Course Syllabus: Model-Based Problem Solving
College of Business Administration
BUAD 5623 Section X20
Spring 2026, online

Contact Information

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Welcome

Welcome to BUAD 5623. It is a graduate course. MBA students are no longer undergraduate students. MBA students are treated as managers who are critical thinkers and problem solvers.

Instructor self-introduction

Dr. Garcia-Fuentes is a native of Nicaragua, Central America. He received his Ph.D. in agricultural economics from Louisiana State University in 2009, his M.S. in agricultural economics from North Carolina Agricultural and Technical State University in 1997, and his B.S. in agronomy from the Universidad Nacional Agraria, Nicaragua in 1992. He taught economic courses from 2010-2012 at Southeastern State University in Hammond, LA. He taught a graduate course in international agricultural trade in the spring 2013 at LSU. He has been teaching economic courses at Midwestern State University since the fall of 2014. He represents the college of business on the EURECA committee and is the sponsor of the Financial Management Association. He has mentored several EURECA research projects and has been organizing the DCOBA forecast competition. He has been conducting research on issues of economic growth and development, exchange rates, price analysis, remittances, and foreign direct investment. He is pleased to be your instructor, and he thanks you for taking this class.

Course Description

This course is an introduction to linear programming and mathematical programming. It covers the following topics: linear programming and the simplex method, the theory of the simplex method, duality theory, linear programming under uncertainty, other algorithms of linear programming, the transportation and assignment problems, network optimization models, dynamic programming, integer programming, nonlinear programming, and decision analysis. In addition, this course requires students to use SAS to solve problems. It would be ideal to have a class that teaches SAS programming, but this is not possible

due to the MBA program structure. This class is not required to teach SAS programing; however, the instructor will be pleased to help students with learning SAS.

Textbook & Instructional Materials

Hillier, F. S., and G. J. Lieberman. 2021. *Introduction to Operations Research.* 11th ed. New York: McGraw-Hill Education. (Required)

Emrouznejad, A., and W. Ho. 2011. Applied Operational Research with SAS. Boca Raton, Florida: Taylor and Francis Group, LLC. (Required)

Supplemental Texts:
Paper: Primer on Using PROC LP. It can be downloaded at PrimerOnUsingProcLP.

SAS Institute Inc. 2018. *SAS/OR 15.1 User's Guide: Mathematical Programming*. Cary, NC: SAS Institute Inc. It can be downloaded at 15.1User'sguide.

SAS Institute Inc. 2018. *SAS/OR 15.1 User's Guide: Mathematical Programming Examples*. Cary, NC: SAS Institute Inc. It can be downloaded at 15.1User'sguide.

SAS Institute Inc. 2015. *Step-by-Step Programming with Base SAS® 9.4, Second Edition*. Cary, NC: SAS Institute Inc. It can be downloaded at Stepbystepprogramming.

SAS Institute Inc. 2015. SAS/OR® 14.1 User's Guide: Mathematical Programming Legacy Procedures. Cary, NC: SAS Institute Inc. It can be downloaded at 14.1User'sguide.

SAS Institute Inc. 2018. SAS/OR® 15.3 User's Guide: Project Management. Cary, NC: SAS Institute Inc. It can be downloaded at 15.3User'sguide.

The supplemental texts are great references for learning SAS coding. They help students understand the SAS coding we will use on this course.

Follett Access Communication for Students

To: Mustangs enrolled in BUAD 5623 x20

From: Dr. Pablo Garcia Fuentes

Re: MSU Texas Access & Affordability Program - aka Follett Access

Mustangs,

- You are receiving this communication because you are enrolled in the above course, which is part of the Follett Access program. Your professor opted to have your content delivered in this manner to save you time and money. The cost of this content that has been added to your student account is $75.25 + tax, for both titles.
- Your digital copies of the texts are located in "My Materials", on the left-hand side of D2L's home page (your account), in light blue font. To access these titles, simply click on "My Materials" and your title will appear with a "maroon" button to click and to begin reading.

