Course Number: BUS 324-01-1
Course Title: Quantitative Methods in Business
Department Name: Management Science, Business Analytics, Management Information Systems (MIS)
College/School/Division Name: School of Business and Communication
Term: Spring 2024 Semester
Course Credits: 3
Class Meeting Days: Mondays, Wednesdays, and Fridays
Class Meeting Hours: 10:30AM – 11:20 AM HST
Class Location: Sullivan Library Hall 201

Instructor Name: Eduard "Eddie" Merc, Ph.D., MBA (Please call me Eddie. ☺)
Email: Eduard.Merc@chaminade.edu or Eduardmerc@gmail.com
Phone: (435) 200-4822 (Google Voice Number)
Office Location: Kieffer Hall, Room 27
Office Hours: Mondays/Wednesday/Fridays 4:00PM-5:00PM HST or by appointment
Instructor Website: https://chaminade.edu/business-and-communication/business-faculty/eduard-merc/
Other Professional Contact Information: eduardmerc (Skype) and @EdkoPletko (Twitter)

CHAMINADE UNIVERSITY MISSION STATEMENT

Chaminade University offers its students an education in a collaborative learning environment that prepares them for life, service, and successful careers. Guided by its Catholic, Marianist and liberal arts educational traditions, Chaminade encourages the development of moral character, personal competencies, and a commitment to build a just and peaceful society. The university offers both the civic and church communities of the Pacific region its academic and intellectual resources in the pursuit of common aims.

"The future is no longer stable; it has become moving target. No single "right" projection can be deducted from the past behavior. The better approach, I believe, is to accept uncertainty, try to understand it, and make it part of our reasoning. Uncertainty today is not just occasional, temporary deviation from a reasonable predictability; it is a basic structural feature of the business environment." [1]

University Course Catalog Description

Catalog Description: Each of the business disciplines uses quantitative information in its planning, operations, and performance evaluation. This course introduces students to a variety of methods and tools for using quantitative data effectively: linear programming, Bayes Decision Rules, forecasting, multiple regression, network models, utility measures and inventory models. Offered every semester. Prerequisites: MA 103, BU 224.

Course Overview

DARE TO LEARN. DARE TO CHANGE. Digital learning removes limits and gives us the freedom to provide education anytime and anywhere, empowering us to overcome our most difficult challenges. [2]

Quantitative Analysis is one of the most widely adopted analyses in management science. Due to the availability of computer software and expansion of applications, quantitative models are now available for business solutions.
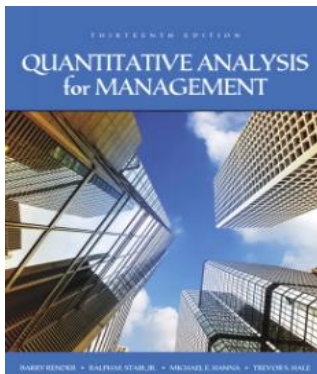
Many organizations have demonstrated that Quantitative Analysis is an effective competitive tool. When used with well-conceived marketing and financial plans, organizations have made major penetrations into global and other markets.

This course is designed to address the key challenges that have strategic as well as tactical implications, faced by organizations in the service, business, and manufacturing sectors.

Computer-based applications and examples are extensively used in this edition to help students to understand and connect management science with real world business. Successful procedures are applied to problems showing step-by-step "how – to" instructions. The use of application software allows to focus on managing and solving problems and less time on memorizing algorithms.

Excel software is used in many chapters to simplify formulas calculations. Students can download Excel QM v5.2 and QM for Windows v4 from www.pearsonhighered.com/render to install these apps on their devices.

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[1] Farsighted. How We Make the Decisions that Matter the Most" by Steven Johnson, New York Times best-selling author

[2] Pearson Higher Ed

Business analytics, one of the hottest topics in the business world, makes extensive use of the models in this textbook. A discussion of the business analytics categories is provided, and the relevant management science techniques are placed into the appropriate category.

