The University of Texas at Dallas
Jindal School of Management
Online Course Syllabus
Spring 2024

Course Information

Course Number: OPRE/BUAN 6398.0W1
Course Title: Prescriptive Analytics
Meeting: Online/ No meeting time

Instructor Contact Information

Instructor: Rasoul Ramezani
Email: rasoul.ramezani@utdallas.edu. Please write the course and the section number in the subject line.
Student Hours: Thursdays 11 am – 12 pm (online Via MS Teams)
If these hours don't work for you, please let me know, and we can find another time to meet.

TA Contact Information

TA: Piyush Yerpude
Email: piyush.yerpude@utdallas.edu
Please write the course and the section number in the subject line.
Student Hours: Tuesdays 5:00 pm - 7:00 pm (online via MS Teams)
The meeting link is posted on the course homepage in eLearning.

Course Description

The course is about the science of better, i.e., applying analytical tools to make better decisions and improve the efficiency of a system. Topics to be covered include linear programming, integer programming, network models, time series forecasting, queuing theory, decision analysis, and project management. The primary goal is to acquaint students in business and relevant disciplines with useful concepts, theories, and solution methods in predictive analytics. Much emphasis will be placed on practical applications of the models discussed in class.

Student Learning Objectives/Outcomes

I will do my best to use approaches that encourage active participation and hope you take advantage of them because I have found they are the best way to engage you in learning. Online learning units will consist primarily of lectures, with some discussions during Student Hours and homework assignments as appropriate to the covered topic. Upon successful completion of this course, you should be able to:

1. Use Analytic Solver Platform proficiently;
2. Formulate real-world problems as analytical or optimization models;

3. Identify appropriate program(s) in Analytic Solver Platform for solving models formulated;
4. Apply programs identified to solve problems manually or by the computer;
5. Interpret the results obtained and implement them in practice.

Prerequisites

- OPRE 6301/SYSM 6303 (Statistics for Data Analysis) or
- OPRE 6359 (Advanced Statistics for Data Science)

Course Materials

- **Required Textbook:** Cliff Ragsdale (2017). *Spreadsheet modeling & decision analysis: A practical introduction to business analytics (8th ed.)*. Stamford, CT: Cengage Learning.
- **Recommended Textbook:** Frederick Hillier and Mark Hillier (2019). *Introduction to Management Science: A Modeling and Case Studies Approach with Spreadsheets (6th ed.)*. McGraw Hill.
- **Required Software*:*** Analytic Solver Platform
  The installation instructions and required course and book codes are posted on the course homepage (under Course Information) in eLearning.

Technical Requirements

In addition to a confident level of computer and Internet literacy, certain minimum technical requirements must be met to enable a successful learning experience. Please review the important technical requirements on the Getting Started with eLearning webpage.

Course Access and Navigation

This course can be accessed using your UT Dallas NetID account on the eLearning website.

Please see the course access and navigation section of the Getting Started with eLearning webpage for more information.

To become familiar with the eLearning tool, please see the Student eLearning Tutorials webpage.

UT Dallas provides eLearning technical support 24 hours a day, 7 days a week. The eLearning Support Center includes a toll-free telephone number for immediate assistance (1-866-588-3192), email request service, and online chat service.

Communication

- **eLearning:** I post the class materials on the course page in eLearning. Please read the emails I send via eLearning and the *announcements* I post on eLearning.
- **Meetings:** We can meet regularly during student hours (mentioned above) to discuss your questions.
- **Discussion Board:** Questions that are not personal should be posted to the course Discussion Board on eLearning. The instructor will receive these questions and comments, as well as other class members. Questions of a personal nature should be sent directly to the instructor and not posted to the Discussion Board.

Students are encouraged to respond to questions from fellow students. Answering questions helps both the student asking the question and the student working on the answer. In addition, since the conversation is open to the entire class, others can also learn from the exchange. To subscribe to the discussion board:

Log into e-Leaning => Course List => Select the course => from the left Menu, select Discussion Board => Click "Questions/Comments" forum => Subscribe

Distance Learning Student Resources

Online students have access to resources, including the McDermott Library, Academic Advising, the AccessAbility Resource Center, and many others. Please see the eLearning Current Students webpage for more information.