- You have the choice to "opt out" of this special pricing and find your material on your own. If you prefer to "opt out", please see instructions below. The last day to "opt out" of this content is 01/27/2026.
    - How Do I Opt Out?
    - Access Opt-Out Customer Portal Process – Student Experience
    - The Follett Access Program delivers all required digital course materials to students for any of the courses participating in the program on or before the first day of class, with the cost of those materials being added as a course charge on your student account with the university or college. You can opt out of this program and acquire the required course materials on your own if you choose to.
    - Emailed Opt-Out Portal Link Process

      You will receive an email from noreply@follett.com. This email will provide you with directions and a link to the Opt-Out Portal. This email will be sent to your my.msutexas.edu email address.

      Please check your junk or Spam filters for this email.

If you "opt out", you lose your course material. If you "opt out" by mistake, please contact the bookstore at the email address below and you will be "re-instated" with your course materials.

For questions concerning the program or if you need assistance, please contact the Bookstore at jenny.denning@msutexas.edu.

Copyright

The class materials associated with this course are provided to facilitate student learning and are protected by the United States copyright laws. Dissemination or sale of the class material (including the World Wide Web) is not permitted. The class material is only available to students enrolled in the course that requires the use of the corresponding textbook. Students should abide by these restrictions. The publisher of the textbook owns the copyright for the class materials associated with this course.

Software Requirements

This course requires students to use SAS. Students can use SAS OnDemand or SAS in the computer labs in DCOBA. SAS on Demand is free. Please watch the video "SASvideo" posted on D2L to learn how to run a SAS program on SAS Studio. See the instructions on how to create a SAS profile and a SAS library on the last page of the syllabus.

Computer Operating System

The instructor uses Microsoft computer operating system. Students are responsible for submitting assignment documents/files that can be managed with the Microsoft operating system. The instructor will not be able to help students who use Mac computers due to different computer operating systems. I recommend you use a Microsoft operating system computer.

Suggestions for Students

BUAD 5623 is a graduate course, which is a higher-level course and different from undergraduate courses. To be successful in this class, students must spare at least two days a week to read the class materials, run and understand the chapter SAS-program, and do the homework. The instructor will be pleased to help you with any questions you may have. Do not hesitate to contact the instructor if you need help, Dr. Garcia-Fuentes's goal is to help students be successful.

Course Learning Goals

The main goal of this course is to help students learn about linear programming and mathematical programming and their applications to allocation of scarce resources to productive activities.

A. General Learning Goals:

1. Leadership. By engaging students in the analysis of liner programming and mathematical programming, this course aims to contribute to developing students' ability to make more effective business decisions.
2. Critical Thinking. The students will demonstrate their critical thinking abilities by developing and solving linear programming models that are related to business decisions.
3. Communication skills. By engaging students in the solving of linear programming problems, this course aims to contribute to developing students' ability to communicate their analyses in a professional manner.
4. Integrate knowledge across business disciplines. By engaging students in solving linear programming problems, this course aims to contribute to developing students' ability to integrate operations research methods with other business disciplines.
5. Personal Responsibilities. Students will demonstrate their abilities in connecting choices, actions, and consequences that are related to economic reasoning and ethical decision-making when solving linear programming problems.

These general learning goals either represent or are related to those established by the Dillard College of Business Administration. The learning goals represent the skills that graduates will carry with them into their careers. While assessing student performance in obtaining these general learning goals, the College seeks to assess its programs. The assessments will assist us in improving our curriculum and curriculum delivery.

B. Course Specific Learning Goals:

- Learn about linear programming and the simplex method.
- Learn about the theory of the simplex method.
- Learn about duality theory.
- Learn about linear programming under uncertainty.
- Learn about other algorithms of linear programming.
- Learn about transportation and assignment problems.
- Learn about network optimization models.
- Learn about dynamic programming.
- Learn about integer programming.
- Learn about nonlinear programming.
- Learn about decision analysis.

Teaching Method

Given that this is an online course, the course starts on 01/20/2026 and ends on 05/15/2025, as suggested by the 2025-26 academic calendar. Students must do the weekly work as shown in the course outline below. Students must submit assignments on D2L. Students are responsible for reading each assigned chapter and any additional class material. Class materials will be posted on D2L. Students can ask questions on any point that is not understood. The instructor has academic freedom to bring in class material and technology in his own way. In this class, students will use the internet to access the class materials posted on D2L. Videos are posted on D2L. The week starts on Monday and ends on Sunday.

