



Dillard College of Business Administration
Syllabus: Model-Based Problem Solving
BUAD 5623 Section X20
Spring 2023

CONTACT INFORMATION:

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SYLLABUS CHANGE POLICY:

This syllabus is a guide for the course and is subject to change. All changes will be announced in class and students will be responsible for incorporating the changes into the syllabus. If, at some point, the university switches to an online format, then there will be significant changes in the manner in which exams are administered. Any exam taken online will be monitored through RESPONDUS, which will require students to have access to a webcam video.

COURSE MATERIALS:

Software: Access to **SAS OnDEMAND for Academics (SODA)** and to EXCEL

This course requires students to use SAS. Students can use SAS OnDemand or mainframe SAS in the computer labs in DCOBA. If students have access to MSU-DCOBA labs, then downloading the SAS software is not necessary. SAS software is installed in most DCOBA labs.

The great news about SAS OnDemand for Academics (hence forth called **SODA**) is that you don't have to download anything! Plus, it is free. You access SAS on a cloud platform. Also, reading data from your real computer is quite simple. **ODA uses SAS Studio as the interface.** SAS Studio provides an environment that includes a point-and-click facility for performing many common tasks, such as producing reports, graphs, data summaries, and statistical tests. SAS Studio enables you to write and run your own programs.

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 in the last page of the syllabus.

Registering for ODA

To gain access to ODA, you need to register with SAS Institute. Part of the registration process is to create a SAS profile. If you already have a SAS profile, skip that portion of the instructions. To start, point your browser to: <https://welcome.oda.sas.com>

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

Supplemental Text:

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. 2018. *SAS/OR 15.1 User's Guide: Mathematical Programming*. Cary, NC: SAS Institute Inc. It can be downloaded at [15.1User'sguide](#). See especially chapter 7 – The Linear Programming Solver.

The supplemental texts are a great reference for learning about SAS coding. They help students understand the SAS coding we will use in this course.

OTHER ANCILLARY MATERIAL:

In addition to the two texts, students need to have access to the following:

- WebCam video
- Thumb drive:

Each student should have a thumb drive (USB) on which to keep various data sets and assignments that will be a part of each class. Projects and assignments may include the requirement that electronic versions of your work be submitted.

Proctoring of exams:

Because this class can use online proctoring such as ProctorU or a 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.

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 publishers of the textbooks own the copyright for the class materials associated with this course.

Course Description

This course gives students 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.

Course Pre-requisites

Consent of the graduate coordinator.

LEARNING GOALS

A. General Learning Goals (GLC):

B.

1. Leadership. By engaging students in the analysis of linear 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 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 the solving of 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.

C. Course Specific Learning Goals:

- Learn about linear programming method.
- Learn about the simplex method of linear programming.
- 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 the transportation and the assignment problems.
- Learn about network optimization models.
- Learn about dynamic programming.
- Learn about decision analysis.

COURSE POLICIES:

A. Attendance Policy:

Students are expected to access all videos and taped lectures for this course. Many important announcements are provided for this course. You are expected to log into D2L a minimum of once daily to check for updates and announcements via postings and email. See the MSU university catalog for the University Class Attendance Policy.

B. Other Related Policies

Electronic Communication Devices

Use of personal electronic communication devices, other than through D2L, is discouraged during exams and students are required to disable any other electronic instruments during exams. Individuals holding devices that disrupt class may be asked to leave the class for the remainder of the session.

Expectation

Answers you provide in exams and case studies are expected to reflect logical reasoning, to be well articulated, including correct grammar and punctuation and to be clearly legible, in a manner and format that would be acceptable for a business report in a commercial setting. Students will be expected to develop a base knowledge in using SAS. Each student is expected to become sufficiently familiar with the Desire-2-Learn (D2L), as it will be a primary communication instrument for this class.

GRADING and EVALUATIONS:

A student's grade will be based on a weighted average of the following:

MAJOR EXAMS	40%
Exam I	20%
Exam II	20%
FINAL EXAM	30%
ASSIGNMENTS	30%

GRADE EVALUATION:

As a **percent** of total points (1000pts):

A (Above 90%), B (80-89%), C (70-79%), D (60-69%), F (below 60%)

Total Points: [Exam Avg. X 4.0] + [Final X 2.0] + [Assignment Avg. X 4.0]

Grades will not be transmitted electronically (e.g., emails). Grades will be posted on D2L and on MSU Banner. I will not discuss grades or class standing over the phone or by emails. You are welcome to come by my office to discuss about your grade.

Major exams:

During the semester, there will be two exams (200 points each). The exams can be take-home exams. The two-exam scores will be for 400 points or 40% of your course grade. The exam's instructions and policies will be stated in the first page of the exam. The instructor has academic freedom to include any type of questions in the exams. All Exams will be an monitored through RESPONDUS.

Missing 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 in those dates will be announced as soon as possible and posted prominently on D2L.

Final Exam:

A comprehensive final exam will be given with greater emphasis on later material. Your score for the final will be for 300 possible points or 30.0% of your course grade. This exam will primarily be an objective-type exam [TF or MC].

Assignments:

There will be ten SAS 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 questions 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 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. Deadline dates for each set of assignments are due the day before scheduled exams. 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 for 300 points or 30.0% of your course grade.

Lower Grades:

The instructor reserves the right to lower any student's final grade by a letter grade (i.e., A to B, D to F) for:

- (A) A negative, rude, unreasonably argumentative or inattentive attitude in online class discussions, or,
- (B) Repeatedly disrupting the class for any reason (tardiness), or,
- (C) Not following specifically designated procedures on any assignment or exam, or,
- (D) Not showing respect for fellow classmates' questions, opinions, or class presentations.