Methods of Delivery

This course is designed to promote student participation through discussion of current business issues as they relate to the quantitative methods and how they are used in today's digital organization for managerial decision-making processes.

Students will learn to apply quantitative formulas and models, using a scientific approach, to develop pragmatic decision-making processes, e.g., how to operate business more efficiently and generate sales and profits. Each mathematical formula or model will be presented in the classroom to illustrate concepts and develop critical thinking skills and approaches to real-life business issues. Formulas and models may be the only way to solve some complex business problems. Of greater importance is the ability to communicate these problems and solutions to others, for example, the modeling and relationship between global warming and pollution control.

Methods of delivery include (but are not limited to) lectures, case studies, class exercises and/or activities, discussions, and guest speakers to name a few.

Program Learning Objectives (PLOs)

1. List and use appropriate quantitative tools, including statistics and management science, for decision-making process (knowledge)

2. Describe the functional areas of business, including central theories, modes of analysis, tasks, and strategies (comprehension)

3. Demonstrate the usage integrative and reflective thinking to assess and create business strategy appropriate for organizations in specified business environments (application)

4. Appraise and evaluate the legal obligations of organizations and the ethical dilemmas faced by businesses, along with appropriate frameworks for addressing these dilemmas (evaluation)

5. Formulate and organize the connections between academic work and real-life situations as a result of the Service-Learning experiences (synthesis)

Course Learning Outcomes (CLOs)

By the end of our course, students will be able to:
1. **Understand** the role of quantitative analysis in the overall business strategy of an organization (lower costs, increase production, reach revenue goals, grow investments, etc.).

2. **Recognize** the use of the scientific approach in managerial decision-making processes. For example, learning to locate warehouses in order to deliver customers goods within minimum time and cost goals.

3. **Gather**, process, manipulate, transform, and interpret raw data into meaningful information; for example, to reflect the results of clinical trials based on conformance with product safety standards.

4. **Recognize** the interdependence of quantitative analysis and other key functional areas in the organization. Consider Toyota's recent quality problems that currently influence customers' perception of the Toyota brand and quality. What is the best role for Toyota's Quality Assurance and marketing groups in order to regain customers' trust if Toyota is to remain number one global car manufacturer?

5. **Identify and evaluate** key factors: quantitative and qualitative and the interdependence of these factors in selecting appropriate models for an effective decision-making process; consider new technology breakthroughs and the influence of legislative acts and regulations upon the usage of such technologies. You may wish to consider legislative actions and outcomes, e.g., statutory changes on cell phone use while driving, in developing these models and processes.

Student Learning Outcomes – Service Learning

- To demonstrate an understanding of the connections between academic work and real-life situations.

Marianist Values

This class represents one component of your education at Chaminade University of Honolulu. An education in the Marianist Tradition is marked by five principles and you should take every opportunity possible to reflect upon the role of these characteristics in your education and development:

1. Education for formation in faith
2. Provide an integral, quality education
3. Educate in family spirit
4. Educate for service, justice, and peace
5. Educate for adaptation and change

Native Hawaiian Values

Education is an integral value in both Marianist and Native Hawaiian culture. Both recognize the transformative effect of a well-rounded, value-centered education on society, particularly in seeking justice for the marginalized, the forgotten, and the oppressed, always with an eye toward God (Ke Akua). This is reflected in the 'Olelo No'eau (Hawaiian proverbs) and Marianist core beliefs:

1. Educate for Formation in Faith (Mana) E ola au i ke akua ('Ōlelo No'eau 364) May I live by God
2. Provide an Integral, Quality Education (Na'auao) Lawe i ka ma'alea a kū'ono'ono ('Ōlelo No'eau 1957) Acquire skill and make it deep
3. Educate in Family Spirit ('Ohana) 'Ike aku, 'ike mai, kōkua aku kōkua mai; pela iho la ka nohana 'ohana ('Ōlelo No'eau 1200) Recognize others, be recognized, help others, be helped; such is a family relationship
4. Educate for Service, Justice, and Peace (Aloha) Ka lama kū o ka no'eau ('Ōlelo No'eau 1430) Education is the standing torch of wisdom
5. Educate for Adaptation and Change (Aina) 'A'ohe pau ka 'ike i ka hālau ho'okahi ('Ōlelo No'eau 203) All knowledge is not taught in the same school

