

## DSCI 3870/Management Science Section 002

### Instructor Contact

**Name:** Javier Rubio-Herrero, Ph.D.

**Office Location:** 357 E - BLB

**Phone Number:** (940) 565 - 3117

**Office Hours:** Wednesday 4:30 pm – 6:00 pm, and Thursday 10:45 am – 12:15 pm, to be held via [Zoom](#).

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**Communication Expectations:** The instructor will communicate with students via, in-class announcements, e-mails, Canvas, and office hours. The students will communicate with the instructor via e-mails and office hours.

It is the instructor's aim to answer e-mails within 48 hours of their receipt during business days. Please, be courteous and professional when communicating with your instructor and follow the provided [Online Communication Tips](#). The instructor may not answer e-mails that do not abide to these tips.

### Tutor/Grader Contact (This section to be updated shortly)

**Tutoring Hours:** ITDS Lab Schedules (both BCIS and DSCI) are usually posted during the second week of classes. Check the [Lab Schedule](#) for more information. Your tutoring meetings will happen via [Zoom](#) (meeting ID: 922-325-916). The phone-scannable card with QR code below will also help you to log into your tutoring sessions:



**Communication Expectations:** The tutor/grader should be your first point of contact for tutoring questions. If you have additional questions, or need additional support for your class needs, you are most welcome to communicate with your instructor after class, during office hours, or via e-mail.

## Course 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.

## Course Structure

This course will be delivered in remote format and will take place between the weeks of January 11<sup>th</sup>, 2021 and April 19<sup>th</sup>, 2020.

**Note:** This course employs lecture capture technology to record class sessions. Students may occasionally appear on video. The lecture recordings will be available to you for study purposes and may also be reused in future course offerings.

<b>Week</b>	<b>Topics/Cases<sup>1</sup></b>	<b>Practice Problems</b>
<b>Week 1</b>	Course Introduction	Chapter 1 STE <sup>2</sup> – 8, 12
<b>Week 2</b>	An Introduction to Linear Programming <i>Deadline for forming groups for projects</i>	Chapter 2 STE – 1, 2, 6, 13, 24
<b>Week 3</b>	An Introduction to Linear Programming <i>Case Problem</i>	Chapter 2 STE – 34, 42, 43
<b>Week 4</b>	An Introduction to Linear Programming <i>Exam 1 to take place on Thursday, February 4<sup>th</sup></i>	
<b>Week 5</b>	Linear Programming <i>Sensitivity Analysis and Interpretation of Solutions</i> <i>Deadline for selecting a topic for the group project</i>	Chapter 3 STE – 6, 10
<b>Week 6</b>	Linear Programming <i>Sensitivity Analysis and Interpretation of Solutions</i>	Chapter 3 STE – 12, 13
<b>Week 7</b>	Linear Programming <i>Sensitivity Analysis and Interpretation of Solutions</i> <i>Case Problem: Product Mix</i> Linear Programming Applications in Marketing, Finance and Operations Management	Chapter 3 STE – 12, 1  Chapter 4
<b>Week 8</b>	Linear Programming Applications in Marketing, Finance and Operations Management (continued)	Chapter 4 STE – 1, 15
<b>Week 9</b>	Linear Programming Applications in Marketing, Finance and Operations Management <i>Exam 2 to take place on Thursday, March 11<sup>th</sup></i>	Chapter 4 STE – 19
<b>Week 10</b>	Distribution and Network Models <i>Soft deadline for developing your projects' models</i>	Chapter 6 STE – 1, 2, 6
<b>Week 11</b>	Distribution and Network Models (Continued)	Chapter 6 STE – 11, 17, 23, 29
<b>Week 12</b>	Integer Linear Programming	Chapter 7
<b>Week 13</b>	Integer Linear Programming (continued)	Chapter 7

<sup>1</sup> Course structure is subject to change in order to accommodate for specific circumstances throughout the semester.

<sup>2</sup> Self-test Exercise. These exercises are numbered according to the 15<sup>th</sup> version of the textbook.

<b>Week</b>	<b>Topics/Cases<sup>1</sup></b>	<b>Practice Problems</b>
		STE – 2, 5, 7
<b>Week 14</b>	No class on Tuesday April 13 <sup>th</sup> ( <i>Prepare for your group project</i> ) Project Presentations (Thursday April 15 <sup>th</sup> )	
<b>Week 15</b>	Project Presentations (Tuesday April 20 <sup>th</sup> ) <i>Final Exam date: Thursday April 29<sup>th</sup> @ 12:30 pm</i>	

Some or all of the Case Problems may be solved in class. STE's will not be collected nor 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 exams.

