

Syllabus: Quantitative Methods MGMT 4033

Dillard College of Business Administration

Spring Semester

Contact Information

Instructor: Dr. Mike Patterson, Professor of Management
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Office hours: TTh 11:00 a.m.-12:30 p.m. and W 9:00 a.m. – 11:00 a.m.
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Course Materials

1. Levin, Rubin, Stinson and Gardner, Quantitative Methods, Primis Online, McGraw-Hill/Irwin, ISBN 0-390-56166-5. ***Required**
2. Patterson, Management Science Programs for the IBM Personal Computer, 3rd ed., Kendall-Hunt Publishing, ISBN: 0-7872-6792-9. ***Required.**

Course Description

Methods and application of operations research including topics such as linear programming, waiting line theory, PERT, networks, transportation, assignment, dynamic, and goal programming.

Course Prerequisites

Junior or Senior standing or consent of Department Chair and BUAD 3033

Learning Goals

- I. General Learning Goals: These general learning goals are among those established by the Dillard College of Business Administration. General learning goals represent the skills that graduates will carry with them into their careers. While assessing student performance in obtaining these general learning goals, Dillard College is assessing its programs. The assessments assist us as we improve our curriculum and curriculum delivery.
 - A. Understand the role of quantitative modeling in business and economics. Students will practice problem-solving and decision-making skills during in-class discussions. Assessment will occur on both homework assignments and course examinations.
- II. Course-Specific Learning Goals: Upon completion of the course students will have a basic knowledge of and understanding of the following database components, concepts, and applications.

- A. Define and discuss the fundamentals of linear programming model formulation and interpretation.
- B. Explore the role of mathematical modeling in multi-objective programming, transportation, assignment, and dynamic programming
- C. Understand the PERT and CPM approach to managing projects and other network models such as the minimal spanning tree and shortest path algorithm.
- D. Define and discuss the basic concepts involved with waiting line models.

Course Policies

Attendance Policy: Regular attendance is expected. See the university catalog for the University Class Attendance Policy. Each meeting of the class will run as scheduled. So as not to disturb the class, you are not to walk in and out of the classroom during the class hour except for an emergency. As a courtesy to all concerned, please silence all pagers and telephones when entering the classroom.

Students are required to attend every scheduled class session. Each unexcused absence that exceeds six (four in summer school) will result in a two-point deduction at the end of the semester average grade. Unexcused absences are defined as follows:

1. A student fails to attend class and has no approved documentation for the absence.
2. A student arrives after the class roll is taken, which will generally be recorded no earlier than 10 minutes after the scheduled start time for the class.
3. A student leaves the classroom before the class session is dismissed.

Excused absences for university-related activities, medical reasons, and traffic-related incidents must be supported by appropriate documentation.

No electronic devices are allowed in the class. This includes computers, phones, headphones, etc. If such devices are observed during class, students will be asked to leave the classroom which will be recorded as an unexcused absence.

Other Related Policies

If a student misses a regularly scheduled exam, the student must immediately notify the instructor of his/her intention to schedule a make-up exam. There is no other recourse available for a missed exam in the class. The exam dates are tentative and subject to change.

Syllabus Change Policy

This syllabus is a guide for the course and is subject to change.

Student Handbook

Refer to: [Student Handbook](#)

Campus Policies

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 individuals 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](#)

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.

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 a 100% 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 Northwestern State University (NSU) may be eligible to receive a refund for all or a portion of the tuition, fees and room/board charges that were paid to NSU 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) exist 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, Northwestern 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

Smoking/Tobacco Policy

Midwestern State University seeks to provide a safe, healthy, pleasant environment for its faculty, staff, and students. To this end, the use of tobacco products, including smoke and smokeless tobacco, and the advertising, sale, free distribution, and discarding of tobacco products shall be prohibited in all indoor and outdoor facilities and in all university vehicles. The policy extends to faculty, staff, students, vendors, guests, and visitors.

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

Students who wish to appeal a grade should consult the Midwestern State University [MSU Catalog](#)

*Notice: Changes in the course syllabus, procedure, assignments, and schedule may be made at the discretion of the instructor.

Grading and Evaluation:

Homework Problems

Each is a requirement of the class. You are required to complete 13 of the 18 assignments. Each homework assignment must be turned in on time. All homework is due within two weeks of the completion of lectures (one week for the summer semester) related to the homework topics, with the exception of homework assigned at the end of the semester. Due dates for end-of-semester homework will be announced. A one-point deduction from the semester average will be calculated at the end of the semester for each missing or late homework assignment.

Grades will be determined on the basis of the total points earned on five 100-point exams and any missing or late homework assignments. A calculator may be allowed for exams and quizzes. The calculator must be a regular hand-held calculator. No other electronic devices are allowed.

Letter grades will be given according to the following scale:

- A: 450-500 points (>90%)
- B: 400-449 points (80%-89%)
- C: 350-399 points (70%-79%)
- D: 300-349 points (60%-69%)
- F: Below 300 points (<60%)

The results of your exams and homework will be posted periodically on D2L

It is the responsibility of the student to assure that homework is being received and proper credit is given. Semester grades will be reported through normal University channels with no exceptions.