Alignment of Learning Outcomes: PLO, CLO with Marianist, and Hawaiian Values

	CLO 1	CLO 2	CLO 3	CLO 4	CLO 5
Marianist Values	1, 2	2	4, 1	3, 2	5
Native Hawaiian Values	1	2	4	3	5
Program Learning Outcomes (PLO)	1, 2, 3, 4	1, 2, 3, 4	4.5	1, 4.5	1, 2, 3, 4, 5

How This Course Meets the Credit Hour Policy:

1. <u>Seat time:</u> 50 minutes MWF= 150 minutes weekly X 15   weeks = 2,250 minutes or 37.5 hours

2. <u>Time Spent on Key Assessments:</u>

   - Individual/Group Discussions = 10 hours establishing synergy, studying, researching and writing discussion summaries + 5 hours reading, replying, and sharing own weekly reflections = 15 hours

   - Weekly Modules (quizzes and MS Excel problem sets) = 15 hours reading, studying, researching and practicing QM calculations + 20.5 hours actual weekly module homework submissions= 35.5 hours

   - Midterm and Finals = 8 hours studying and 2 hours during finals + 8 hours   studying = 18 hours

3. <u>Homework</u> (Reading, QM Homework, Business Article Research): 29 hours

About 2 additional hours   each week

TOTAL: 135 hours of learning per student per this class/per semester

Course Prerequisites

Prerequisites: MA 103, BU 224. Also, please check Chaminade's Course Catalog for any additional pre-requisites for this class at: https://catalog.chaminade.edu/

Required Learning Materials
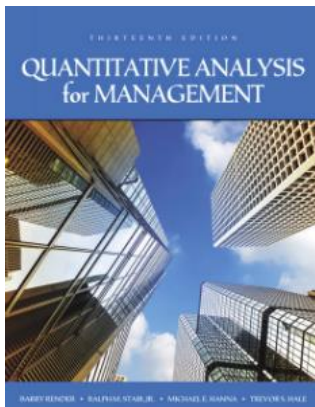
Textbook: **By Barry Render, Ralph M. Stair, Michael E. Hanna, Trevor S. Hale "Quantitative Analysis for Management,"** *Thirteen Edition*, Pearson Education, Inc., Copyright © 2018,
ISBN-13: 978-0134543161

Note: Check the Chaminade Bookstore for competitive options to buy or rent a hard copy of the textbook. If you are planning to rent or purchase used book, make sure that you use above picture of the textbook, ISBN#, author and edition as specified above.

Course Website:

Our course website in Canvas can be accessed by clicking this link: https://chaminade.instructure.com/courses/28749

Technical Assistance for Canvas Users:
- Search for help on specific topics or get tips in Canvas Students
- Live chat with Canvas Support for students
- Canvas Support Hotline for students: +1-833-209-6111
- Watch this video to get you started
- Online tutorials: click on "Students" role to access tutorials
- Contact the Chaminade IT Helpdesk for technical issues: helpdesk@chaminade.edu or call (808) 735-4855

Tutoring and Writing Services

Chaminade is proud to offer free, one-on-one tutoring and writing assistance to all students. Tutoring and writing help is available on campus at Kōkua ʻIke: Center for Student Learning in a variety of subjects (including, but are not limited to: biology, chemistry, math, nursing, English, etc.) from trained Peer and Professional Tutors. Please check Kōkua ʻIke's website (https://chaminade.edu/advising/kokua-ike/) for the latest times, list of drop-in hours, and information on scheduling an appointment. Free online tutoring is also available via TutorMe. Tutor Me can be accessed 24/7 from your Canvas account. Simply click Account – Notifications – TutorMe. For more information, please contact Kōkua ʻIke at tutoring@chaminade.edu or 808-739-8305.