A list of important dates for this semester can also be consulted at the [Spring 2021 Registration Guide](#).

### Course Prerequisites or Other Restrictions

ECON 1100, ECON 1110, MATH 1100. DSCI 2710 or consent of instructor; ACCT 2010 and ACCT 2020 with grades of C or better; MATH 1190 or equivalent.

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 skills is not necessary in an "applied" course such as this, there are certain insights into the course that are gained through the mathematics involved.

### 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.

By the end of this course, students will be able to:

1. Interpret a mathematical optimization model as a representation of actual business processes.
2. Classify optimization problems depending on their level of difficulty.
3. Formulate their own optimization models.
4. Develop solutions to those models.
5. Apply their solutions to areas such as finance, marketing, and operations management.

## Materials

Anderson, Sweeney, Williams, Camm, Cochran, Fry and Ohlmann, *An Introduction to Management Science: Quantitative Approaches to Decision Making*, 15th Edition\*, © 2018, Cengage Learning ISBN-10: 133740652X, ISBN-13: 9781337406529.

You can also purchase or rent the [digital version of the textbook](#).

The 13<sup>th</sup> or 14<sup>th</sup> edition of this text book are also acceptable.

If you intend to enroll in DSCI 4510 you will also use this book, so do not sell it!



## Teaching Philosophy

Since this course will be taught remotely, we will aim at resembling a face-to-face class environment as much as possible. To make the class more dynamic, I will opt for combining slides and hand-written notes. I will write notes on-the-go in class as I explain concepts and exercises. This course has a clear mathematical background and mathematics require work and patience to be understood. I believe that this understanding cannot be attained without writing things down by yourselves and, for this reason, I expect you to be active in taking notes and in solving exercises on paper. Just by looking at slides, you might deceptively think that you understand something. However, you will also need to create models and manipulate mathematical concepts and this can only be achieved if you work on problems and concepts on paper.

## Technical Requirements & Skills

All students are responsible satisfying the requirements below and they must make sure that they comply with them when they perform the tasks that are needed for the successful completion of this course.

### Minimum Technology Requirements

- Computer with Webcam
- Reliable internet access
- Speakers
- Microphone
- Plug-ins
- Microsoft Office Suite
- [Canvas Technical Requirements](#)
- Business or scientific calculator. It must be able to perform at least the following functions: square, square root, raise to nth power, extract n<sup>th</sup> root, logarithm. The lack of a calculator does not excuse the student from making math errors on exams. **Only these calculators will be allowed in quizzes and exams. Calculators from phones, tablets or other electronic devices will not be allowed.**

## Computer Skills & Digital Literacy

- Using Canvas and supported embedded apps such as LockDown Browser and Respondus Monitor.
- Using email with attachments
- Downloading and installing software
- Using spreadsheet programs
- Using presentation and graphics programs

## Rules of Engagement

Rules of engagement refer to the way students are expected to interact with each other and with their instructors online. Here are some general guidelines:

- Treat your instructor and classmates with respect in any communication online or face-to-face, even when their opinion differs from your own.
- Always use your professors' proper title: Dr. or Prof., or if in doubt use Mr. or Ms.
- Unless specifically invited, don't refer to your instructor by first name.
- Use clear and concise language.
- Remember that all college level communication should have correct spelling and grammar (this includes discussion boards).
- Avoid using "text-talk" unless explicitly permitted by your instructor.
- Avoid using all caps while communicating digitally. This may be interpreted as "YELLING!"
- Be careful with personal information (both yours and other's) and avoid sending confidential information via e-mail.
- Be cautious when using humor or sarcasm in emails or discussion posts as tone can be difficult to interpret digitally.
- Keep in mind that online posts can be permanent, so think first before you type.

See these [Engagement Guidelines](https://clear.unt.edu/online-communication-tips) (https://clear.unt.edu/online-communication-tips) for more information.

## Course Requirements

During this course you will have the following graded and not graded requirements:

- **Self-test problems:** some are already assigned in the Tentative Course Agenda above. Some others may be assigned later on during the course. Students are responsible for solving these problems in a timely manner. Self-test problems will not be collected nor graded. However, if needed, the course tutor and I will provide feedback and help to solve them during office hours. You should expect some of these problems to be challenging.
- **Homework assignments:** these assignments will be graded and can be completed in groups of up to five people. When working in groups, only one submission with the name of the team members will be needed.

