Jacksonville University

COURSE SYLLABUS
for
DSIM305 – Quantitative Analysis

Summer II, 2014

COURSE INFORMATION

Course Hours / Dates: **Wednesdays, 6:00 pm ~ 8:50 pm, July 2 – August 20**
Location: **DCOB 216**
Website: **http://www.drjimmirabella.com/dsim305** *(& Blackboard)*

COURSE DESCRIPTION

This course covers a variety of quantitative techniques utilized by managers to enhance decision-making. Topics to be covered are breakeven analysis, decision theory, forecasting, inventory control, linear programming, transportation and assignment problems, network models, and waiting line models.

LEARNING GOALS & OBJECTIVES

LG1. BUSINESS EXPERTISE: Students will have core competencies in:
    LO1-4. management
    LO1-5. marketing

LG5. APPLIED TECHNOLOGY SKILLS: Students will have a functional understanding of business application technologies
    LO5-1. Students will create a financial or operational analysis using the advanced features of a spreadsheet program.

PHILOSOPHY OF TEACHING & LEARNING

The course will mainly be taught as a facilitated lecture. As this course is quantitative and qualitative in nature, a portion of the course will utilize the computer, while the major portion will involve class discussion and experiential learning. Class participation and completion of practice assignments are vital to learning.

COURSE MATERIALS

Textbook: Barry Render, Ralph M. Stair, Jr. & Michael E. Hanna. Quantitative Analysis for Management, Prentice-Hall, 11th edition, 2011, ISBN#: **978-0132149112**.

Software: MS Excel will be utilized throughout the course for all applications.

INSTRUCTOR INFORMATION

Instructor: Dr. Jim Mirabella, *Associate Professor of Decision Sciences*

Bio: Dr. Jim Mirabella has a Doctorate in Management from Nova SE University, an MBA in Quantitative Methods from Auburn University, and a BS in Operations Research / Statistics from the U.S. Air Force Academy. Dr. Jim has been teaching for over 26 years (including the past 16 with Jacksonville University), and has served as an operations research analyst in the U.S. Air Force and has held statistical positions in Fortune 100 corporations and served as the Director of Institutional Research at FCCJ. He also teaches Statistics, Operations Management, Organizational Behavior & Public Policy Research.

Office Location: DCOB Room 134

Office Hours: Mon & Wed, Noon – 1 pm, 2:30 – 6 pm
                                  Other times by appointment

Office Phone: (904) 256-7905

Email: jmirabe@ju.edu   (preferred means of contacting instructor; emails will typically get a reply within 24 hours, often the same day)

STUDENT RESPONSIBILITIES

- **Attendance**: While attendance is not checked regularly, excessive absences will likely impact one's grade since some of the material on the exams come from class lectures (some of which is not in the text).

- **Recommended Problems** will only be covered upon student request. These problems are indicative of the types of problems that will appear on exams. Students are encouraged to practice as much as possible, as it is the best preparation for success. The key to understanding statistical concepts that are tested is to be comfortable with the problem solving techniques first. All recommended problems will be posted on the course website.

- **ADP Online Component** (**Quizzes**): There will be weekly quizzes conducted via Blackboard, worth a combined 25% of the course grade. Each quiz will open following the Wednesday class and must be completed by the following Tuesday, 11:59pm. Quizzes not completed by the deadline will receive a zero and will not be given an extension. Quizzes are to be completed individually, and the use of all course materials are permitted. Quizzes may be opened earlier at the professor's discretion; quiz deadlines are as stated in this syllabus unless told otherwise.

- **Exams**: There will be two exams worth a combined 70% of the course grade. Each exam will consist of quantitative problems that may require the use of Excel as well as quantitative concepts. Use of the textbook and all notes are permitted on all exams. The final exam is not comprehensive. Cheating on exams will not be tolerated under any circumstances, and will be handled in accordance with JU policy. **All suspected incidents of cheating will be turned in to the Dean's office for academic dishonesty without hesitation.**

- **Lateness**: In-class exams begin at the start of class and have a set stop time; students who are late will have less time to complete the exam.

- **Make-Up Exams**: There are no make-up exams in this class except in rare circumstances that are documented and unavoidable (at the discretion of the instructor). If a student is aware of a future absence, prior arrangements must be made to reschedule the exam.

- **Grading**: Students will receive the grade they earn, and grades are not negotiable.

GRADING

Grading criteria	
Weekly Quizzes	30%
Exam 1	35%
Exam 2	35%

Grade Determination		
90.0 ~ 100.0	A- to A	
80.0 ~ 89.9	B- to B+	
70.0 ~ 79.9	C- to C+	
60.0 ~ 69.9	D- to D+	
0.0 ~ 59.9	F	

DAVIS COLLEGE OF BUSINESS

Vision

We build thoughtful, engaged leaders who create sustainable high performance and value in their careers, organizations, communities, and world.

Mission

We do so by delivering high quality, relevant and accessible educational programs and scholarship that build the capacities of current and future leaders for:

- Championing ideas that provide perspective and advantage through a creative, action-oriented **strategic mindset**

- Applying specialized knowledge and methods that make a sustainable difference and demonstrates significant **business expertise**

- Displaying outstanding **leadership skills** across their entire careers

- Acting with the highest standards of **professionalism** evidenced by their ethical character and integrity

The Davis College of Business
"Professional Results In Daily Efforts Program"
(P.R.I.D.E.)

"We the students and faculty of the Davis College of Business understand learning is a process of interaction, partnering, and collaboration. To create the learning environment necessary to produce the future generators of sustainable value for business and society at large, we understand we must focus our daily efforts to achieve lasting success. Therefore, as indicated by my signature below, I agree to support the tenets and professional behaviors of the P.R.I.D.E. program outlined below applicable to my position within the Davis College of Business."

As DCOB Faculty, *you can count on us to:*
- *Treat each student in a fair and equitable manner*
- *Come to class prepared*
- *Start and end class on-time*
- *Honor office hours*
- *Make required text books and reading materials relative to the material taught*
- *Use a proper mix of IT and lecture (Blackboard)*
- *Return assignments in a timely manner*
- *Allow peer review to reduce "free-riders" on team projects*

As DCOB Students, *you can count on us to:*

- *Respect everyone's right to have a positive academic experience*
- *Respect other students' property*
- *Respect other students' cultures and opinions*
- *Support academic integrity*
- *Be enthusiastic and productive members of team projects*
- *Come to class on-time*
- *Come to class prepared*
- *Be attentive and participate*
- *Turn assignments in on-time*
- *Respect others by not having real or virtual side conversations*
- *Turn off electronic devices during class*
- *Dress appropriately*

_____

Please Print Name

_____

Signature

_____

Date

JACKSONVILLE UNIVERSITY POLICIES

JU Honor Code: Jacksonville University students are expected to adhere to the highest standard of academic honesty. Academic misconduct is defined as follows:

> *Any form of cheating, including concealed notes during exams, copying or allowing others to copy from an exam, students substituting for one another in exams, submission of another person's work for evaluation, preparing work for another person's submission, unauthorized collaboration on an assignment, submission of the same or substantially similar work for two courses without the permission of the professors. Plagiarism is a form of Academic Misconduct that involves taking either direct quotes or slightly altered, paraphrased material from a source without proper citations and thereby failing to credit the original author. Cutting and pasting from any source including the Internet, as well as purchasing papers, are forms of plagiarism. (Warshauer, M., 2002.)**
>
> ** Matthew Warshauer, History Department, Central Connecticut State University, Academic Misconduct/Plagiarism; Questionnaire; http://www.history.ccsu.edu/*

The faculty regards all incidents of academic misconduct as major offenses, which merit disciplinary action; faculty members will handle each case of academic misconduct in accordance with their own course policy. Following action, it is recommended that faculty members report all incidents of academic misconduct to the Senior Vice President for Academic Affairs, via division chair and appropriate college dean, in order to identify multiple incidents.

ADA Policy: Jacksonville University provides reasonable accommodations to students with disabilities who need such assistance under the Americans with Disabilities Act and Section 504 of the Rehabilitation Act of 1973. Disability categories can include, but are not limited to, visual, physical, hearing, speech impairments, learning disabilities, and other impairments such as cardiovascular and circulatory conditions, psychological disorders, blood serum illnesses, diabetes, and epilepsy. A student with a visible or non-visible disability who requests "reasonable accommodation" to his or her condition should provide medical and/or psychological documentation of the disability to the Student Life Office. It is preferable and recommended that documentation be provided immediately after acceptance to the University. Notice of a disability, but not the medical documentation, may be provided by the Student Life Office to any administrator, dean, and/or professor on a need-to-know basis, but only after consultation with the student. Specialized services are provided through the Student Life Office. Students must request "reasonable accommodations" in a timely manner so that faculty can plan for those accommodations. Students with disabilities are also responsible for maintaining the same academic levels as other students attending class, maintaining appropriate behavior, and providing timely notification of any special needs. Services provided may include: special arrangements when needed (change of rooms, referrals to tutors), letters of classroom accommodation based on medical recommendations and student suggestions and experience, and individual counseling or referral for counseling. Recommendations for "reasonable accommodations" in the classroom may include priority seating, change of classroom, tape recording of lectures, extra time for tests/quizzes/assignments, alternative test formats, etc. Students who wish to be tested or reevaluated may arrange for testing through the Student Life Office at the student's expense. Faculty who wish to refer students for testing also should contact the Student Life Office.

Week 1: July 2

Topics: Introduction, Game Theory, Breakeven Analysis, intro to Forecasting

Chapter 1: Problems 1.14 – 1.22 (*use Breakeven_Analysis.xls*)

Supplementary Problem 1: Suppose you wanted to choose from three different cell-phone plans.
- Sin-Gular, geared for low volume users, charges $30 / month plus 15 cents per minute
- No-Tel, geared for intermediate users, charges $50 / month plus 5 cents per minute
- T-Immobile, geared for high volume users, charges $70 / month with no per-minute charge.

