

UNIVERSITY OF THE INCARNATE WORD

School of Professional Studies

MSC 3371 Management Science

COURSE OUTLINE

See Instructor Section of Blackboard Course for More Information.

Prerequisites: MATH 1304 (College Algebra) or equivalent, BMDS/MS 3370 (Business Statistics) or equivalent.

Overview of the Course

- A. Cognitive Elements / Thematic Expectations / Skills Developments
 - 1. Introduction to Management Science models, such as Optimization Models, Forecasting, Markov Analysis, Inventory Models, Queue Theory, Project Management, and Decision Theory.
 - 2. Application of Management Science models in a variety of organizational settings.
- B. Requirements essential to the course
 - 1. Strong mathematical and analytical skills
 - 2. Ability to communicate quantitative information
 - 3. Use of optimization software

The tremendous growth of data availability through various media strengthens the need to transform data into information and useful knowledge. The increasing complexity of the problems and opportunities facing businesses calls for relevant information. Thus, a shift in emphasis from data gathering to information processing is essential. Analytical decision-making processes are an important link in making these needed transformations. MSC 3371 is designed to complete the quantitative analysis process and introduce the student to management science techniques. This course is the second in a sequence of two “quantitative” classes. A systematic approach in the design of a sequence of management science tools is the main focus of this class. It is these systematic models, combined with quality statistical analysis, which will enhance the business research process. *Students must learn to solve quantitative models and interpret their results. In addition, students will be asked to make managerial decisions, based on their analysis, and effectively communicate the results.*

Required Text: See Blackboard for book information.

This course may be offered in a face-to-face, blended and online format.

Course Outcomes:

Assessments:

Upon completion of the course, students will be able to:	For each outcome of the course, assessments are as follows:
Demonstrate knowledge in the fundamental use of Management Science in a Business environment.	Instructor designed progress examinations evaluating objective and applied concepts.
Demonstrate the ability to proficiently use technology to generate management science solutions in order to support managerial decisions	A combination of problems from the end of each chapter and at least one case study designed to illustrate the

	applicability of the various computer-based management science models studied in the course.
Demonstrate the ability to think critically and to communicate complex ideas.	A writing assignment requiring the accurate interpretation and application of results produced by one or more of the analytical approaches studied in the course.

Course Outline

Week	Topics and Discussions	In Class and Homework Assignments
Week #1	Time Series Analysis Forecasting Markov Analysis	Assignments/Class Activities (3) Course Materials Review and Discussion (2) Case Development (1)
Week #2	Project Management PERT/CPM Modeling	Assignments /Class Activities (3) Course Materials Review and Discussion (2) Case Development (1) Submit topic for research paper/project
Week #3	Inventory Models	Assignments /Class Activities (3) Course Materials Review and Discussion (2) Case Development (1)
Week #4	Queuing Theory or Waiting Line Models	Class Activities (3) Course Materials Review and Discussion (2) Case Development (1) Submit outline of Case Midterm Examination (questions from first half of the course)
Week #5	Introduction to Linear Programming	Assignments /Class Activities (3) Course Materials Review and Discussion (2) Case Development (1)
Week #6	Sensitivity Analysis and Basic LP Applications	Assignments /Class Activities (3) Course Materials Review and Discussion (2) Case Development (1)
Week #7	Advanced LP applications – Marketing, Financial, Operations, Blending, Crashing	Assignments /Class Activities (3) Course Materials Review and Discussion (2) Case Development (2) Submit completed Case
Week #8	Advanced LP Applications – Transportation, Transshipment, Assignment, Shortest Route, Maximal Flow, Production, and Inventory	Class Activities (3) Course Materials Review and Discussion (2) Final Examination (questions from second half of the course)

Total: 48 hours

Note: Each week you will notice a number in parenthesis. This is the Alternative Learning Equivalencies for this course. It is an expectation for the minimum amount of time (hours) you will spend on each topic during the week. Its primary purpose is for accreditation.

Grading Activities Criteria and Guidelines

Grading Standards:

Discussion/Participation	15%
Problem Sets	20%
Research Paper/Project	15%
Midterm Examination	25%
Final Examination	25%
Total	100%

Grading Scale:

A	93 - 100	B-	80 - 82	D+	67 – 69
A-	90 - 92	C+	77 - 79	D	63 – 66
B+	87 - 89	C	70 - 76	D-	60 – 62
B	83 - 86	There is no C- grade at UIW		F	< 60

A and A- indicates a superior grasp of the subject matter of the course, initiative and originality in attacking problems, and ability to relate knowledge to new situations.

B+, B, and B- indicates better than average grasp of the subject matter of the course and ability to apply principles with intelligence.

C+ and C indicates an acceptable grasp of the essentials of the course.

D+, D, and D- indicates less than average performance in the course.

F indicates failure to master the minimum essentials of the course. The course must be repeated.

Assessment	Description	Weight
Discussion/Participation	Students are encouraged to use outside materials and examples in class discussions, whether online (in online version of the class) or on-ground. Constructive class contribution includes being present, engaged, and professional. We will try to spend time each class discussing content in addition to lectures. Students will be expected to participate in discussion by asking questions, sharing examples, presenting arguments, and sharing real-world applications. The Discussion Rubric relevant to this course is provided below.	15%
Problem sets	Selected problems assigned from each topic covered in the course outline. There are SIX problem sets assigned, out of which, the lowest grade will be dropped (5% each). EVERY WEEK except Weeks 4 and 8.	20%
Midterm Exam	Cumulative-objective-type examinations consisting of multiple choice questions, technical exercises and/or statistical analysis based on topics from the 1 st - half of the semester. To be taken online or at home.	25%

Final Exam	Cumulative-objective-type examinations consisting of multiple choice questions, technical exercises and/or statistical analysis based on topics from the 2 nd -half of the semester and select topics from the 1 st semester. To be taken online or at home. WEEK 8	25%
Research Paper/Project	A 2-3 page write up of a case study that will be shared by instructor. The write-up must include your linear program as well as direct responses to the first three questions found at the end of the case. The assignment will be evaluated on the thoroughness and accuracy of your statistical analysis as well as the overall professionalism of the work itself. The Grading Rubric will be available in Blackboard.	15%
Total Grade		100%

Participation, Punctuality and Attendance: Requirements and Expectations for In-person Classes

- Attendance: Abide by the UIW Attendance Policy as stated in the Catalog: <https://uiw.smartcatalogiq.com/en/2019-2020/Catalog/VII-Institutional-Academic-Policies/Attendance-and-Religious-Observance-Policies>
- Eating and Smoking: NOT ALLOWED in class
- Talking and Messaging using mobile devices: NOT ALLOWED in class
- Copies of homework, tests, exams, and e-mail communication: Save for your records
- Assignments and homework with due dates: Expected to be turned-in on time

Research Paper/Project Rubric:

Use APA style writing as the standard format. Any written assignments as a part of the or problem sets will also be graded using the rubric below:

	Levels of Achievement			
Criteria	Novice (50-70%)	Competent (71-80%)	Proficient (81-90%)	Excelling (91-100)
Content Weight 50.00%	-Content is incomplete. - Major points are not clear and /or persuasive. -Questions were not adequately answered. -Terms were not used properly.	-Content is not comprehensive or accurate. -Major points are addressed, but not well supported. -Terms are sometimes used properly. -Correct formulas identified but not used correctly.	-Content is accurate. -Major points are stated. - Terms are properly used. -Correct formulas used but correct answers not always present.	- Content is comprehensive and accurate. - Major points are stated clearly and are well supported. -Terms are properly used -Correct formulas used in paper with correct answers.

	Levels of Achievement			
Criteria	Novice (50-70%)	Competent (71-80%)	Proficient (81-90%)	Excelling (91-100)
	-Correct formulas not used.			
Clarity Weight 30.00%	-Completely lacking	-Segments of the work are clear but, in most cases, ideas presented are still quite general.	-Clarity exists throughout much of the work and some, though not all, ideas presented are quite specific.	Clarity exists throughout the work. Ideas presented are specific.
Grammatical accuracy Weight 20.00%	- Contains numerous grammatical, punctuation, and spelling errors. - Language uses conversational tone and/ or slang.	- Contains few grammatical, punctuation and spelling errors.	- Rules of grammar, usage, and punctuation are followed with minor errors. Spelling is correct.	- Rules of grammar, usage, and punctuation are followed; spelling is correct. - Language is clear and precise; sentences display consistently strong and varied structure.