- **Real business cases and handouts:** I might provide you with magazine articles, journal papers, newspapers clippings, etc. In some cases, you will have to complete a graded in-class quiz about these materials.
- **Exams:** there will be 2 midterm exams and a final exam. All of them will be non-cumulative and they will be held online *via LockDown Browser with Respondus Monitor*.
- **Group Project:** you will have to complete a graded group project. More information about this can be found in the Word file named *DSCI 3870 Team Project Instructions*. The information contained there constitutes an addendum to this syllabus and the acceptance of the latter also implies conformity with the former. You will also fill out a group evaluation form in which you will detail your contribution and give a score to your teammates.

Your final grade will be calculated according to the following breakdown<sup>3</sup>:

Course Requirement	Percentage of Final Grade
Homework assignments	10%
In-class quizzes	10%
Exam 1	15%
Exam 2	15%
Final exam	20%
Group project	15%
Group evaluation form	5%
Additional weight of best exam <sup>4</sup>	10%
<b>Total</b>	<b>100%</b>

## Grading

Grades measure the performance of a student in individual courses. Students will be evaluated based on their performance and command of the course materials. A student's final grade will be determined following the scheme below:

A = 90% or higher

B = 80% or higher and less than 90%

C = 70% or higher and less than 80%

D = 60% or higher and less than 70%

F = Less than 60%

<sup>3</sup> The breakdown below is contingent upon acceptance of this syllabus and its addenda. Each student submission will receive a 0 until such acceptance is received by the instructor.

<sup>4</sup> Your best exam will carry a weight of 10% more than noted above. For example, if your scores are 75 (Exam 1), 85 (Exam 2), and 88 (Final Exam), the portion of your grades corresponding to your exams will be  $75*0.15+85*0.15+88*(0.20+0.10) = 50.4$ .

## Course Evaluation

The Student Perceptions of Teaching (SPOT) is the student evaluation system for UNT and allows students the ability to confidentially provide constructive feedback to their instructor and department to improve the quality of student experiences in the course. At some stage during this course, students will be given access to this evaluation. I would certainly appreciate your constructive feedback when the time comes.

## Course Policies

### Attendance Policy

I expect, but do not enforce, that students attend each class session. Take into account that there might be quizzes and midterm exams during regular class hours. Visit the [University of North Texas' Attendance Policy](#) to learn more.

**Students are responsible for learning the contents, meet the deadlines, and follow the directions explained in class regardless of their attendance.**

### Class Participation

Students are expected to actively participate in class and group activities, ask relevant questions and keep up with the material discussed in earlier class sessions.

### Assignment Policy

Homework assignments will be announced via Canvas. The due date for each homework will be announced on the posting date along with extra instructions (if needed). As a rule of thumb, homework has to be completed professionally and therefore it needs to be well presented, clean, readable, and easy to follow. The instructor and the grader may reduce your grade at their discretion if these general guidelines are not correctly followed.

Any assignment that is submitted after the submission deadline will not be graded and will receive zero marks. This course requires a professional attitude so **there will not be any exceptions to this rule.** Consequently, make sure that you do not leave your submissions for the last minute. See the [Late Work](#) subsection for more details about late submissions. Also, the submissions will typically consist of a Word file and an Excel file. **Make sure that the names of all the students that participated in the homework are listed in the first page of your Word file. Students that participated in an assignment that are not listed will not receive any credit for this submission.**

### Examination Policy

The following policies will apply the midterm exams and the final exam:

- All exams will have a combination of multiple choice and problem formulation/analysis.
- You will need a desktop or a laptop to complete your exams. If you use a laptop, make sure you connect it to the power grid. **I will not repeat any exam if your laptop runs out of battery.**
- Calculators will be allowed.
- Phones and tablets will **not** be allowed.
- Students are responsible for their materials on an exam. Loaning or sharing any materials is strictly prohibited.