At what calling volumes is each plan recommended?

Supplementary Problem 1B: Suppose you wanted to choose from four different texting plans.
- Verizon charges a flat $20 per month with unlimited texting
- Sprint charges $15 per month and $.02 per message
- AT&T charges $10 per month and $.05 per message
- T-Mobile charges $0 per month but charges $.10 per message .

At what message volumes is each plan recommended?

Quiz: **Complete Week 1 quizzes by July 8**

Week 2: July 9

Topics: Decision Analysis, Forecasting

Chapter 3: Problems 3.17-3.20, 3.22–3.28, 3.34-3.35, 3.41 (use *Decision_Tables.xls*)

Chapter 5: Problems 5.14, 5.18, 5.24, 5.25ab, 5.30, 5.32, 5.35 (use *Forecasting.xls*)

Supplementary Problem 2: Dorothy Stanyard has three major routes to take to work. She can take Tennessee Street the entire way, she can take several back streets to work, or she can use the expressway. The traffic patterns are very complex, however. Under good conditions, Tennessee Street is the fastest route. When Tennessee is congested, one of the other routes is usually preferable. Over the past two months, Dorothy has tried each route several times under different traffic conditions. This information is summarized in minutes of travel time to work in the following table:

	NO TRAFFIC CONGESTION (minutes)	**MILD TRAFFIC CONGESTION (minutes)**	**SEVERE TRAFFIC CONGESTION (minutes)**
probability	**.50 (30/60)**	**.33 (20/60)**	**.17 (10/60)**
Tennessee Street	15	30	45
Back roads	20	25	35
Expressway	30	30	30

In the past 60 days, Dorothy encountered severe traffic congestion 10 days and mild traffic congestion 20 days. Assume that the last 60 days are typical of traffic conditions.
a. Develop a decision table for this decision.
b. What route should Dorothy take if she wants to minimize average drive time?
c. Dorothy is about to buy a radio for her car that would tell her the exact traffic conditions before she started to work each morning. How much time in minutes on the average would Dorothy save by buying the radio?

Supplementary Problem 3

			Florida's Defensive Plays		
		5-4	Wide Tackle	Nickel	Blitz
	Probabilities---->	0.4	0.3	0.2	0.1
Auburn's Offensive Plays	Off Tackle	3.00	9.00	7.00	(1.00)
	Toss Sweep	7.00	(4.00)	4.00	14.00
	Draw	(2.00)	3.00	10.00	(3.00)
	Pass	8.00	12.00	(7.00)	(8.00)

3A) What play should Auburn run if:
  a) they decide to employ an aggressive game plan (optimistic)?
  b) they decide to employ a conservative game plan (pessimistic)?
  c) they want the best average gain based on the probabilities of Florida running each play?

3B) What play should Florida run if:
  a) they decide to employ an aggressive game plan (optimistic)?
  b) they decide to employ a conservative game plan (pessimistic)?
  c) they want to give up the lowest average gain based on the probabilities of Auburn running each play (note: Auburn runs Off Tackle 20% of the time, Toss Sweep 30%, Draw 10% and Pass 40%)?

Quiz: **Complete Week 2 quizzes by July 15**

Week 3: July 16
Topics: Inventory Analysis, **PREPARE FOR EXAM 1**
Chapter 6: Problems 6.18, 6.19, 6.25, 6.26, 6.32-6.34, 6.45, 6.47 (use *Inventory.xls*)
Quiz: **Complete Week 3 quizzes by July 20 (SUNDAY)**

Week 4: July 23
Topics: **Exam 1 (35% of grade),** Linear Programming
Chapter 7: Problems 7.14, 7.17-7.19, 7.25, 7.26 (use *Linear_Programming.xls*)
Chapter 9: Problems 9.28-9.30 (use *Linear_Programming.xls*)
Supplementary: LP Problems in document on website (use *Linear_Programming.xls*)
Quiz: **Complete Week 4 quizzes by July 29**

Week 5: July 30
Topics: Linear Programming (*continued*), Waiting Lines
Chapter 13: Problems 13.11-13.14, 13.16, 13.17, 13.23-13.25, 13.27 (use *Waiting Lines.xls*)
Quiz: **Complete Week 5 quizzes by August 5**

Week 6: August 6
Topics: Transportation, Assignments
Chapter 10: Problems 10.30, 10.32, 10.34, 10.35, 10.36 (use *Assignments.xls*)
Quiz: **Complete Week 6 quizzes by August 12**

Week 7: August 13
Topics: Network models, **PREPARE FOR EXAM 2**
Chapter 11: Problems 11.11, 11.14 (*use QM for Windows -- Networks*)
Quiz: **Complete Week 7 quizzes by August 17 (SUNDAY)**

Week 8: August 20
Topics: **Exam 2 (35% of grade)**