.

Diversity/Tolerance Policy: Students are encouraged to contribute their perspectives and insights to class discussions. However, offensive & inappropriate language (swearing) and remarks offensive to others of particular nationalities, ethnic groups, sexual preferences, religious groups, genders, or other ascribed statuses will not be tolerated. Disruptions which violate the Code of Student Conduct will be referred to Student Support Services (Office of Student Life) for disciplinary action as the instructor deems appropriate.

Grade of Incomplete, "I": If a student misses the final exam, he or she must provide an excuse. If the excuse is acceptable, the instructor will submit an "I" grade for the final grade and the student must make up the exam within the first two (2) weeks of the school session immediately following the one in which the "I" was earned. "I" grades are rarely assigned due to the strict criteria required to award them.