DSCI 3870: Management Science
Course Outline: Fall 2019
Section 501: Tuesday 2:00 — 4:30 PM, FRISCO RM 112

INSTRUCTOR INFORMATION

Professor: Dr. Valarie J. Bell
Office: 365D – BLB
E-mail: Valarie.Bell@unt.edu
Telephone: 630-853-4089

Office Hours: See p. 11 for schedule & locations; also available via zoom during office hours and by appointment in Frisco, Denton, or via zoom.

COURSE OBJECTIVES

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, to strengthen students’ understanding. Techniques covered will include linear, integer, and non-linear programming, network optimization and implementation issues. This course may seem challenging, but it will provide you with "current" and "marketable" skills in the field of Quantitative Analysis/Business Analytics.

Prerequisite(s): Please see UNT Undergraduate Catalog:
(It is assumed that students taking this course have completed the college algebra course and also have a good foundation in calculus, basic statistics and probability theory as covered in the basic statistics course. Although some review of elementary concepts and terminology is provided in the textbook, it is not intended to replace a complete course, but rather to refresh your memory. While a high degree of mathematical skill is not necessary in an “applied” course such as this, there are certain insights into the course that are gained through the mathematics involved.)
REQUIRED TEXTBOOK


You can also purchase or rent the digital version of the textbook at the following address:


If you intend to enroll in DSCI 4510 later, please don’t sell your book (either edition). We will be using it in DSCI 4510 too.

MEANS OF COMMUNICATIONS

I may be reached via the email or mobile phone shown on page one. I will generally return most emails within 24 hours unless received on a holiday/when the University is closed or after 5pm on Friday through Sunday evening. In such instances, your email will be returned on the next UNT school day. When contacting me by mobile phone, please first text me rather than calling and identify yourself by first & last name as well as the course (e.g., 3870). Briefly explain the issue/pose your question. You should reserve texts for time-sensitive matters & emergencies. Any texts will generally be returned within 4 hours unless that text is received Monday-Thursday after 6:30pm when I am in class, on a holiday/when the University is closed, or after 5pm on Friday through Sunday evening.

If you need any additional assistance, simply contact me via email. I am here to help you.

REQUIRED RESOURCES

Business or scientific calculator; must be able to perform at least the following functions: square, square root, raise to nth power, extract nth root, logarithm. The lack of a calculator does not excuse the student from making math errors on exams. Graph paper will also prove to be quite useful.
ASSIGNMENTS
At the end of each chapter some “Self test” problems are already assigned in the “Tentative Course Agenda”. The student is responsible for solving these problems in a timely manner.

Some of the problems are challenging so do not wait until the last minute or until after 3pm on Friday & during the weekend before an assignment is due to contact me for help as I will be unavailable. As needed and where helpful, I will also provide you real business cases and hand out readings (magazine articles, newspaper clippings etc.) in Canvas.

EVALUATION
Grades are a measure of the performance of a student in individual courses. Each student shall be judged on the basis of how well he or she has command of the course materials.

One Test = 8%
Group Project = 17%
Group Evaluation = 5%
MS-Excel Certification = 10%
Midterm = 25%
Final Exam = 25%

+ 10% your best performance over two exams (Midterm and Final)

Letter Grades:

90% + = A  80% + = B  70% + = C  60% + = D  Below 60% = F

All exams will be multiple choice or a combination of multiple choice and problem formulation/analysis. The exams will be open book, open notes. Laptops and calculators will also be allowed.

Students are responsible for their materials on an exam. There will be no loaning or sharing of books, calculators, or other items, or sharing of any type of information among students while taking the exam. If the student fails to bring his or her required materials, she or he 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.

Exams are not cumulative of previous exam coverage. Exam information and marks will be posted in Canvas. Since exams are not cumulative, please take all exams. Missed exams will receive zero marks unless a legitimate excuse is presented. If you miss an exam, please follow the steps below:
Step 1: If you miss an exam for any acceptable reason, please e-mail the instructor as soon as you are able about the reason why you missed the exam.

Step 2: Then, you may provide the instructor proof in the form of an official document as soon as you are able with proper documentation. Your documentation should be acceptable based on an interpretation of College of Business or University policy.

Step 3: After the instructor receives an acceptable proof, the instructor will then e-mail you to schedule a make-up exam.

