

Dillard College of Business Administration

Syllabus: Quantitative Methods

MGMT 4033

Summer Semester

Contact Information

Instructor: Dr. Mike Patterson, Professor of Management

Office: Dillard Building 203

Office hours: none

E-mail: mike.patterson@msutexas.edu

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:

- Understand the role of quantitative modeling in business and economics. Students will practice problem solving and decision-making skills during in-class discussion. Assessment will occur on both homework assignments and course examinations.

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, the Dillard College is assessing its programs. The assessments assist us as we improve our curriculum and curriculum delivery.

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.

- Define and discuss the fundamentals of linear programming model formulation and interpretation.
- Explore the role of mathematical modeling in multi-objective programming, transportation, assignment and dynamic programming and goal programming.
- Understand the PERT and CPM approach to managing projects and other network models such as the minimal spanning tree and shortest path algorithm.
- 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 which exceeds six (four in summer school) will result in a two-point deduction in the end of 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 class room 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, student 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.

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 in two weeks of the completion of lectures (one week for 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 the 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 ($\geq 90\%$)
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:			homework	videolectures
Summer Topic Outline:	Class Sessions (Hours)	Textbook		mgmtscivideo syllabusqm
1 Linear Programming	7	Pages 1-75		linearprogramming1
Graphic Method				
Technical Issues			1-2	
Computer Applications				
Simplex Method				
Exam one (tentative date(06/08/2023)				
Linear Programming	8	Pages 1-75		linearprogramming_2
Maximization vs. Minimization				
Problem Examples				lpsolver
Setting up for the Computer			3-4	
Shadow Prices				
Reduced Cost				
Homework				
Exam Two (tentative date 06/15/2023)				
Goal Programming	6	Pages 189-213		goal
Comparison to Linear Programming			5-6	
Setting up computer solutions				
Interpretations of output				
Homework				
Assignment Method	4	Pages 129-143	7-8	assignment

Basic Concepts				assignmenttipsolver
Homework				montyhall
Exam Three (tentative date 06/22/2023)				
Transportation Problem	4	Pages 91-129	9-10	transportation
Introduction				
Interpreting Input/Output				transportationwithsolver
Homework Assignments				
Dynamic Programming	6	Pages 156-170	11-12	dynamic
Shortest Route Problem				
Basic Knapsack Problem				
Applications				bridgeandtorchpowerpointpresentation
Homework				
Exam Four (tentative date 06/29/2023)				
Waiting Line Models	5	Pages 207-213	13-14	queuetheory
Descriptive Systems				
Normative Systems				
Simulation of Waiting Lines				
Homework Assignments				
Minimal Spanning Tree Model	2	Pages 156-170	15-16	minimalspanningtree
Network Models		Pages 156-170		
PERT/CPM	3	NA	17-18	PERT
Cost Considerations				
Homework Assignments				

Exam Five (tentative date 07/07/2023)				
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Academic Integrity:

With regard to academic honesty, students are referred to the "Student Honor Creed" of Midwestern State University Undergraduate Catalog.

Americans with Disabilities Act:

This class follows the guidelines suggested by Disabilities Support Services for those students who qualify for disability services. See Midwestern State University Undergraduate Catalogue, Services for Students with Disabilities.

Syllabus Change Policy:

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

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 Golfball 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

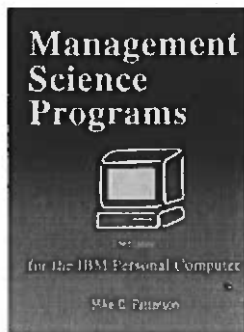
Software:

mgmtsci.exe recommended software for newer computers 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