Course Policies

A. Attendance Policy

Attendance will be checked each week based on assignment submissions and on student access to the course on D2L. Students must submit all assignments (attend all scheduled classes) for this course given the university attendance policy. Missing 2 assignments during the semester is considered excessive by the instructor; therefore, students who reach this level of missed classes will be dropped by the instructor with a grade of "F", given the university attendance policy. Please see the Student Handbook which may be found at Handbook.

B. Other Policies

Graduate Course:
BUAD 5623 is a graduate course that demands a lot of work and students are treated as graduate students and managers. This is different from being an undergraduate student. Therefore, students must comply with the course policies.

Academic Integrity:
Regarding academic honesty, students are referred to the "Student Honor Creed" and "Academic Dishonesty Policies and Procedures" in the Student Handbook, which may be found at Handbook.

Assignment submissions that do not represent students' own work will receive zero credits. Be careful when using ChatGPT/AI because it can cause zero credits on a submission.

Exam Policies:
Exam policies are related to academic integrity and can also be stated on the first page of the test.

Syllabus Change Policy:
This syllabus is a guide for the course and is subject to change.

Correspondence:
All correspondence regarding class issues must be conducted in person or by email using your Midwestern State University (MSU) email only. I will not return answers to questions to other email accounts. Grades will be posted on D2L and on MSU Banner. I will not discuss grades or class standing over the phone or by emails. Since email is often the most convenient means of communication, it is recommended that students use and regularly monitor their MSU email account. Grades will not be transmitted electronically (e.g., emails).

Please link your D2L email with your MSU email, so the messages sent through D2L will be delivered to your MSU email. To do this,

- Log in to D2L.
- Click on your name on the right upper corner of the screen.
- Click on "account settings".
- Click on "email".
- Check "Forwarding incoming messages to an alternate email account" and enter your email in the box.
- Click on "save and close".

Netiquette: Communication Courtesy Code:
Students are expected to follow rules of common courtesy in all email messages, class discussions, lecture hall posts, chats, etc. If I consider any of them to be inappropriate or offensive, I will forward the message to the Chair of the department and the online administrators and appropriate actions will be taken.

Deadlines:
We cannot totally rely on cyberspace—emails get lost, and servers disconnect temporarily. Do not wait for the last hour to do your homework. Reply and check for replies on every email sent and received. The student is responsible for checking deadlines on D2L and submitting the work to the instructor on time. *I will not reply to emails regarding homework issues during the last 7 hours prior to the deadline*.

Proctoring of exams:
Because this class can use online proctoring such as ProtorU or similar software, students will be required to pay the proctoring fees when taking the exams. In addition, because this is an online course, students are required to have a webcam.

Webcams:
This course requires students to have access to a web cam.

Student Handbook

Refer to: Student Handbook

Academic Misconduct Policy & Procedures

Academic Dishonesty: Cheating, collusion, and plagiarism (the act of using source material of other persons, either published or unpublished, without following the accepted techniques of crediting, or the submission for credit of work not the individual's to whom credit is given). Additional guidelines on procedures in these matters may be found in the Office of Student Conduct.
Office of Student Conduct

Exams, Assignments and Grading

Exams: During the semester, there will be a midterm exam and a comprehensive final exam (200 points each). The exams can be take-home exams. The final exam can also be a course project. The two-exam scores will be for 400 points or 66.7% of your course grade. The exam's instructions and policies will be stated on the first page of the exam. The instructor has academic freedom to include any type of question in the exams.

If a student misses an exam without prior approval from the instructor, please do not expect a make-up exam. With the instructor's prior approval, you may take a make-up exam during the week of finals. If you anticipate a valid reason for missing an exam, please inform the instructor in advance by email.

An unexcused absence from an exam will result in a score of zero on that exam and may be compensated for by counting your final exam in its place with the instructor's approval, and a 20% penalty on that exam's score will be assessed. The exam dates are noted in the Tentative Course Schedule in this syllabus. Any changes to those dates will be announced as soon as possible and posted prominently on D2L.