MS-Excel Certification. Our industry partners have emphasized the need for our students to have spreadsheet skills and we have listened. COB has a new initiative to certify all COB students in MS-Excel at no cost to the student. In this semester of this initiative all DSCI 3870, ECON 4140, LSCM 3960, and OPSM 3830 courses are incorporating certification as part of the course grade. Fine-tune your Excel skills using Gmetrix software and after you have completed the training you will be able reserve a time slot to complete your certification testing at the Sage Testing Center during the week of First Round of Testing. Details will be provided during your lecture session.

ATTENDANCE & PARTICIPATION

The student is expected to attend each class session and actively participate in class and group activities, ask relevant questions and keep up with the material discussed in earlier class sessions.

DISABILITIES

The College of Business Administration complies with the Americans with Disabilities Act in making reasonable accommodations for qualified students with disability. If you have an established disability as defined in the "Act" and would like to request accommodation, please see your instructor as soon as possible. Office hours and phone number are shown at the top of this syllabus.

LAPTOPS & CELL PHONES

You may bring your laptop/tablet computers to class, but you will NOT be permitted to have them open during the lectures, unless authorized by the instructor. You may not use cell phones or other electronic communication devices in class. Out of respect for your classmates, please turn your cell phones off, or set to vibrate mode.
HONOR CODE

http://facultysuccess.unt.edu/academic-integrity:

As an institution of higher education, UNT is committed to creating and sustaining an environment that facilitates students’ academic, personal, and ethical development. This commitment balances freedom of individual choice and expression with the expectation that individual members of the community will:

- Be honest
- Demonstrate self-respect and respect for others
- Demonstrate respect for the law and University policies, procedures, and standards.

Engaging in any form of academic dishonesty, such as plagiarism (representing the work or ideas of others as one’s own without giving proper acknowledgment), cheating (e.g., using unauthorized resources or assistance on coursework, copying the work of another person, falsifying data, sabotaging the work of others, and the unauthorized use of electronics, media, or data), or other acts generally understood to be dishonest by faculty or students in an academic context will subject the student to disciplinary action. Any UNT policy regarding grounds for Dismissal from the Course is effective in this course.

CAMPUS CLOSING POLICY

In the event of an official campus closing, please check your UNT e-mail account (EagleConnect) for instructions about how to turn in various assignments, how the due dates are modified, etc. I will do my best to accommodate your needs.

Please do not hesitate to contact me, if you need to discuss anything.
TOPICS AND TENTATIVE LECTURE SCHEDULE

This schedule is subject to change according to the needs of the class. I will try my best to give you advance notice about any changes. STE: SELF-TEST EXERCISES

<table>
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<tr>
<th>WEEK</th>
<th>TOPICS/CASES</th>
<th>Practice Problems</th>
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<tbody>
<tr>
<td>Week 1</td>
<td>Course Introduction</td>
<td>Chapter 1</td>
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<td>STE – 8, 12</td>
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<td>Week 2</td>
<td>An Introduction to LP</td>
<td>Chapter 2</td>
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<td>STE – 1, 2, 6, 13, 24</td>
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<tr>
<td>Week 3</td>
<td>An Introduction to LP (continued)</td>
<td>Chapter 2</td>
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<td>– Case Problem</td>
<td>STE – 34, 42, 43</td>
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<td>Week 4</td>
<td>Review for Exam 1</td>
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| Week 5: Test 1, Tuesday, September 24 |

<p>| Week 5  | Linear Programming                              | Chapter 3             |
|         | Sensitivity Analysis and Interpretation of Solution | STE – 6, 10          |
| Week 6  | Linear Programming                              | Chapter 3             |
|         | Sensitivity Analysis and Interpretation of Solution | STE – 12, 13         |
| Week 7  | Linear Programming                              | Chapter 3             |
|         | Sensitivity Analysis and Interpretation of Solution | STE – 12, 1           |
|         | – Case Problem: Product Mix                      |                       |
|         | LP Applications in Marketing, Finance and Operations Management | Chapter 4 |
| Week 8  | LP Applications in Marketing, Finance and Operations Management (continued) | Chapter 4 |
|         | Decision Theory                                  | STE – 1, 15           |</p>
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<tr>
<th>Week 9</th>
<th>LP Applications in Marketing, Finance and Operations Management</th>
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<tr>
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<td>Case Problem 3: Textile Mill Scheduling</td>
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<td>Review for Midterm</td>
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### Week 9: Midterm, Tuesday, October 22

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<th>Week 10</th>
<th>Distribution and Network Models</th>
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<tr>
<td></td>
<td>Decision Making Under Uncertainty</td>
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<td>STE – 1, 2, 6</td>
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<tr>
<th>Week 11</th>
<th>Distribution and Network Models</th>
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<td>Chapter 6</td>
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<td>STE – 11 (17), 17(9), 23, 29</td>
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<th>Week 12</th>
<th>Integer Linear Programming</th>
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<td>Chapter 7</td>
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**Week 12** *Please take the MS-excel certification exam this week.* **FYI: SAGE HALL WILL PROVIDE TESTING**

**DETAILS & DATES FOR TESTING. SEE CANVAS**

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<th>Week 13</th>
<th>Integer Linear Programming</th>
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<tr>
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<td>Case Problem: Textbook Publishing</td>
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<td>STE – 2, 5, 7</td>
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<th>Week 14</th>
<th>Integer Linear Programming</th>
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<td>Business Case: Decision Making Under Uncertainty</td>
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<td>Chapter 7</td>
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<th>Week 15</th>
<th>PROJECT PRESENTATION</th>
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<td>Final overview</td>
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### Week 16: Final, Tuesday, December 10 1:30-3:30pm

Some or all of the Case Problems may be solved in class. Self test Problems will not be collected or graded. However it is imperative for students to solve these problems and also go through any assigned readings in order to be better prepared for the examination.

“STE” above stands for Self test Exercises that appear in the book.

You can check deadlines at: https://registrar.unt.edu/exams/final-exam-schedule/fall
GROUP PROJECT

As soon as you choose your project topic, clear it with me to avoid duplication. Sometimes your first choice topic may not work out, so be sure to allow sufficient time to find an alternative. Scheduling to meet your group members near the middle of the semester is best, but other schedules will work too. If you plan to take pictures for project, be sure to get permission if needed. Turn in both a printed paper copy and an electronic copy of your final report.

The goal of this project is to observe and understand an actual process and relate it to this course. Think about the key strategic issues and decisions that a DFW-based company (or community, system, project, etc.) faces and relate them to the analytical methods that we study in this course. That is, discuss which of our methods and concepts they are now using, or could potentially use, for their marketing, operations, finance, human resource, or accounting policies and decisions. Think of yourself as a management consultant rather than a reporter, when doing this project.

Working in groups of six, this project begins with defining a relevant topic for your project. Toward the end of the semester, each group will give a 10 to 15 minutes presentation to the class on their group project. This talk could describe a company's products (or services) and the manufacturing process and how the decisions for the process are made. You present different aspect of your analytical model (the decision factors, objective function, the relationship between factors, constraints), the solution, the managerial insights and recommendations. It should include some kind of visual aids such as PowerPoint slides, transparencies or paper charts to hang on the blackboard to make the presentation more organized and interesting. Regardless of the visual aids, the presentation will need some rehearsing and good coordination among the members of your team. If possible, bring in samples of the company's product and/or raw materials to show to the class. The quality of the presentation, as well as the content is important. Presentation PowerPoint file is due the day before the presentation date by 10:00 a.m. The presentation does not need to cover all the topics in the written report and not everyone in the group needs to speak.

Sample Outline for the Written Report

1. Background on the subject/problem (not too long), why this topic is important?
2. Model description
3. Model solution
4. Recommendations for improving the management of the process
5. Final comments.

The written report, which is due at the end of the semester, should be no more than 10 typed pages, plus all attachments. Using what we have discussed in this class, make recommendations for how the management of the process could be improved. This is an opportunity to be creative and develop insights by integrating suggestions from each member of the group. Be sure to have everyone in your group proof read the report to improve its style. Please not that copying text or the process diagram for your report from the website is not acceptable. This paper should contain your own thoughts and how they relate to the material in this course. Your project grade will be determined by the quality of the written report and the presentation, and by your active participation in the project as evaluated by other members of your group. Have fun and good luck!
EVALUATION FORM FOR GROUP WORK

This form is for evaluating the relative contributions of your team members to the group project and the homework (if done jointly). Make comments to clarify differences in the evaluations. This form covers both the level of each member’s participation and the value of their contributions. List each member of your team (including yourself) and rate their contribution from 5 (High) to 1 (Low) in the two categories. Then sign the form and turn it in at the final exam or return it to my office. (You can fold it and slide it under the door or give it to me directly.) I will keep these evaluations confidential.

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<th>Team Member</th>
<th>Level of Participation</th>
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Name: _________________________  Signed: ________________________________

Describe the things you did on the group project. (If jointly with someone else, say so.)
Name:

Major Field:

MINOR FIELD (If Applicable):

Classification (FR, SO, JR, SR):

Email (Students are required to have EagleConnect by University policy and regularly check the “Official” folder in their account for class related emails. You can easily set an Auto-Forward to your preferred (i.e. hotmail, yahoo etc.) email account from within EagleConnect if you don’t log in regularly. Please provide your EagleConnect address below):

Are you taking this as a “required” course? As an optional elective?

Do you intend to work in the field of decision modeling or related areas in the future? In any case, please pen a few words on your prospective future career choice i.e. after college.

Please read the above syllabus and agree to abide by the class policies and procedures set forth therein. Please get an EagleConnect account and check it regularly for “official” announcements.
Dr. Valarie J. Bell Office Hours & Teaching Schedule
Effective August 26, 2019

Mondays  Office hours: 4:00-6:00 pm
My usual location will be Frisco but on the 2nd Monday of each month, I will be in my Denton office #365D. Regardless of which campus I have office hours at, I’m always available every Monday 4-6pm to Denton & Frisco students via my permanent Zoom link:
https://unt.zoom.us/j/3594059147

In class: 6:30-9:20 pm Mondays in Frisco
2nd Monday of month in Denton

Tuesdays  Office hours: Noon-2:00 pm always in Frisco
Zoom link:  https://unt.zoom.us/j/3594059147

In class: 2-4:30 pm in Frisco
& 6:30-9:20 pm in Denton

Thursdays  Office hours: 4:00-6:00 pm always in Denton

In class: 6:30-9:20 pm in Denton
STUDENT INFORMATION & AGREEMENT FORM -- DSCI 3870

Please complete and return this form to your instructor after you have studied the syllabus.

Name: ______________________________ (Print your name)

STATEMENT ON UNDERSTANDING THE SYLLABUS (REQUIRED)

I have read, understand, and agree to abide by the syllabus and the information it contains on course administration, policies, assignments, schedule, and requirements.

Your initials here please: __________

Optional Information

In order to get acquainted with you more quickly, please complete the following. Doing so is completely optional. I will use this information to better plan the course to meet your needs.

Experience and skills in IT/IS/DECISION SCIENCES(ANALYTICS):

Brief statement of your career goals:

What do you hope to learn in this course?

Are you interested in learning & doing research with Dr. Bell? (NO EXPERIENCE NECESSARY):

| (your signature) | (today’s date) |
UNT College of Business Student Ethics Statement

As a student of the UNT College of Business, I will abide by all applicable policies of the University of North Texas, including the Student Standards of Academic Integrity, the Code of Student Conduct and Discipline and the Computer Use Policy. I understand that I am responsible reviewing the policies as provided by link below before participating in this course. I understand that I may be sanctioned for violations of any of these policies in accordance with procedures as defined in each policy.

I will not engage in any acts of academic dishonesty as defined in the Student Standards of Academic Integrity, including but not limited to using another’s thoughts or words without proper attribution (plagiarism) or using works in violation of copyright laws. I agree that all assignments I submit to the instructor and all tests I take shall be performed solely by me, except where my instructor requires participation in a group project in which case I will abide by the specific directives of the instructor regarding group participation.

While engaged in on-line coursework, I will respect the privacy of other students taking online courses and the integrity of the computer systems and other users’ data. I will comply with the copyright protection of licensed computer software. I will not intentionally obstruct, disrupt, or interfere with the teaching and learning that occurs on the website dedicated to this course through computer “hacking” or in any other manner.

I will not use the university information technology system in any manner that violates the UNT nondiscrimination and anti-sexual harassment policies. Further, I will not use the university information technology system to engage in verbal abuse, make threats, intimidate, harass, coerce, stalk or in any other manner which threatens or endangers the health, safety or welfare of any person. Speech protected by the First Amendment of the U.S. Constitution is not a violation of this provision, though fighting words and statements that reasonably threaten or endanger the health and safety of any person are not protected speech.

Student Standards of Academic Integrity
http://policy.unt.edu/sites/default/files/untpolicy/pdf/7-Student_Affairs-Academic_Integrity.pdf

Code of Student Conduct and Discipline

Computer Use Policy: http://policy.unt.edu/policy/3-10

By signing below, I acknowledge my responsibility to read the UNT academic dishonesty policy and the Student Standards of Academic Integrity (https://policy.unt.edu/policy/06-003); and attest that I have read and understand the statements in this document and agree to behave ethically in this class.

____________________________________________________  ____________________________
Student Name (Print)  Student ID No.

____________________________________________________  ____________________________
Student Signature  Date