Course Content and Outline

Week	Topic Outline	Class (Hours)	Textbook	Homework
1-2	1 Linear Programming	7	Pages 1-75	-
1-2	Graphic Method	-	-	-
1-2	Technical Issues	-	-	1-2
1-2	Computer Applications	-	-	-
1-2	Simplex Method	-	-	-
3	Exam one (tentative date 02/03/2026)	-	-	-
3-5	Maximization vs. Minimization	8	Pages 1-75	-

Week	Topic Outline	Class (Hours)	Textbook	Homework
3-5	Problem Examples	-	-	-
3-5	Setting up for the Computer	-	-	3-4
3-5	Shadow Prices	-	-	-
3-5	Homework	-	-	-
6	Exam Two (tentative date 02/24/2026)	-	-	-
6-9	Goal Programming	6	Pages 189-213	-
6-9	Comparison to Linear Programming	-	-	5-6
6-9	Setting up computer solutions	-	-	-
6-9	Interpretations of output	-	-	-
6-9	Homework	-	-	-
6-9	Assignment Method	4	Pages 129-143	7-8
6-9	Basic Concepts	-	-	-
6-9	Homework	-	-	-
9	Exam Three (tentative date 03/24/2026)	-	-	-
9-12	Transportation Problem	4	Pages 91-129	9-10
9-12	Introduction	-	-	-
9-12	Interpreting Input/Output	-	-	-
9-12	Homework Assignments	-	-	-
9-12	Dynamic Programming	6	Pages 156-170	11-12
9-12	Shortest Route Problem	-	-	-
9-12	Basic Knapsack Problem	-	-	-
9-12	Applications	-	-	-
9-12	Homework	-	-	-
12	Exam Four (tentative date 04/14/2026)	-	-	-
13-15	Waiting Line Models	5	Pages 207-213	13-14
13-15	Descriptive Systems	-	-	-
13-15	Normative Systems	-	-	-
13-15	Simulation of Waiting Lines	-	-	-
13-15	Homework Assignments	-	-	-
13-15	Minimal Spanning Tree Model	2	Pages 156-170	15-16
13-15	Network Models	-	Pages 156-170	-
13-15	PERT/CPM	3	-	-
13-15	Cost Considerations	-	-	-
13-15	Homework Assignments	-	-	17-18
15	Exam Five (tentative date 05/07/2026)	-	-	-

Additional Information:

Operations Homework Notes

Homework assignments for this class are located on the Dillard server drive Y. These files may be accessed in the Dillard computer labs on the first and third floors (146, 306, 324 and 335).

- Computer Icon
- Coursework(Y :)
- Mike Patterson
- homeworkdocuments
- quantitativemethods
- qmhomework.doc

Homework Documents

- You are provided with a set of blank documents for homework.
- These homework assignments are very similar to the types of problems which will be on the exams.
- **If you lose your homework copies, these may be downloaded from D2L or the computer lab server on drive Y:\coursework\MikePatterson\homeworkdocuments\opshomeworkmaster.doc.**
- **Homework assignments should be e-mailed to my graduate assistant at the following e-mail address: patterson.homework@msutexas.edu.**

Homework Assignments

(13 of the 18 are required to avoid grade deductions for the semester)

- 1 Handout - RediKleen Corp. Linear Programming
- 2 Problem 2, page 75
- 3 Problem 6, page 76
- 4 Problem 25, page 83
- 5 Crescent Products Inc.
- 6 Problem 25, page 203
- 7 Problem 6, page 149
- 8 Problem 22, page 151
- 9 Problem 11-11, page 147
- 10 Problem 11-10, page 147
- 11 Golf ball Problem from Class
- 12 Training Program Problem from Class (Shortest Path)
- 13 Homework Queuing #1 Handout
- 14 Homework Queuing #2 Handout
- 15 Problem 27, page 164
- 16 Problem 38, page 168
- 17 Problem 7, page 157
- 18 Problem 9, page 159

Quantitative Methods	Homework Assignments	13 of 18 are required to avoid point deductions for semester
Number	Assignment	Best Payoff
1	Hand-out RediKleen Problem	2.72
2	Problem 2, page 75	5,538.XX
3	Problem 6, page 76-77	770
4	Problem 25, page 83-84	907.7
5	Crescent Products Inc. (Handout)	Ultras 3,500
6	Problem 25, page 203	Earning Goal met Ag. Loan 230
7	Problem 16, page 149	4,300
8	Problem 22, page 151	40
9	Problem 11, page 147	119,987.5
10	Problem 10, page 147	540
11	Golf ball Problem from Class	2,900
12	Training Program Problem from Class (Shortest Path)	30
13	Homework Queuing #1 Handout	Optimum # clerks = 2 Total Cost 2 clerks =25.44
14	Homework Queuing #2 Handout	Average Number on System Daily=11
15	Problem 27, page 164	1,125
16	Problem 38, page 168	22
17	Problem 7, page 157	37
18	Problem 9, page 158	42

Software:

mgmtsci.exe recommended software for newer computers with 32 and 64-bit operating system

Management Science Programs for the IBM Personal Computer

Found in Dillard Computer Labs –Y drive, Mike Patterson

mgmtsci.exe

Can be purchased from Midwestern Book Store or on-line from



[Kendall-hunt publishing](#)

How to hide/unhide files

[show hidden files](#)