Assignments: There will be 12 assignments corresponding to the chapters that will be covered during the semester. The assignments will be submitted through D2L. The instructor has academic freedom to include any type of question in the assignments. There will be no make-up assignments under any circumstances. The student is responsible for having an appropriate internet connection. If you do not have an appropriate internet connection and fail to submit an assignment, do not expect a make-up assignment. You are expected to complete each assignment by the deadline. You will have an adequate amount of time for each assignment, and you must not fall behind. If you miss an assignment, you will earn zero credits. Your score for all assignments will be 190 points. Assignment deadlines are posted on D2L.

In addition, students are required to attend a live or watch an on-demand SAS Institute webinar on any business analytics topic at SASwebinar. Students must submit screenshots of the beginning and ending times of the webinar on the D2L.

Table 1. Course Grading

Course work	N/A	Grade Scale	Percentages	N/A
SAS webinar	10 pts	540-600 pts	90% & above	A
Assignments (12)	190 pts	480-539 pts	80%-89%	B
Exam 1	200 pts	420-479 pts	70%-79%	C
Exam 2/Course project	200 pts	360-419 pts	60%-69%	D
Total	600 pts	below 360 pts	below 60%	F
N/A	N/A	N/A	N/A	N/A

Notes: Percentages are only given for relative levels. Your final score is a total of all your exams, quiz, and homework scores with any bonus points added separately. Therefore 89% is not 1 point short of an A. 89% is 534 points which is 6 points short of an A.

Moffett Library

Moffett Library provides resources and services to support student's studies and assignments, including books, peer-reviewed journals, databases, and multimedia materials accessible both on campus and remotely. The library offers media equipment checkout, reservable study rooms, and research assistance from librarians to help students effectively find, evaluate, and use information. Get started on this Moffett Library webpage to explore these resources and learn how to best utilize the library.

Desire-to-Learn (D2L)

Extensive use of the MSU D2L program is a part of this course. Each student is expected to be familiar with this program as it provides a primary source of communication regarding assignments, examination materials, and general course information. You can log into D2L through the MSU Homepage. If you experience difficulties, please contact the technicians listed for the program or contact your instructor.

Online Computer Requirements

Taking an online class requires you to have access to a computer (with Internet access) to complete and upload your assignments. It is your responsibility to have (or have access to) a working computer in this class. **Assignments and tests are due by the due date, and personal computer technical difficulties will not be considered reason for the instructor to allow students extra time to submit assignments, tests, or discussion postings.* Computers are available on campus in various areas of the buildings as well as the Academic Success Center. *Your computer being down is not an excuse for missing a deadline!! There are many places to access your class! Our online classes can be accessed from any computer in the world which is connected to the internet. Contact your instructor immediately upon having computer trouble If you have technical difficulties in the course, there is also a student helpdesk available to you. The college cannot work directly on student computers due to both liability and resource limitations however they are able to help you get connected to our online services. For help, log into D2L**.**

Change of Schedule

A student dropping a course (but not withdrawing from the University) within the first 12 class days of a regular semester or the first four class days of a summer semester is eligible for a100% refund of applicable tuition and fees. Dates are published in the Schedule of Classes each semester.

Refund and Repayment Policy

A student who withdraws or is administratively withdrawn from Midwestern State University (MSU) may be eligible to receive a refund for all or a portion of the tuition, fees and room/board charges that were paid to MSU for the semester. HOWEVER, if the student received financial aid (federal/state/institutional grants, loans and/or scholarships), all or a portion of the refund may be returned to the financial aid programs. As described below, two formulas (federal and state) exists in determining the amount of the refund. (Examples of each refund calculation will be made available upon request).

Services for Students with Disabilities

In accordance with Section 504 of the Federal Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990, Midwestern State University endeavors to make reasonable accommodations to ensure equal opportunity for qualified persons with disabilities to participate in all educational, social, and recreational programs and activities. After notification of acceptance, students requiring accommodations should make application for such assistance through Disability Support Services, located in the Student Wellness Center, (940) 397-4140. Current documentation of a disability will be required in order to provide appropriate services, and each request will be individually reviewed. For more details, please go to Disability Support Services.

College Policies

Campus Carry Rules/Policies

Refer to: Campus Carry Rules and Policies

Smoking/Tobacco Policy

College policy strictly prohibits the use of tobacco products in any building owned or operated by WATC. Adult students may smoke only in the outside designated-smoking areas at each location.