Server Unavailability or Other Technical Difficulties

The University is committed to providing all users with a reliable learning management system. However, in the event of any unexpected server outage or any unusual technical difficulty that prevents students from completing a time-sensitive assessment activity, the instructor will provide an appropriate accommodation based on the situation. Students should immediately report any problems to the instructor and also contact the online eLearning Help Desk. The instructor and the eLearning Help Desk will work with the student to resolve any issues at the earliest possible time.

Topics and Tentative Academic and Assignments Calendar

Week of	Topics	HW	Due Date	Reading No.
Syllabus Quiz, submitted online via eLearning by Sunday, Jan 28th, at 11:59 pm.				
Module 1				
Jan 15	Unit 1: Introduction to Optimization and Linear Programming	HW 1	Jan 28	1
Jan 22	Unit 2: Modeling and Solving LP Problems in a Spreadsheet (1)	HW 2	Feb 4	2
Jan 29	Unit 3: Modeling and Solving LP Problems in a Spreadsheet (2)			
Feb 5	Unit 4: Sensitivity Analysis	HW 3	Feb 18	3
Feb 12	Unit 5: Ad-hoc Sensitivity Analysis			4
Feb 19	**Exam 1 -- To be taken between Feb 21 and Feb 23 in the Testing Center (9am - 9pm).**			
Module 2				
Feb 26	Unit 6: Network Modeling	HW 4	Mar 10	5 and 6
Mar 4	Unit 7: Integer Linear Programming	HW 5	Mar 24	7 and 8
Mar 11	No Class -- Spring Break	--	--	--
Mar 18	Unit 8: Goal Programming	HW 6	Mar 31	9
Mar 25	Unit 9: Multiple Objective Functions			10
Apr 1	**Exam 2 -- To be taken between Apr 3 and Apr 5 in the Testing Center (9am - 9pm).**			

Module 3				
Apr 8	Unit 10: Time Series Forecasting (Stationary Data) Unit 11: Times Series Forecasting (Non-stationary Data)	HW 7	Apr 21	11 and 12
Apr 15	Unit 12: Queuing Theory	HW 8	Apr 28	13 and 14
Apr 22	Unit 13: Decision Analysis	HW 9	May 5 (optional for extra credit)	15 and 16
Apr 29	**Exam 3 -- To be taken between May 1 and May 3 in the Testing Center (9am - 9pm).**			
	Peer evaluation, submitted online via eLearning by Sunday, May 5th at 11:59 pm.			

- Note: The assignments are due at midnight on the specified date. The due dates are designed to make sure that you will be able to master each of the course objectives by the end of the semester. I encourage you to plan to complete all assignments by the due date. If you miss the deadline, you could submit by no later than 12 hours after the due date for partial credits. Assignment solutions will be posted the day after the deadline.

Grading Policy

Syllabus Quiz	1%
Exam 1	23%
Exam 2	23%
Exam 3	23%
Assignments	30%

Grading Scale

≥ 91	A	83-86	B	70-75	C
89-91	A-	79-83	B-	< 70	F
86-89	B+	75-79	C+		

Course Policies

Homework Assignments

- Eight equal-weight homework assignments will be given. The 9th assignment is optional for extra credits.
- You should work in groups of **five** on homework assignments.
- You should sign up for a group on the course home page on eLearning.
- Each team must have a team leader responsible for submitting (1) the typed homework solutions (in a PDF format) and (2) the Excel works (all in a single file, one sheet per question/sub-question) on e-learning.
- Your final homework grade is subject to peer evaluations at the end of the semester.
  - For example, if your team's average score on all assignments is 95, and you receive an average evaluation of 96% from your teammates and yourself. Then, your overall score for the homework assignments will be $95 \times 96\% = 91.2\%$.
  - Please refer to the last page for a sample completed peer evaluation. The same form in Excel will be posted on eLearning, where you download, fill out, and submit it.