Course Expectations

This course is designed to promote student participation through discussions of current business issues as they relate to management decision-making processes. Students will study and apply quantitative techniques to practical issues and decisions faced by management to include global markets. Thus, it is important to know quantitative methods and understand their limitations and assumptions in order to use them appropriately.

Applications, technology, and audio-visual tools will make this course highly interactive and experiential. The undergraduate course will be taught, as follows:

a) **Lectures** supported by PowerPoint presentations.

b) **Case Studies** will be presented in the classroom to illustrate concepts and develop critical thinking skills and approaches to real-life business issues.

c) **Case Studies** also will be assigned to student teams to develop team skills; each student will have an opportunity to make a case resolution presentation.

d) **Supplementary materials** and handouts will be provided to students to aid in understanding quantitative concepts.

e) **In-class exercises** comprised of challenging questions will be presented and the handling of resolutions and certain quantitative techniques will be discussed in order to provide an overall approach for the concepts presented.

f) **Chapter handouts** will be made available to students; these handouts will be used by students to follow the lectures, Power Point presentations and for note taking purposes. These handouts can be used for exam preparation.

g) **Excel QM and POM-QM for Windows Version 3** will be used, where possible and as time permits to make classes more interesting and trigger classroom discussions.

Your final grade will be based on your performance on exams and quizzes, assignments, class participation, professionalism, and attendance.

- The average student can expect to spend approximately 6-9 hours per week preparing for this class.
- Active student participation in all required discussions and weekly assignments is required.
- Honest communication with me personally or via e-mail is expected if any unexpected changes occur in your life.
  - Note: In case of class cancelation, you will be notified via Canvas and your Chaminade email.

Recommended Learning Strategies

1. **Chapter Assignments** must be read prior to each class. Students familiar with chapter materials will more effectively participate in class by being prepared to offer critical comments and pose thoughtful questions.

2. **Complete** self-tests after each chapter to reinforce the understanding of presented concepts.

3. **Take** tests and quizzes after each chapter to reinforce the learning material.

4. **Deliver** assigned homework on time.

5. **Contribute to and participate in** team projects. You will learn to become a confident public speaker and improve your presentation skills.

6. **Participate** in classroom discussions and ask questions.

7. **Review** supplementary materials in preparation for midterm and final exams.

8. **Complete and return** the final exam, as scheduled.

Computer Proficiency Expectations

Students in this course are expected to be proficient in the following technology areas:
- Canvas LMS
- Chaminade email
- Microsoft Word (or other word processing software), MS Excel, and MS PowerPoint

Course Attendance Policy

Students are expected to attend daily and log in to Canvas daily to check for course announcements, materials, and assignments. Class begins on time. Excessive lateness will be counted as an absence from class. Unexcused absences equivalent to more than a week of classes may lead to a grade reduction for the course. Any unexcused absence of two consecutive weeks or more may result in being withdrawn from the course by the instructor.

Behavioral Expectations

You are expected to conduct yourself in a manner compatible with the college's function as an institute of higher learning. To uphold this principle in the face-to-face BUS classroom, no cell phones, or "side conversations" that disrupt the learning process or interfere with the primary activity are allowed. Laptop computers may be used for taking notes or engaging in class activities. Please refrain from surfing the Internet, or using your computer for anything other than classwork. Lastly, please silence your cell phones before entering class. Thank you in advance!

In the online classroom, civil discourse must be adhered to both in synchronous live meetings as well as asynchronous discussion rooms and/or interactions whether they are with the instructor or peers. Students should use proper netiquette at all times online.

Every student has the right to a respectful learning environment. In order to provide this right, students must take individual responsibility to conduct themselves in a mature and appropriate manner. I appreciate your serious approach to education.

Assessment

Assessment methods include quizzes, exams, oral and written assignments, class discussions, class activities, and group work. Every effort will be made to return all student work within two weeks of the due date.

Grading and Assignments

Class sessions are designed to promote student participation through the discussion of current events in the business world as they relate to the use of quantitative analysis for managerial decision-making processes.

Grading Distribution	Final Grade Requirements
Attendance = 150 points	A = 900 or more
Exam #1 (Midterm Exam) = 150 points	B = 800 to 899
Exam #2 (Final Exam) = 200 points	C = 700 to 799
8 Module/Chapter Quizzes/Problem Sets = 400 points (8x50 each)	D = 600 to 699
Journal/Reflection Discussions = 100 points	F = Below 600

Grading **Standards**

"A" students do not miss classes during the semester. They read and critically engage all the assigned readings before class on their own, and with classmates and the instructor. All assignments are not only complete but go beyond more than just the minimum requirements. Their assignments are turned in on time or early, exhibit proper style, grammar, and format, are well-organized, integrate strategic planning and targeting, and are written precisely and concisely. They take advantage of all rewrite and extra credit opportunities. These students always keep up with current news events, both locally and globally.

"B" students miss a few classes during the semester. They usually read the assigned readings before class. Their assignments exhibit proper style, grammar, and format, are well-organized, integrate strategic planning and targeting, and are written precisely and concisely. They take advantage of all rewrite and extra credit opportunities. These students usually keep up with current events.

 "C" students miss several classes during the semester. They complete the assigned readings before exams. Written assignments and exams usually exhibit proper style and formatting, but do not always integrate strategic planning and

targeting, and are not always well organized or written precisely and concisely. All assignments are turned in on time, and most rewrite opportunities are used. These students sometimes keep up with current events.

"D" students miss four or more classes during the semester and skim assigned readings. Assignments and exams usually exhibit proper style and formatting, but they often lack integrated strategic planning and targeting, and are often not well-organized, or written precisely and concisely. Assignments are not always turned in on time and only some rewrite opportunities are used. They do not keep up with current events.

"F" students fail to attend class consistently, miss exams, written assignments; do not use rewrite opportunities.

Suggestions for Success

Manage your time wisely and stay organized! Learn how to use the required technology. Come to class prepared. Engage in the learning, discussions, and activities that take place in the classroom. Don't be distracted or distract others. Always do your best! ☺

Challenging a Grade on an Individual Assignment

Should a student find at any point during the semester that they wish to challenge a grade they have received on an assignment, they are welcome to do so. Following are the grade challenging guidelines:

- Students must wait 48 hours after receipt of their assignment before challenging the grade
- Grade challenges must be submitted in writing via email, in respectful and professional prose
- Students must articulate, based on the merits of their work (not on circumstances) and the guidelines of the assignment/rubric, why they feel their grade should be amended
- Students have up to 2 weeks to challenge an assignment grade, attempts to challenge a grade after 2 weeks from receiving an assignment back will be automatically forfeited

Students also retain the right to academic grievance for final course grades through standard Chaminade processes should they feel this step is necessary.

Course Policies

Late Work Policy

All work in this course will be due at (Midnight) 11:59PM HST every Sunday, at which point online submission boxes will promptly close. Late work is NOT accepted in this course. Assignments which are not submitted on or before their due date will receive an automatic zero. If you find that you are having technical difficulties, please contact the Chaminade IT Helpdesk for issues related to Chaminade technology. If you have documentation from the Helpdesk indicating that they have identified a problem with the technology, I will allow you to submit the assignment once a resolution has been reached at no penalty to you. If students are unsure of their home technology, they should plan ahead to use the computer lab on-campus in order to submit work in a timely manner.

Grades of "Incomplete"

Incomplete grades are reserved for cases of illnesses and other emergencies that cause a student to be unable to complete the course by the due date. In such cases, the instructor has the option of issuing an "incomplete" grade at the end of the semester. Requests for an "incomplete" must be accompanied by substantive documentation.

Writing Policy

APA Style writing will be used in this class. For more information about this writing style, please visit: https://apastyle.apa.org/

Instructor and Student Communication
Questions for this course can be emailed to the instructor at Eduard.Merc@chaminade.edu. Online, in-person and phone conferences can be arranged. Response time will take place up to 24 hours.

Cell phones, tablets, and laptops
Out of consideration for your classmates, please set your cell phone to silent mode during class. Students are encouraged to bring laptops or tablets to class as the instructor will assign online activities and readings that will require the use of a laptop or tablet. Laptops and tablets should not be misused, such as checking distracting websites. Use your best judgment and respect your classmates and instructor.

Disability Access

If you need individual accommodations to meet course outcomes because of a documented disability, please speak with me to discuss your needs as soon as possible so that we can ensure your full participation in class and fair assessment of your work. Students with special needs who meet criteria for the Americans with Disabilities Act (ADA) provisions must provide written documentation of the need for accommodations from Kōkua ʻIke: Center for Student Learning by the end of week three of the class, in order for instructors to plan accordingly. If a student would like to determine if they meet the criteria for accommodations, they should contact the Kōkua ʻIke Coordinator at (808) 739-8305 for further information (ada@chaminade.edu).

Title IX Compliance

Chaminade University of Honolulu recognizes the inherent dignity of all individuals and promotes respect for all people. Sexual misconduct, physical and/or psychological abuse will NOT be tolerated at CUH. If you have been the victim of sexual misconduct, physical and/or psychological abuse, we encourage you to report this matter promptly. As a faculty member, I am interested in promoting a safe and healthy environment, and should I learn of any sexual misconduct, physical and/or psychological abuse, I must report the matter to the Title IX Coordinator. If you or someone you know has been harassed or assaulted, you can find the appropriate resources by visiting Campus Ministry, the Dean of Students Office, the Counseling Center, or the Office for Compliance and Personnel Services.

Attendance Policy
The following attendance policy is from the 2019-2020 Academic Catalog (p. 54-55). Faculty members should also check with their divisions for division-specific guidelines.

Students are expected to attend regularly all courses for which they are registered. Student should notify their instructors when illness or other extenuating circumstances prevents them from attending class and make arrangements to complete missed assignments. Notification may be done by emailing the instructor's Chaminade email address, calling the instructor's campus extension, or by leaving a message with the instructor's division office. It is the instructor's prerogative to modify deadlines of course requirements accordingly. Any student who stops attending a course without officially withdrawing may receive a failing grade.

Unexcused absences equivalent to more than a week of classes may lead to a grade reduction for the course. Any unexcused absence of two consecutive weeks or more may result in being withdrawn from the course by

the instructor, although the instructor is not required to withdraw students in that scenario. Repeated absences put students at risk of failing grades.

Students with disabilities who have obtained accommodations from the Chaminade University of Honolulu Tutor Coordinator may be considered for an exception when the accommodation does not materially alter the attainment of the learning outcomes.

Federal regulations require continued attendance for continuing payment of financial aid. When illness or personal reasons necessitate continued absence, the student should communicate first with the instructor to review the options. Anyone who stops attending a course without official withdrawal may receive a failing grade or be withdrawn by the instructor at the instructor's discretion.

Academic Conduct Policy

From the 2019-2020 Undergraduate Academic Catalog (p. 39):

Any community must have a set of rules and standards of conduct by which it operates. At Chaminade, these standards are outlined so as to reflect both the Catholic, Marianist values of the institution and to honor and respect students as responsible adults. All alleged violations of the community standards are handled through an established student conduct process, outlined in the Student Handbook, and operated within the guidelines set to honor both students' rights and campus values.

Students should conduct themselves in a manner that reflects the ideals of the University. This includes knowing and respecting the intent of rules, regulations, and/or policies presented in the Student Handbook, and realizing that students are subject to the University's jurisdiction from the time of their admission until their enrollment has been formally terminated. Please refer to the Student Handbook for more details. A copy of the Student Handbook is available on the Chaminade website.

For further information, please refer to the Student Handbook: https://chaminade.edu/wp-content/uploads/2019/08/NEW-STUDENT-HANDBOOK-19-20-Final-8.20.19.pdf

Credit Hour Policy

The unit of semester credit is defined as university-level credit that is awarded for the completion of coursework. One credit hour reflects the amount of work represented in the intended learning outcomes and verified by evidence of student achievement for those learning outcomes. Each credit hour earned at Chaminade University should result in 45 hours of engagement. This equates to one hour of classroom or direct faculty instruction and a minimum of two hours of out-of-class student work each week for approximately fifteen weeks for one semester, 10-week term, or equivalent amount of work over a different amount of time. Direct instructor engagement and out-of-class work result in total student engagement time of 45 hours for one credit.

The minimum 45 hours of engagement per credit hour can be satisfied in fully online, internship, or other specialized courses through several means, including (a) regular online instruction or interaction with the faculty member and fellow students and (b) academic engagement through extensive reading, research, online discussion, online quizzes or exams; instruction, collaborative group work, internships, laboratory work, practica, studio work, and preparation of papers, presentations, or other forms of assessment. This policy is in accordance with federal regulations and regional accrediting agencies.

Schedule

NOTE: This semester schedule is official, but subject to change at the instructor's discretion.

#	Content
1.	Introduction to the Course Chapter #1
2.	Chapter #1
3.	Chapter #1
4.	Chapter #2
5.	Chapter #2
6.	Chapter #2
7.	Chapter #2
8.	Chapter #3; Business Faculty Visit
9.	Chapter #3; Business Faculty Visit
10.	Chapter #4
11.	Chapter #4
12.	Chapter #4
13.	Chapter #5
14.	Chapter #5
15.	Chapter #5
16.	Chapter #6
17.	Chapter #6
18.	Chapter #6
19.	Chapter #7; Guest Speaker
20.	Chapter #7
21.	Chapter #7
22.	Chapter #8; Midterm Exam
23.	Chapter #8
24.	Chapter #9
25.	Chapter #9
26.	Chapter #9
27.	Chapter #10
28.	Chapter #10
29.	Chapter #10
30.	Chapter #11
31.	Chapter #11
32.	Chapter #11
33.	Chapter #12
34.	Chapter #12
35.	Chapter #12
36.	Chapter #13
37.	Chapter #13
38.	Chapter #13
39.	Chapter #14
40.	Chapter #14
41.	Chapter #15
42.	Chapter #15
43.	Chapter #15
44.	Finals Week; Final Exam
45.	Finals Week; Final Exam

#	Content
46.	All Homework is due by 11:59PM HST on May 5th, 2024.

Chapter 1 - Introduction to Quantitative Analysis

This chapter is about solving the problem: define the problem, develop model, gather data, develop solution, analyze, and interpret results.

- **Case Study: Food and Beverages at Southwestern University Football Games**
  Prepare a report for the president of Southwestern University about food and beverage needs during football games; goal is to create a service profit center.

Chapter 2 - Probability Concepts and Applications

Today, risk or probability is a part of our daily lives. Learn about the foundation of probability analysis, type of events, Bayes' Theorem, binominal, normal, F, exponential, and Poisson distributions. Can we mitigate risk by understanding probability?

- **Case Study: Case Study Toledo Leather Company**

Chapter 3 - Decision Analysis

Six steps in Decision Making; decision environments: uncertainty and risk, decision tree, Utility Theory.
- **Case Study: Blake Electronics**
- **Case Study:** Starting Right Corp.
  A retired elementary school teacher is considering investing in "Starting Right" Corp.
    1. What do you recommend?

Chapter 4 - Regression Models

Use regression analysis to predict the value of one variable based on the value of others by understanding relationships between variables, for example, the relationship between level of education and income.

- **Case Study:** North-South Airline
  The fleet cost analysis for the merger of Northern Airlines with Southeast Airlines.
    1. Whether the average fleet age was correlated?
    2. Whether there was a relationship between average fleet age and direct engine maintenance cost?

Chapter 5 – Forecasting

Use forecasting models to reduce uncertainty and to make better estimates of what will happen in the future.

- **Case Study**: Forecasting attendance at Southwestern University, Stephenville, TX, football games.
    1. Develop forecasting model, justify its selection over other techniques
    2. Project attendance through 2013.
    3. What revenues are to be expected in 2012 and 2013?
    4. Discuss the school's options.

Chapter 6 - Inventory Control Models

Determine *when* and *how much* to order and identify the quantity discounts?

- **Case Study**: Martin-Pullin Bicycle Corporation

Chapter 7 - Linear Programming Models: Graphical and Computer Methods

Learn the requirements and formulate Linear Programming (LP) Problems, including four special cases in LP and sensitivity analysis.

- **Case Study:** Mexicana Wire works.
    1. What recommendations should Ron Garcia make, with what justification? Provide a detailed analysis with charts, graphs and computer printouts included.
    2. Discuss the need for temporary inventory workers in the drawing department.
    3. Discuss the plant layout.

Chapter 8 - Linear Programming Modeling Applications

Review of LP problems from various areas of business: marketing, manufacturing, scheduling, finance, transportation, and transshipment; the goal will be to solve these problems with Excel's Solver and QM for Windows.

- **Case Study:** Case Study: Andrew Carter, Inc., Canadian producer, and distributor of outdoor lighting fixtures.
    1. Evaluate the various configurations of operating and closed plants that will meet weekly demand.
    2. Determine which configuration minimizes total costs.
    3. Discuss the implications of closing plants.

Chapter 9 - Transportation and Assignment and Network Models

Explore a practical use of transportation models to optimize distribution of goods from sources to destinations. Determine the most efficient number of people to projects and thereby minimize total cost and time.

- **Case Study:** Case Study: Andrew Carter, Inc., Canadian producer, and distributor of outdoor lighting fixtures.

Chapter 10 - Integer Programming, Goal Programming and Nonlinear Programming (to be discussed as time permits)

Business managers have objectives to maximize profit and market share, maintain full employment and minimize cost. These conflicting goals are difficult to qualify.

Case Study:
- **Case Study:** Oakton River Bridge

Chapter 11 – Project Management

Learn how to manage complex projects by using Program Evaluation and Review (PERT) Technique and Critical Path Method (CPM).

+ **Case Study:** Using Network Models resolve Southwestern University traffic problems (maximum flow) and for Binder's Beverage find the shortest route from the soft drink plant to the warehouse.
    1. Develop a network drawing for Hill Construction and determine the critical path(s). How long is the project expected to take?
    2. What is the probability of finishing in 270 days?
    3. If it were necessary to crash to 250 or 240 days, how would Hill do so, and at what costs? As noted in the case, assume that optimistic time estimates can be used as crash times.

Chapter 12- Waiting Lines and Queuing Theory Models

Find the ideal level of service for an organization. Recognize trade-offs that must take place between the costs of service and the costs of customer waiting time.

+ **Video Library:** New England Foundry

Chapter 13 – Simulation Modeling

Simulation is one of the most widely used quantitative analysis tools. Simulation imitates a real-world situation with a mathematical model that does not affect operations. Learn the seven steps of simulation discuss the advantages and disadvantages and make action decisions based on the results of the simulation.

+ **Video Library:** Alabama Airlines

Chapter 14 – Markov Analysis

How to deal with probabilities of future occurrences by analyzing presently known probabilities; Markov Analysis is used to predict future event states or conditions based on the known probabilities of the current state or condition.

+ **Case Study:** Rental Tracks

Chapter 15 – Statistical Quality Control (to be discussed as time permits)

Quality is a conformance to requirements. Total Quality Management (TQM) is a systematic way of guaranteeing that organized activities happen the way they are planned. It emphasizes a commitment by management to drive excellence in all aspects of the products and services that are important to the customer.

Miscellaneous Student Notes:

Aloha from Professor Eddie Merc, Ph.D./MBA, CAPM