Alcohol and Drug Policy

To comply with the Drug Free Schools and Communities Act of 1989 and subsequent amendments, students and employees of Midwestern State are informed that strictly enforced policies are in place which prohibits the unlawful possession, use or distribution of any illicit drugs, including alcohol, on university property or as part of any university-sponsored activity. Students and employees are also subject to all applicable legal sanctions under local, state and federal law for any offenses involving illicit drugs on University property or at University-sponsored activities.

Campus Carry

Effective August 1, 2016, the Campus Carry law (Senate Bill 11) allows those licensed individuals to carry a concealed handgun in buildings on public university campuses, except in locations the University establishes has prohibited. The new Constitutional Carry law does not change this process. Concealed carry still requires a License to Carry permit, and openly carrying handguns is not allowed on college campuses. For more information, visit Campus Carry.

Active Shooter

The safety and security of our campus is the responsibility of everyone in our community. Each of us has an obligation to be prepared to appropriately respond to threats to our campus, such as an active aggressor. Please review the information provided by MSU Police Department regarding the options and strategies we can all use to stay safe during difficult situations. For more information, visit MSUReady – Active Shooter. Students are encouraged to watch the video entitled "*Run. Hide. Fight.*" which may be electronically accessed via the University police department's webpage: *"Run. Hide. Fight."*

Grade Appeal Process

Update as needed. Students who wish to appeal a grade should consult the Midwestern State University MSU Catalog

Course Schedule

Table 2. Outline of the course (Subject to changes and additional readings)

Week and dates	Chapter	Topic
Week 1 (Jan 20)	NA	Syllabus, SAS on demand, and SAS programming introduction
Week 2 (Jan 26)	3	Introduction to linear programming
Week 3 (Feb 2)	4	The simplex method
Week 4 (Feb 9)	5	The theory of the simplex method
Week 5 (Feb 16)	6	Duality theory
Week 6 (Feb 23)	7	Linear programming under uncertainty
Week 7 (Mar 2)	8	Other algorithms for linear programming
Week 8 (Mar 9)	Break	Spring break
Week 9 (Mar 16)	Exam 1	Exam 1: Chapters 3-8; due 03/22/2026.
Week 10 (Mar 23)	9	Transportation and assignment problems
Week 11 (Mar 30)	10	Network optimization models
Week 12 (Apr 6)	11	Dynamic programming
Week 13 (Apr 13)	12	Integer programming
Week 14 (Apr 20)	13	Nonlinear programming; Thanksgiving Holiday (11/26-11/30)
Apr 29, 2026	W day	Last day for “W” at 4:00pm. Drops after this deadline receive an “F”.
Apr 30, 2026	SAS webinar	SAS webinar due on 4/30/26 at 11:59pm
Week 15 (Apr 27)	16	Decision analysis
Week 16 (May 3)	Final exam	Chapters: 9-16; due 05/10/2026, 11:59pm.

Notes: Subject to changes and additional readings. The instructor can change the exam dates and locations if it is necessary. Changes in the course syllabus, procedure, assignments, and schedule may be made at the discretion of the instructor.

SAS On Demand Instructions

Create a SAS profile at SASonDemand.

1. Log in to SAS On Demand
2. Click on SAS Studio.
3. Click on Server Files and Folders
4. Expand odaws03-usw2
5. Expand Files (Home)
6. Right click on sasuser.v94, then new, then folder, name your folder BUAD5623, then save.
7. To upload files: right click on the BUAD5623 folder, then upload files, then choose files, then choose your file, then open, then upload.
8. Press F4. A new SAS program opens.
9. Paste chapter 3 SAS program posted on D2L to your Code window and run the SAS program.
10. The statement libname BUAD5623 '/home/u45422697/sasuser.v94/BUAD5623'; creates a new SAS library.

Your SAS user number "u#" is different from mine, it is shown at the bottom right corner of the SAS screen. So, you need to change it to yours.

11. Click on Libraries and you will see your library.
12. Another way of creating a new library:
    12.1. Click on libraries
    12.2. Click on the new library icon that is below "Libraries"
    12.3. Name your library BUAD5623
    12.4. Click on browse
    12.5. Expand Files (Home)
    12.6. Expand sasuser.v94
    12.7. Click on BUAD5623
    12.8. Okay, then okay
    12.9. Expand my libraries, your BUAD5623library is created.