- If you miss the submission deadline, the evaluation that you would give yourself is considered 0 (the last column).

Exams

- Three noncumulative exams will be given.
- The exams will be proctored at the UTD Testing Center on the scheduled date and time as in the Academic Calendar table above. You must complete the exam during the scheduled time window. Please review the Testing Center Student Guidelines.
- Please reserve a time slot no later than **48 hours** before the exam appointment time on the Exam Registration page.
- If you're remote, you should arrange to take the exam during the same time window at an off-campus testing center. Please see the Distance Learning Exam Proctoring Information page.
- If you plan to take the test off-campus, you must submit an application **at least 10 business days** prior to the exam date. Please do it ASAP.
  - Note: There are off-campus testing centers in all major US cities and all over the world. So, please do not ask for other options.
- You can start booking a seat for both on-campus and off-campus testing centers right after the semester starts. Please do so ASAP.
- No makeup exam (in any form) is offered if you miss the booking deadlines (for any reason).
- The types of questions to be asked in the test include but are not limited to multiple-choice, fill-in-blanks, short-answer, model formulation, analysis of computer output, and computational.
- You can use class notes and other materials posted on eLearning during the exam (hard copy of notes is not allowed).
- You are allowed to use Excel during the exams.
- No online search and communication in any form during the exams allowed.
- Traumatic events are unwelcome, and I understand how difficult these times are. Thus, I will give you a makeup exam if you contact me within 24 hours of the event.

Final Note: *Claims against grading can only be made for* ***one week*** *after the exam or assignment return. Periods when the university is not holding classes will not count towards this week.*

Class Participation

Regular class participation is expected. Students who fail to participate in class regularly are inviting scholastic difficulty. A portion of the grade for this course is directly tied to your participation in this class. It also includes engaging in group or other activities during class that solicit your feedback on homework assignments, readings, or materials covered in the lectures (and/or labs). Class participation is documented by faculty. Successful participation is defined as consistently adhering to University requirements, as presented in this syllabus. Failure to comply with these University requirements is a violation of the Student Code of Conduct.

Class Recordings

Students are expected to follow appropriate University policies and maintain the security of passwords used to access recorded lectures. Unless the AccessAbility Resource Center has approved the student to record the instruction, students are expressly prohibited from recording any part of this course. Recordings may not be published, reproduced, or shared with those not in the class, or uploaded to other online environments except to implement an approved AccessAbility Resource Center accommodation. Failure to comply with these University requirements is a violation of the Student Code of Conduct.

The instructor may record meetings of this course. These recordings will be made available to all students registered for this class if the intent is to supplement the classroom experience. If the instructor or a UTD school/department/office plans any other uses for the recordings, consent of the students identifiable in the recordings is required prior to such use unless an exception is allowed by law.

Nondiscrimination

UTD's Nondiscrimination Policy states, "The University of Texas at Dallas is committed to providing an educational, living and working environment that is welcoming, respectful and inclusive of all members of the university community. An environment that is free of discrimination and harassment allows members of the university community to excel in their academic and professional careers. To that end, to the extent provided by applicable federal and state law, the University prohibits unlawful discrimination against a person because of their race, color, religion, sex (including pregnancy), national origin, age, disability, genetic information, or veteran status. The University's commitment to equal opportunity extends its nondiscrimination protections to include sexual orientation, gender expression, and gender identity.

"Retaliation against a person who files a claim of discrimination, participates in a discrimination investigation or proceeding, or otherwise opposes an unlawful employment practice is prohibited.

"A person who believes that he or she has been subjected to discrimination or harassment in violation of this policy and seeks to take action may use either the informal resolution process or the formal complaint process, or both. The informal resolution and formal complaint process described in this policy are not mutually exclusive, and neither is required as a pre-condition for choosing the other; however, they cannot both be used at the same time."

Please see the full Nondiscrimination Policy Statement.