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 for 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.**

Campus Carry:

Senate Bill 11 passed by the 84th Texas Legislature allows licensed handgun holders to carry concealed handguns on campus, effective August 1, 2016. Areas excluded from concealed carry are appropriately marked, in accordance with state law. For more information regarding campus carry, please refer to the University's webpage at [Campus Carry Polices Link](#).

Academic Integrity:

With regard to academic honesty, students are referred to the "Student Honor Creed" of Midwestern State University Undergraduate Catalog, which may be found using the following MSU link: [Link to Student Honor Creed](#).

Americans with Disabilities Act:

This class follows the guidelines suggested by the Center for Counseling and Disabilities Services for those students who qualify for disability services. See Midwestern State University Undergraduate Catalog which may be found at: [Link to Suggested Guidelines Center for Counseling and Disabilities Services](#).

D2L:

The Midwestern State University D2L program will be incorporated into this class and will provide the primary default means of communication. Each student is expected to master the use of D2L. Assistance to achieve comfort using this program will be available as needed. Grades will be posted using D2L.

OTHER RELEVANT INFORMATION:**Midwestern State University Student Handbook:**

See the most recent MSU Student Handbook for a statement of the university's policy on academic dishonesty. Any other questions not specifically addressed by this syllabus are governed by the student handbook.

Medical or Other Serious Problems:

Please take time and make the effort to advise me if you have difficulties that require my attention to properly evaluate your classroom participation and activities.

Tape Recordings and Cell Phones:

Tape recording of lectures is permitted. You may not tape record any information or class discussion when a graded test is being reviewed. Cell phones and pagers are prohibited unless the instructor has granted permission to have them in class.

Return of Exams:

Never download or take a photo of any exam or graded answer sheet. Never share exam with anyone. This will result in an automatic zero (0) on the exam.

Plagiarism Statement:

“By enrolling in this course, the student expressly grants MSU a “limited right” in all intellectual property created by the student for the purpose of this course. The “limited right” shall include but shall not be limited to the right to reproduce the student’s work product in order to verify originality and authenticity, and educational purposes.”

Correspondence

All correspondence regarding grades or class issues must be conducted through email using your **Midwestern State University (MSU) email or through D2L**. I will not return answers to questions to other email accounts and will not discuss grades or class standing over the phone. Since email or D2L messages are the most convenient means of communication, it is recommended that students use and regularly monitor their MSU email and D2L account. You must adhere to the following subject line of any message sent to me via text message or email: **BUAD 5603 First, Last Name**.

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 action will be taken.

Deadlines

Do not wait for the last minute to do any assignment. Check D2L for all assignments and the deadlines. Reply and check for replies on every email sent and received. The student is responsible for getting the work to me on time.

Spring Semester 2023 Schedule

https://msutexas.edu/registrar/_assets/files/pdfs/acadcal2223.pdf

MLK Birthday observed.....	January 16
Classes begin.....	January 17
Spring Break begins 5:00 p.m.....	March 11 (March 13-18)
Classes resume.....	March 20
Last Day for “W”, 4:00 p.m. – Drops after this date will receive grades of “F.”	March 27
Holiday Break begins 10:00 p.m.....	April 5
Classes resume.....	April 10
Last day of classes	May 5
Final examinations begin	May 6

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(Subject to some changes and additional readings)

Course Schedule – Schedule is subject to change

Week and dates	Chap	Topic
Week 1 (Jan 15-21)		Introduction to Course
Week 2 (Jan 22, 28)	3	Introduction to linear programming
Week 4 (Jan 29, Feb 4)	4	The simplex method
Week 5 (Feb 5, 11)	5	The theory of the simplex method
SAS Assignments due	3-5	By midnight of Feb.18
Week 6 (Feb 12, 18)	Review	Exam 1: Chaps. 3 to 5; Feb 19, 2023.
Week 7 (Feb 19, 25)	6	Duality theory
Week 8 (Feb 26, Mar 4)	7	Linear programming under uncertainty
Week 9 (Mar 5, 11)	8	Other algorithms for linear programming
Week 10 (Mar 12, 18)	Break	
SAS Assignments due	6-9	By midnight of Mar. 25
Week 11 (Mar 19, 25)	Review	Exam 2: Chapters 6 to 8; March 26, 2023.
Week 12 (Mar 26, Apr 1)	9	Transportation and assignments problems
Week 13 (Apr 2, Apr 8)	10	Network optimization models
Week 14 (Apr 9, 15)	11	Dynamic programming
Week 15 (Apr 16, 22)	12	Integer programming
Week 16 (Apr 23, Apr 29)	16	Decision analysis
Week 17 (Apr 30, May 6)	Review	
SAS Assignments due	9	By midnight of Mon., May 8
	Final	Wed., May 10, 2023

Note: The instructor can change the exam dates and locations if it is necessary.

*All Dates are Tentative

Final Exam schedule can be found in the **Spring Schedule of Classes**. Please check the following link: https://msutexas.edu/registrar/_assets/files/pdfs/spring23finals.pdf

SAS On Demand instructions

1. Create a SAS profile at [SASonDemand](#).
2. Log in to SAS On Demand
3. Click on SAS Studio.
4. Click on Server Files and Folders
5. Expand odaws03-usw2
6. Expand Files (Home)
7. Right click on sasuser.v94, then new folder, name BUAD5623, then save.
8. To upload files: right click on the BUAD5623 folder, then upload files, then choose files, then choose your file, then open, then upload.
9. Press F4. A new SAS program opens.
10. Paste chapter 3 SAS program posted on D2L to your Code window and run the SAS program.

Your SAS user number “u#####” is different from mine, it is shown in 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.