

School of Business and Nonprofit Management

Course Syllabus

Course: Quantitative Decisions Analysis; SBNM-5411
Academic Year: 2013-2014 **Semester/Quad:** Fall Quad A

Professor: Mr. Emile Cambry, Jr.

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Availability:

Please contact me via email. I will reply within 24 hours during the week and within 48 hours on weekends. Also, if necessary, telephone conversations can be requested (send email to request times).

Course Description:

This course is designed to help students learn a logical, rational approach to the decision making process. The title of the course (Quantitative decision Analysis) suggests that mathematical modeling is used to aid us in the decisions process, as is the five step scientific approach. Statistics is a prerequisite for the course and will be used throughout to determine statistical significance, it's not enough just to come up with an answer you must prove that is significant. Many managerial problems revolve around quantitative factors such as production quantities, revenues, costs, and so on. By incorporating these quantitative factors into a mathematical model and then applying mathematical procedures to solve the model, this course provides a powerful way to analyze managerial problems. This course is concerned with the practical solutions of management, including taking into account qualitative factors, but its special contribution lies in this unique ability to deal with the quantitative factors.

Introductory Comments:

This is a course designed to help the students with mathematical modeling and using these models to aid in the decision making process. The work will be broken down into seven weeks and three modules. Module one will be statistics and forecasting, module two will be decision analysis, and module three will be linear programming. The method I like to use is called problem based learning, this requires each student to get involved and help solve the problem. Class participation is a part of the grade each of you will be receiving, and the rules or rubrics, and expectations will be laid out later. This is one of the difficult aspects of learning, building community. The first task will be introductions and each person's experience all to help build community and friendship. Some students may not have had any statistics or mathematics for some time, so I will make myself available for hand holding and extra help. I would also encourage all learners to get to know each other and help those in need of assistance.

Course Materials:

REQUIRED

Quantitative Analysis for Management Prentice Hall ISBN 0-13-214911-2, 11th Edition, by Render, Stair, and Hanna

Additional Readings: A statistics interactive software program will be provided in the textbook package (POM)

Essential IDEA Objectives:

1. Gaining factual knowledge (terminology, classifications, methods, trends).
2. Learning fundamental principles, generalizations, or theories.
3. Learning to apply course material (to improve thinking, problem solving, and decisions).

Specific Course Objectives:

Learning Objectives:

1. After the first week, the learner will be able to define the term management science. The task would be discussed in the classroom and agreed upon by all learners. The definition then becomes part of the class and will be assessed during the semester.
2. After the first week the learner will be able to differentiate between qualitative and quantitative analysis. This must be performed over and over again during the semester. This task will be assessed in the course.
3. After the second week, the learner will be able to construct a mathematical model. The task will be performed using case studies. The students will be able to quantify a word problem, and this will be assessed and discussed among the classmates.
4. After two weeks the learner will be able to outline the steps in the forecasting process. This task will be quizzed and assessed by using problems and cases. The learner will be able to outline all forecasting problems. The results will be shared and presented.
5. After week three, the learners will be able to describe averaging techniques, trend and seasonal performed techniques, and regression analysis, and solve typical problems. These tasks will be through assignments and cases. The results will be shared with all students and assessed.
6. After four weeks, the learners will be able to identify the business decision making environment. This task will be a group project and the final result will be part of the data base.
7. After week four, the learners will be able to perform decision making computations including payoff tables and decision trees. This task will be performed by assigning cases and problems to the students. The answers will be shared and discussed and finally assessed.
8. After five weeks, the learners will be able to describe and use techniques that apply to the linear programming process. This task will be tested through the use of cases and problem sets. The answers will be shared with all students.
9. After week five, the learners will be able to construct an algebraic linear programming problem and they will graph the solution. The students will present their findings to all the other learners assess each other.
10. After week six the students will be able to formulate and run a linear programming problem. The results will be presented and shared. The other students will make comments and assess the results.

Course Methodology:

In this course, we'll be doing practice problems to apply the theoretical framework with practical application. We will also do a considerable amount of group work so students have an opportunity to learn from each other.

Computer Requirements:

In order to effectively participate in and successfully complete this course, each participant will need to have access to a computer and a high-speed internet connection. Please visit <http://www.northpark.edu/Campus-Life-and-Services/Information-Technology/Network/Minimum-Requirements> for information on computer requirements.

Technical Skills Required:

None out of the ordinary

Assignments by Session

Week 1: Introduction

Some of the course is static, assignments, quizzes and cases will be due on certain dates at specific times. Other deadlines or milestones will be dynamic. The group as a whole will determine how to go about solving problems and cases. This will involve problems and assignments posted by the facilitator two to three times a week. The problems and possible solutions should not necessarily be directed to the facilitator, but to the group as a whole to kick around and brainstorm with other students as well. The method used is called problem based learning. The facilitator expects that each student will provide constructive and timely feed back to other class members. The course facilitator may also provide feedback and even hints as needed to solve a problem. Grading will of course be given privately for each assignment and for term grades.

Learning Objectives: After the first week the learner will be able to differentiate between qualitative and quantitative analysis, describe the use of modeling, use computers and spreadsheet models, understand the foundations of probability analysis, describe independent and dependent events, describe and explain the distributions, and calculate expected values and variances.

Readings: Chapters 1 and 2 in the textbook

Assignments: Define the term Management Science as it pertains to your organization. Try to solve problems 2-14 Through 2-20 at the end of chapter two. Distinguish between quantitative and qualitative decision analysis. Use the computer to help solve these problems. You will need to distinguish between dependent and independent events, discrete and continuous distributions, and calculate expected values and variances.

Week 2:

Learning Objectives: After the second week, the learner will be able to construct a mathematical model. The task will be performed using case studies. The students will be able to quantify a word problem, and this will be assessed and discussed among the classmates. Additionally, students will be able to outline the steps in the decision making process, make decisions under uncertainty, use probability to make decisions under risk, use your computer to help solve decision-making problems.

Reading: Chapter three in the textbook.

Assignment: Think about problems you are experiencing. Why would anyone want to know this kind of material? How would you explain the results to a group of managers? Is there other qualitative data you might want to know? How did you set up your mathematical model? Why did you set it up this way? Does this make sense to you? What help can your peers or I give to you? By the end of week two each student must try to solve problems 3-16 and 3-17 at the end of chapter three. As a part of these problems the students must decide the type of decision, the criterion, and which alternative is best.

Week 3:

Learning Objectives: After week three, the learners will be able to describe averaging techniques, trend and seasonal techniques, and regression analysis, and solve typical problems. These tasks will be performed through personal experience and a real world problem. The results will be shared with all students and assessed.

Reading: Chapter four in the textbook.

Assignment: Use a company or organization that you are familiar with to construct a forecasting problem and solve using regression as the model. Be sure you include F-ratios and t-tests to prove significance. Explain the alpha or intercept, as well as the beta or regression coefficient. How will you use this to forecast? Is there a homo or heteroscedastic condition present?

Week 4:

Learning Objective: After four weeks, the learners will be able to understand and know when to use various families of forecasting models, compare moving averages, exponential smoothing, and trend time series models, and seasonally adjusted data.

Reading: Read chapter 5 in your text.

Assignments: Please use the data from week three to forecast using smoothing or seasonal techniques. Use the same organization previously used to come up with a forecast. Students must be able to prove whether the model is significant or not at the 5% level of significance, this means using the F-test, and t-test. Each student must decide which model is best and how the results are explained.

Week 5:

Learning Objectives: After five weeks, the learners will be able to describe and use techniques that apply to the linear programming process. Students will be able to graphically solve any linear programming problem that has two variables, understand special issues in LP such as infeasibility, unboundedness, redundancy, and alternate optimal solutions. Learners will be able to construct an algebraic linear programming problem and graph the solution. The students will present their findings to all the other learners and they will assess each other.

Reading: Chapter seven in the textbook.

Week 6:

Learning Objectives: After week six the students will be able to formulate and run a linear programming problem. This task will be performed using problems the students see at work or in their organizations. The results will be presented and shared. Each student will be able to understand major application areas, including marketing, production, transportation, and finance. Students will use one of these areas to solve a real world problem. The POM software should be used to help solve these problems. The other students will make comments and assess the results.

Reading: Chapters eight and nine in the textbook.

Assignment: Each student should use a real world organization and create a linear programming problem that would be of service to the organization. Hopefully this would be the same organization used in the forecasting module and decision making module, but may be different with the permission of the facilitator. This may require a great deal of hand-holding, and I would encourage all students to help each other for a start. I promise not to let you get too frustrated. I would like to see the algebraic model by Friday at midnight at the end of the sixth week.

Week 7:

Final Assignment: The optimal solution and all explanations for the linear programming that the students created in week six are due at the end of week seven (Friday Midnight). The paper should be no longer than 10 pages in length. The papers should be posted for all students to see. Every student will look over all fellow students' assignments.

Grading:

Assignment	Points	Grade %
Written Assignment	250	25%
Skill Building Assignments 1-5	500	50%
Participation and Attendance	250	25%
Total	1000	100%

Grade Mapping:

Numeric Grade	Letter Grade	Numeric Grade	Letter Grade	Numeric Grade	Letter Grade
950-1000	A (95-100%)	800-820	B- (80-82%)	670-700	D+ (67-70%)
900-940	A- (90-94%)	770-790	C+ (77-79%)	630-660	D (63-66%)
870-890	B+ (87-89%)	730-760	C (73-76%)	600-630	D- (60-63%)
830-860	B (83-86%)	700-720	C- (70-72%)	<600	F (<60%)

Assignment Grading Policies:

Assignments will be graded according to the rubrics given. Grades, and instructor feedback, will be posted in Moodle.

Please be aware that any late submission of an assignment will incur a penalty. A late submission which is received within 24-hours of the deadline will be assessed an automatic 10% point deduction, and a submission which is received 24-48 hours after the deadline will be assessed an automatic 20% point deduction. No submissions will be accepted over 48-hour past the deadline.

Student Responsibilities:

Come ready to participate.

Instructor Responsibilities:

As your instructor, I will:

- Provide updated information on relevant resources for the various topics of interest
- Read and critically assess students' assignments and provide feedback within 7-10 days of receipt
- Facilitate a participant-centered course experience, which focuses on student learning
- Respond to all student e-mails within 48 hours of receipt (target is 24 hours)
- Respond to all student phone calls within 48 hours (target is 24 hours)

POLICY STATEMENTS**Academic Honesty**

In keeping with our Christian heritage and commitment, North Park University and the School of Business and Nonprofit Management are committed to the highest possible ethical and moral standards. Just as we will constantly strive to live up to these high standards, we expect our students to do the same. To that end, cheating of any sort will not be tolerated. Students who are discovered cheating are subject to discipline up to and including failure of a course and expulsion.

Our definition of cheating includes but is not limited to:

1. Plagiarism – the use of another's work as one's own without giving credit to the individual. This includes using materials from the internet.
2. Copying another's answers on an examination.
3. Deliberately allowing another to copy one's answers or work.

4. Signing an attendance roster for another who is not present.

In the special instance of group work, the instructor will make clear his/her expectations with respect to individual vs. collaborative work. A violation of these expectations may be considered cheating as well. For further information on this subject you may refer to the Academic Dishonesty section of the University's online catalog.

In conclusion, it is our mission to prepare each student for a life of significance and service. Honesty and ethical behavior are the foundation upon which such lives are built. We therefore expect the highest standards of each student in this regard.

Attendance Policy for Graduate Courses

The graduate courses in the SBNM are all 7 weeks in length. Missing one class session is allowed without penalty as long as all readings and assignments are made up by the student within a reasonable time period (the following week). Failing to log into an online course site for an entire week is allowed, but a penalty may be applied at the instructor's discretion. Missing a second class session is allowed only in unusual circumstances by prior arrangement with the instructor. Since this represents almost 30% of the engagement time for the course, the student runs the risk of receiving a lower overall grade for the class. Faculty are encouraged to drop the course grade by a full letter grade in this situation. A student who misses three classes (or the equivalent two weeks for an online class) will automatically fail the course, unless the student drops the course before the seventh week of class. Students who drop a course will be held responsible for tuition, based upon the current North Park University refund policy outlined in the University Catalog.

Attendance Policy for Graduate Courses

Attendance and participation are vital. Thus, students are expected to attend every class session, and to arrive on time – tardiness is undesirable and disruptive to your fellow classmates. This course has a strict requirement of documented, advance notification. If you are unable to attend any class session, you are to inform me (preferably by email) **prior to** that session. You need to provide a reason for your absence. Failure to provide advance notification will result in an unexcused absence. Be advised that poor attendance can affect your grade adversely

APA Requirement

The School of Business and Nonprofit Management (SBNM) has adopted the *Publication Manual of the American Psychological Association* (APA) as the standard and required format for all written assignments in SBNM courses.

Our goal in adopting the *APA Manual* is to enhance student learning by:

- 1) Improving student's writing skills.
- 2) Standardizing the required format of all written assignments in all SBNM courses.
- 3) Emphasizing the importance of paper mechanics, grammatical constructs, and the necessity of proper citations.
- 4) Holding students accountable for high quality written work.

If you are unfamiliar with the requirements of the *APA Manual*, we recommend that you purchase the reference manual and/or that you consult one or more of the suggested resources as listed on the Student Resources section of the SBNM website. ***It is your responsibility to learn and ensure that all written work is formatted according to the standards of the APA Manual.***

Students with Disabilities

Students with disabilities who believe that they may need accommodations in this class are encouraged to contact your program's office (Business: 773-244-6270). Please do so as soon as possible to better ensure that such accommodations are implemented in a timely manner. For further information please review the following website: <http://www.northpark.edu/ada>