AccessAbility Services

It is the policy and practice of The University of Texas at Dallas to make reasonable disability-related accommodations and/or services for students with documented disabilities. However, written notification from the AccessAbility Resource Center (ARC) is required. If you are eligible to receive disability-related accommodations and/or services and to ensure accommodations will be

in place when the academic semester begins, students are encouraged to submit documentation four to six weeks in advance. Students who have questions about receiving accommodations, or those who have, or think they may have, a disability (mobility, sensory, health, psychological, learning, etc.) are invited to contact the AccessAbility Resource Center for a confidential discussion.

The AccessAbility Resource Center provides:

a) Academic accommodations for eligible students with a documented permanent physical, mental, or sensory disability
b) Facilitation of non-academic and environmental accommodations and services
c) Resources and referral information and advocacy support as necessary and appropriate.

ARC is located in the Student Services Building, Room 2.224. They can be reached by phone at 972-883-2098, or by email at studentaccess@utdallas.edu.

Academic Integrity

Students are expected to adhere to UTD's Student Code of Conduct:

Because the value of an academic degree depends on the absolute integrity and character of the student the university expects all students to maintain a high level of responsibility with respect to their behavior. As a member of the university community, it is imperative that a student maintain a high standard of individual responsibility and civility.

The dean may initiate disciplinary proceedings under Subchapter D against a student accused of a violation of the Code of Conduct upon complaint by a faculty member, a student or other source.

Academic dishonesty could result in disciplinary action from the university. Penalties could include receiving a grade of "F" for this course, expulsion, or even the revocation of a degree. With respect to academic dishonesty, see Section 49.10 from the Student Code of Conduct, which includes:

a) **Plagiarism:** The adoption or reproduction of ideas, words, statements, images or works of another person as one's own without proper acknowledgement.
b) **Cheating:** Using or attempting to use unauthorized materials, information, or study aids in any academic exercise. Academic exercise includes all forms of work submitted for credit or hours.
c) **Fabrication:** Falsification or creation of any information, data or citation in an academic exercise.
d) **Collaboration and/or Collusion:** Seeking or providing aid to another student in completion of any assignment submitted for academic credit without permission from the faculty member.

Section C. Student Standards of Conduct

Student Code of Conduct

Cheating: Includes but is not limited to the use, attempted use, or providing of unauthorized materials, information, or study aids in any academic exercise; the use of sources beyond those authorized by the instructor in completing any academic exercise. Any type of discussion about questions and answers on assignments/tests, including those held in social media platforms and other electronic chat groups, may be considered cheating. Failure to submit a test within the timeframe allocated by the professor, whether in the classroom or in the University testing center, may be considered cheating. Academic exercise includes all forms of work submitted for credit or hours.

Comet Creed

This creed was voted on by the UT Dallas student body in 2014. It is a standard that Comets choose to live by and encourage others to do the same:

"As a Comet, I pledge honesty, integrity, and service in all that I do."

Academic Support Resources

The information contained in the following link lists the University's academic support resources for all students.
Please go to Academic Support Resources webpage for these policies.

UT Dallas Syllabus Policies and Procedures

The information contained in the following link constitutes the University's policies and procedures segment of the course syllabus.
Please go to UT Dallas Syllabus Policies webpage for these policies.

The descriptions and timelines contained in this syllabus are subject to change at the discretion of the Professor.

Appendix: Peer Evaluation Form for Group Homework

OPRE/BUAN 6398 -- Prescriptive Analytics

Instructions: The information submitted is final and cannot be changed. So please rate each of your fellow team members with respect to the criteria listed in the table below. Be honest, reasonable, and fair.

Group number: …

	Amy Becker	Chris Drake	Eileen Flay	Gene Hanks	Yourself
Meeting attendance (15%)	13%	15%	15%	14%	15%
Punctuality of work (15%)	13%	15%	14%	15%	13%
Fair share of work (30%)	28%	30%	26%	27%	29%
Quality of work (40%)	34%	40%	40%	35%	36%
Total (100%)	88%	100%	95%	91%	93%

Name: _____ Signature: _____

Date: _____

Comments: