

Dillard College of Business Administration

Syllabus: Quantitative Methods
MGMT 4033
TTH 12:30 p.m.
Dillard Building 129
Spring Semester 2019

Contact Information

Instructor: Dr. Mike Patterson, Professor of Management
Office: DB 203
Office hours: MW 8:30 a.m. until 12:00 noon and 9:30 a.m. until 11:00 a.m. and by appointment
Office phone: (940) 397-4710
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. <i>Patterson, Management Science Programs for the IBM Personal Computer, 3rd ed., Kendall-Hunt Publishing, ISBN: 0-7872-6792-9. Required.</i>

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
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
• 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. Unexcused absences which exceed six will result in a failing grade for the semester. 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 ask 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 three 100-point exams, and the 200 point comprehensive final 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 750 POINTS
- B 600-674 POINTS
- C 525-599 POINTS
- D 450-524 POINTS
- F Below 450 points

You will assign yourself an ID number for record keeping in this class when you take the first examination. Please record your number for future reference. I do not return examinations to students. You may look at your examination in my office. Due to the number of students and examinations in my classes, I ask that if you wish to review your examination, you do so within two weeks of taking the examination.

The results of your exams and homework will be posted periodically on a bulletin board.
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:		
Topic Outline:	Class Sessions (Hours)	Textbook
Linear Programming	7	Pages 1-75
Graphic Method		
Technical Issues		
Computer Applications		
Simplex Method		
Exam one		
Linear Programming	8	Pages 1-75
Maximization vs. Minimization		
Problem Examples		
Setting up for the Computer		
Shadow Prices		
Reduced Cost		
Homework		
Exam Two		
Goal Programming	6	Pages 189-213
Comparison to Linear Programming		
Setting up computer solutions		
Interpretations of output		
Homework		
Assignment Method	4	Pages 129-143
Basic Concepts		
Homework		
Exam Three		
Transportation Problem	4	Pages 91-129

Introduction		
Interpreting Input/Output		
Homework Assignments		
Dynamic Programming	6	Pages 156-170
Shortest Route Problem		
Basic Knapsack Problem		
Applications		
Homework		
Exam Four		
Waiting Line Models	5	Pages 207-213
Descriptive Systems		
Normative Systems		
Simulation of Waiting Lines		
Homework Assignments		
Minimal Spanning Tree Model	2	Pages 156-170
Network Models		Pages 156-170
PERT/CPM		
Cost Considerations		
Homework Assignments		
Exam Five		
Final Examination Saturday May 4		

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 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 computer-based part of the comprehensive final examination.
If you lose your homework copies, these may be downloaded from 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@mwsu.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 p. 75
- 3 Problem 6 p. 76
- 4 Problem 25 p. 83
- 5 Crescent Products Inc.
- 6 Problem 25 p. 203
- 7 Problem 6 p. 149
- 8 Problem 22 p. 151
- 9 Problem 11-11 p. 147
- 10 Problem 11-10 p. 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 p. 164

- 16 Problem 38 p. 168
- 17 Problem 7 p. 157
- 18 Problem 9 p. 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 p. 75	5,538.XX
3	Problem 6 p. 76-77	770
4	Problem 25 p. 83-84	907.7
5	Crescent Products Inc. (Handout)	Ultras 3,500
6	Problem 25 p. 203	Earning Goal met Ag. Loan 230
7	Problem 16 p. 149	4,300
8	Problem 22 p. 151	40
9	Problem 11 p. 147	119,987.5
10	Problem 10 p. 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 p. 164	1,125
16	Problem 38 p. 168	22
17	Problem 7 p. 157	37
18	Problem 9 p. 158	42

Software:
mgmt16.exe software for MSU computer labs and older computer
mgmt32.exe software for newer computers with windows 32 and 64 bit operating systems
mgmtsci.exe recommended software for newer computers 32 and 64 bit operating system
If your disk has only one exe file (mgmtsci.exe) this is your program to run.

Quantitative Methods Review for Final Examination

1. Show all work — input and output — No printouts — all answers should be written on the examination

Problems

- 2 questions on Linear Programming
- 1 question on Goal programming
- 1 question on PERT
- 1 question on Assignment
- 1 question on Transportation
- 1 question on Minimal Spanning Tree
- 1 question on Dynamic Programming
- 1 question on Queueing
- 1 question on Shortest Distance

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 concerning [concealed carry](#).