

**North Park University**  
**School of Business and Nonprofit Management**  
**Quantitative Decision Analysis (SBMN 5411 B12)**  
**Fall 2012-13, 2 Credit Hours**

**INSTRUCTOR**

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**OFFICE HOURS**

M, W, F 11:00 am - 4:00 pm. Please be sure to call first to arrange a time.

**ON CAMPUS OFFICE LOCATION**

5043 North Spaulding Ave., Chicago, Illinois 60625

**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 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. 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.

## COURSE PREREQUISITES

Although technically there is no prerequisite course, knowledge of statistics is required as it 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. Students must have access to a computer, high-speed Internet connection and to our Learning Management System, Moodle. All Moodle requirements are detailed in the Moodle Orientation (SBNM 0500, e-Learning, Prepare for Success!) which is completed by each new SBNM student. Apple computers may not work with the software from the text!

## TEXTS

### Required Texts:

Quantitative Analysis for Management Prentice Hall ISBN 0-13-603625-2, 10th Edition, by Render, Stair, and Hanna

### Additional Readings:

A statistics interactive software program will be provided in the textbook package (POM).

## LEARNING OBJECTIVES

Week	Learning Objectives
1	<p>After the completion of the first week, the learner will be able to:</p> <ul style="list-style-type: none"><li>• define the term management science. The task would be discussed in the virtual classroom and agreed upon by all learners. The definition then becomes part of the class and will be assessed during the semester.</li><li>• 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.</li></ul>
2	<p>After the completion of the second week, the learner will be able to:</p> <ul style="list-style-type: none"><li>• outline the steps in the forecasting process. This task will be quizzed and assessed by using problems and cases.</li><li>• outline all forecasting problems. The results will be shared and presented.</li><li>• construct a mathematical model. The task will be performed using case studies.</li><li>• quantify a word problem. This will be assessed and discussed among the classmates.</li></ul>
3	<p>After the completion of the third week, the learner will be able to:</p> <ul style="list-style-type: none"><li>• 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.</li></ul>
4	<p>After the completion of the fourth week, the learner will be able to:</p> <ul style="list-style-type: none"><li>• identify the business decision making environment. This task will be a group project and the final result will be part of the data base.</li><li>• 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.</li></ul>

- 5 After the completion of the fifth week, the learner 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.
  - construct an algebraic linear programming problem and graph the solution. The students will present their findings to all and the other learners will assess each other.
- 6 After the completion of the sixth week, the learner will be able to:
- formulate and run a linear programming problem. The results will be presented and shared. The other learners will make comments and assess the results.
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## **COURSE TEACHING AND LEARNING METHODS**

Some of the course is static, with assignments, quizzes and cases 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.

### Course Facilitator Responsibilities:

1. The course facilitator will design the course and learning modules in such a way that students have every opportunity to achieve the learning objectives.
2. The course facilitator will provide reactions to student responses and discussion as appropriate in order to clarify important ideas and concepts.
3. The course facilitator will provide opportunities for group work that will include discussion as well as hands-on exercises.
4. The course facilitator will provide updated information on relevant resources for the various topics of interest.
5. The course facilitator will read and critically assess students' assignments and provide feedback within 3 days of receipt.
6. The course facilitator will respond to all student e-mails within 48 hours of receipt.
7. The course facilitator will respond to all student phone calls within 48 hours.

### Participant Responsibilities:

1. Attendance, presence, and full participation are required for this class. You cannot successfully complete this course without completing the weekly readings and assignments.
2. Some assignments will be posted on-line for others to see. You will be asked to comment and provide feedback to one another on your work.

3. Although I strongly suggest that all issues, questions, and problems be dealt with online, you can feel free to call or e-mail me regarding these issues at any time, noting the office hours I am available.

4. Use proper “netiquette” (see A Guide to Netiquette in the “Moodle Course Room Information” book ).

5. I normally advise participants to plan on spending [80] hours total on course responsibilities (e.g. reading, assignments, online discussion). (Usually 10-12 hours a week for a 2 credit hours course is the expectation.)

### COURSE SCHEDULE AND OUTLINE OF WEEKLY ASSIGNMENTS

Week	Dates	Topics	Assignments
1	10/21-27	Quantitative Analysis	<ul style="list-style-type: none"> <li>• Read Chapters 1&amp;2</li> <li>• Week 1 Written Assignment</li> <li>• Week 1 Discussion Forum</li> </ul>
2	10/28-11/3	Models	<ul style="list-style-type: none"> <li>• Read Chapter 3</li> <li>• Week 2 Written Assignment</li> <li>• Week 2 Discussion Forum</li> </ul>
3	11/4-10	Forecasting	<ul style="list-style-type: none"> <li>• Read Chapter 4</li> <li>• Week 3 Skill Building Assignment</li> <li>• Week 3 Discussion Forum</li> </ul>
4	11/11-17	Time Series	<ul style="list-style-type: none"> <li>• Read Chapter 5</li> <li>• Week 4 Skill Building Assignment</li> <li>• Week 4 Discussion Forum</li> </ul>
5	11/18-24	Linear Regression	<ul style="list-style-type: none"> <li>• Read Chapter 6</li> <li>• Week 5 Written Assignment</li> <li>• Week 5 Discussion Board</li> </ul>
6	12/2-8	Linear Programming Application	<ul style="list-style-type: none"> <li>• Read Chapter 8</li> <li>• Week 6 Written Assignment</li> <li>• Week 6 Discussion Forum</li> </ul>
7	12/9-15	Simplex	<ul style="list-style-type: none"> <li>• Read Chapter 9</li> <li>• Week 7 Discussion Board</li> <li>• Final Paper</li> </ul>

## GRADING RUBRICS

### Rubric for Grading Moodle Discussion Forum Participation

Your postings should be thorough and thoughtful. Just posting an “I agree/disagree with your comment” or an “I think the same” to someone else’s thoughts is not considered to be an adequate response. Your posts will be graded on a weekly basis according to the following criteria:

There are a total of three points possible each week.

Category	3 pts- Meets Standards	2 pts - Approaching Standards	1 pt- Below Standards
Discussion Board Forums	Each student has entered into the board forum three times and left attachments.	The learners have entered the forum but only entered into the weekly discussion two times.	The students have entered into discussions once or never.

### Rubric for grading written assignments: 9 points possible each week

Category	3 pts meets standards	2 pts approaching standards	1 pt below standards
Problem setup	The student set up the problem correctly, solved it correctly, and explained all the numbers.	The student set up the problem correctly, got an incorrect answer, but explained all the numbers.	The problem was set up incorrectly, the answer is wrong, and not all the numbers are explained.
Report	The question is answered, proved to be significant, and reliable.	The question is answered but no proof of significance or not reliable.	The main question is not answered, there is no proof of significance, and not shown to be reliable.
Language	The student used correct English, the report is concise and summary is correct.	The student used correct English, the report wandered and did not zero in on the solution, and the summary was not totally correct.	The student did not use correct grammatical skills, the solution was off and the summary was not correct.

### Rubrics for the Skill Building Assignments/Final Paper:

90-100 points: Projects are scientifically defined, appropriate models used, solved properly and, well defined.

80-89 points: Projects are defined, appropriate models used, solved properly, and explained.

70-79 points: Projects are defined, models used, solved, and explained.

69 and less: Projects are not well-defined, wrong models used, and not well explained.

## GRADING SUMMARY

Assignment	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Total Points	Grade %
Discussion Forums	3	3	3	3	3	3	3	21	6
Written Assignments	9	9			9	9		36	10
Skill Building			100	100				200	56
Final Paper							100	100	28
								357	100

All assignments are due in the week they are assigned at Midnight on Friday. Please be aware that your instructor will not accept late submissions of any papers, projects, assignments, or other forms of assessment. If you have an emergency or circumstances beyond your control, please be sure to call in advance to see if any arrangements can be made.

## GRADING SCALE

Total Points	Letter Grade
357-339	A (95-100%)
338-321	A- (90-94%)
320-311	B+ (87-89%)
310-296	B (83-86%)
295-285	B- (80-83%)
284-275	C+ (77-79%)
274-261	C (73-76%)
260-250	C- (70-72%)
<250	F (<70%)

## ACADEMIC HONESTY

In keeping with our Christian heritage and commitment, North Park University is 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.

### **SUPPORT SERVICES**

Please see the Moodle book "Moodle Course Room Information" for the information on Student Support if you need assistance during your course.

### **DISABILITIES ACCOMODATIONS**

Students with disabilities who believe that they may need accommodations in this class are encouraged to contact the program's office. 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>

### **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.