- It is **strictly forbidden** that students share information during an exam. Failure to comply with this will result in disciplinary actions as described in the [Academic Integrity Policy](#) subsection of this syllabus.
- Students who fail to bring their own required materials will take the exams without them and to the best of their ability.
- Further instructions will be announced ahead of time, if needed.
- In case you lose Internet connection during an exam:
  - If you are having a short disruption, Canvas will allow you to keep on working on the exam and will reconnect automatically once your Internet service resumes.
  - If the issues persist, contact the [Student Helpdesk](#) ([helpdesk@unt.edu](mailto:helpdesk@unt.edu) or 940.565.2324) immediately and document the remedy ticket number.
  - If the Student Helpdesk cannot address your problems or if they advise you to contact your instructor, immediately report this disruption to both your instructor and the grader and enclose a copy of the current state of your exam. This is very important to keep a recorded time stamp of the events.
  - If the issues still persist, complete your exam offline and send it via e-mail to both your instructor and the grader. **Important:** always do this within the allotted time for the exam.
- Exams are not cumulative and therefore I encourage you to take all exams. Exam information and marks will be posted on course website.
- Missed exams will receive zero marks unless a legitimate excuse is presented, as described in the [Late Work](#) subsection of this syllabus.
- In the case that you want to review a midterm exam that you took, this request must be done to the grader/instructor within two weeks since the grades were posted. Later reviews will not be accepted.
- If you want to review a final exam, this request must be done to the grader/instructor within 10 days or before the grades are due at the Registrar's Office, whatever is shorter.

### Late Work

It is **highly recommended** that you work on your submissions well in advance to avoid last-minute issues. I will **not** accept any late submissions nor agree to make-up tests or exams except in the following cases:

- Medical emergency cases, in which case a doctor's note is required.
- Family emergency cases, in which case a written verifiable proof is required.
- Any other excused absence specified in Chapter 6 of Faculty Affairs document, [Student Attendance and Authorized Absences](#).

Late submissions and make-up tests or exams must always be agreed **before the corresponding due date**. No make-up tests or exams will be offered due to poor performance in exams.

### COVID-19 Impact on Attendance

While attendance is expected as outlined above, it is important for all of us to be mindful of the health and safety of everyone in our community, especially given concerns about COVID-19. Please contact me if you are unable to attend class because you are ill, or unable to attend class due to a related issue regarding COVID-19. It is important that you communicate with me prior to being absent so I may make a decision about accommodating your request to be excused from class.



If you are experiencing any [symptoms of COVID-19](https://www.cdc.gov/coronavirus/2019-ncov/symptoms-testing/symptoms.html) (<https://www.cdc.gov/coronavirus/2019-ncov/symptoms-testing/symptoms.html>) please seek medical attention from the Student Health and Wellness Center (940-565-2333 or [askSHWC@unt.edu](mailto:askSHWC@unt.edu)) or your health care provider PRIOR to coming to campus. UNT also requires you to contact the UNT COVID Hotline at 844-366-5892 or [COVID@unt.edu](mailto:COVID@unt.edu) for guidance on actions to take due to symptoms, pending or positive test results, or potential exposure. While attendance is an important part of succeeding in this class, your own health, and those of others in the community, is more important.

### Syllabus Change Policy

The contents of this syllabus might be changed to the instructor's discretion in order to adjust the course to the specific circumstances of each semester.

### Getting Help

#### Technical Assistance

Part of working in the online environment involves dealing with the inconveniences and frustration that can arise when technology breaks down or does not perform as expected. Here at UNT we have a Student Help Desk that you can contact for help with Canvas or other technology issues.

**UIT Help Desk:** [UIT Student Help Desk site](http://www.unt.edu/helpdesk/index.htm) (<http://www.unt.edu/helpdesk/index.htm>)

**Email:** [helpdesk@unt.edu](mailto:helpdesk@unt.edu)

**Phone:** 940-565-2324

**In Person:** Sage Hall, Room 130

**Walk-In Availability:** 8am-9pm

**Telephone Availability:**

- Sunday: noon-midnight
- Monday-Thursday: 8am-midnight
- Friday: 8am-8pm
- Saturday: 9am-5pm

**Laptop Checkout:** 8am-7pm

For additional support, visit [Canvas Technical Help](https://community.canvaslms.com/docs/DOC-10554-4212710328) (<https://community.canvaslms.com/docs/DOC-10554-4212710328>)

### Computer Labs

The BLB computer labs on the first floor will open with reduced hours and reduced seating to comply with social distancing guidelines. They will not be BLB laptop checkouts due to potential contamination issues. The library [has computers to check out for up to 24 hours](#) and the [RCOB virtual computer labs](#) will be open for business continuously.

### UNT Policies

#### Academic Integrity Policy

Academic Integrity Standards and Consequences. According to [UNT Policy 06.003, Student Academic Integrity](#), academic dishonesty occurs when students engage in behaviors including, but not limited to

cheating, fabrication, facilitating academic dishonesty, forgery, plagiarism, and sabotage. A finding of academic dishonesty may result in a range of academic penalties or sanctions ranging from admonition to expulsion from the University.

**Academic dishonesty is an extremely serious issue. It will not be tolerated and will be prosecuted according to UNT Policy 06.003. You are responsible for knowing what those behaviors above (cheating, plagiarism, etc.) mean and when you might be incurring any of them.**

#### ADA Policy

UNT makes reasonable academic accommodation for students with disabilities. Students seeking accommodation must first register with the Office of Disability Accommodation (ODA) to verify their eligibility. If a disability is verified, the ODA will provide a student with an accommodation letter to be delivered to faculty to begin a private discussion regarding one's specific course needs. Students may request accommodations at any time, however, ODA notices of accommodation should be provided as early as possible in the semester to avoid any delay in implementation. Note that students must obtain a new letter of accommodation for every semester and must meet with each faculty member prior to implementation in each class. For additional information see the [ODA website \(https://disability.unt.edu/\)](https://disability.unt.edu/).

#### Emergency Notification & Procedures

UNT uses a system called Eagle Alert to quickly notify students with critical information in the event of an emergency (i.e., severe weather, campus closing, and health and public safety emergencies like chemical spills, fires, or violence). In the event of a university closure, please refer to Canvas for contingency plans for covering course materials.

#### Retention of Student Records

Student records pertaining to this course are maintained in a secure location by the instructor of record. All records such as exams, answer sheets (with keys), and written papers submitted during the duration of the course are kept for at least one calendar year after course completion. Course work completed via the Canvas online system, including grading information and comments, is also stored in a safe electronic environment for one year. Students have the right to view their individual record; however, information about student's records will not be divulged to other individuals without proper written consent. Students are encouraged to review the Public Information Policy and the Family Educational Rights and Privacy Act (FERPA) laws and the University's policy. See UNT Policy 10.10, Records Management and Retention for additional information.

#### Acceptable Student Behavior

Student behavior that interferes with an instructor's ability to conduct a class or other students' opportunity to learn is unacceptable and disruptive and will not be tolerated in any instructional forum at UNT. Students engaging in unacceptable behavior will be directed to leave the classroom and the instructor may refer the student to the Dean of Students to consider whether the student's conduct violated the Code of Student Conduct. The University's expectations for student conduct apply to all instructional forums, including University and electronic classroom, labs, discussion groups, field trips, etc. Visit UNT's [Code of Student Conduct \(https://deanofstudents.unt.edu/conduct\)](https://deanofstudents.unt.edu/conduct) to learn more.

### Access to Information - Eagle Connect

Students' access point for business and academic services at UNT is located at: [my.unt.edu](https://my.unt.edu). All official communication from the University will be delivered to a student's Eagle Connect account. For more information, please visit the website that explains Eagle Connect and how to forward e-mail [Eagle Connect](https://it.unt.edu/eagleconnect) (<https://it.unt.edu/eagleconnect>).

### Student Evaluation Administration Dates

Student feedback is important and an essential part of participation in this course. The student evaluation of instruction is a requirement for all organized classes at UNT. The survey will be made available during weeks 13, 14 and 15 of the long semesters to provide students with an opportunity to evaluate how this course is taught. Students will receive an email from "UNT SPOT Course Evaluations via IASystem Notification" ([no-reply@iasystem.org](mailto:no-reply@iasystem.org)) with the survey link. Students should look for the email in their UNT email inbox. Simply click on the link and complete the survey. Once students complete the survey they will receive a confirmation email that the survey has been submitted. For additional information, please visit the [SPOT website](http://spot.unt.edu/) (<http://spot.unt.edu/>) or email [spot@unt.edu](mailto:spot@unt.edu).

### Class Recordings & Student Likenesses

Synchronous (live) sessions in this course will be recorded for students enrolled in this class section to refer to throughout the semester. Class recordings are the intellectual property of the university or instructor and are reserved for use only by students in this class and only for educational purposes. Students may not post or otherwise share the recordings outside the class, or outside the Canvas Learning Management System, in any form. Failing to follow this restriction is a violation of the UNT Code of Student Conduct and could lead to disciplinary action.