Discussion/Participation Rubric – Online/Blended classes:

	<70%	70%-79%	80%-89%	90%-100%
Quality and Substance (34%)	Initial post is missing or does not utilize ideas presented in the course material. Post may be off topic of simply reiterate what was said in the materials. Questions and observations may also be missing or be superficial and add no value to the ongoing discussion.	Initial post shows an inconsistent knowledge of the concepts. Postings may be hard to follow or missing important information to explain your thinking. Questions and observations may be rudimentary and add little value to the continuation of the discussion.	Initial post shows an understanding of the concepts. Postings are adequately developed and easy to understand by your colleagues. Questions and observations help move the conversation along through expanding current ideas and discussion.	Initial post shows strong explanations to demonstrate knowledge of the concepts in application. Postings are well developed and provide clear evidence of critical thinking. Questions and observations consistently add depth and substance to the discussion with new ideas.
Organization (33%)	Your initial posting may appear after the deadline and provide no opportunity for classmates to respond within the timeframe required. Responses to	Your initial postings may be inconsistent or submitted at the very last possible time, making it difficult for others to respond. Your	Your initial postings and responses to classmates meet the deadlines as described in the assignment. The number of comments	You share your ideas early in the week to allow colleagues to have time to consider and respond. The number of substantive comments to

	others are either non-existent or appear after the assignment deadline.	responses to the postings of others may be late.	to colleagues also meet the necessary frequency.	colleagues exceed the requirement of the course.
Professionalism (33%)	Writing appears to be careless or incomplete. Observations are not offered that allow for additional conversation. Tone of responses to others may be defensive or uninviting.	Your writing is difficult to understand at times or seemingly incomplete. It is difficult at times for classmates to consider how to respond to you. Feedback to the posts of others may have a critical tone or be written in a way that inhibits conversation	Your comments build on the prior posts. Your writing is understandable and open-ended to the degree that others can comment. Your tone with others is acceptable for further conversation	Your writing is clear actively engages other classmates. You exhibit an openness and willingness for discussion in the tone and manner of your postings and responses to feedback

Discussion/Participation Rubric – On-ground classes:

	<70%	70%-79%	80%-89%	90%-100%
Quality and Substance (34%)	You do not utilize ideas presented in the course material. Your comments may be off topic and distracting. Your questions and observations may also be missing or be superficial and add no value to the discussion.	Your participation demonstrates an inconsistent knowledge of the concepts. Your comments might be missing important information required to explain your thinking. Questions and observations may be rudimentary and add little value to the continuation of the discussion.	Your participation demonstrates a good understanding of the concepts. Your comments are adequately developed and easy to understand by your colleagues. Questions and observations help move the conversation along through expanding current ideas and discussion.	Your participation demonstrates strong explanations to demonstrate knowledge of the concepts in application. Your comments are well developed and provide clear evidence of critical thinking. Questions and observations consistently add depth and substance to the discussion with new ideas.
Professionalism (33%)	Your participation in class appears to be careless. You don't offer observations that allow for additional conversation. Tone of responses to others	Your style of communicating your thoughts is difficult to understand at times or is just seemingly incomplete. It is difficult at times for	Your comments build on the prior discussions. Your style of communicating is understandable and open-ended to the degree that others can	Your participation actively engages other classmates. You exhibit an openness and willingness for discussion in the tone and manner of your

	may be defensive or uninviting.	classmates to consider how to respond to you. Feedback to others may have a critical tone or be given in a way that inhibits conversation	respond. Your tone with others is acceptable for further conversation	comments and responses to feedback from others.
Presence (33%)	You are not, either mentally or physically, present in class for at least 50% of the sessions.	You are not, either mentally or physically, present in class for at least 25% of the sessions.	You are not, either mentally or physically, present in class for at least 10% of the sessions.	You are always present, physically and mentally in all class sessions.

Discussion Participation Expectations (Online/Blended classes):

This consists of your weekly postings to our general discussion thread. Each week, we will consider practical topics that warrant detailed exploration as the discussion forum component of our class. Proactive, meaningful class participation is essential to maximizing course potential and to enable the Instructor to fully evaluate your comprehension of course content. Further, it enhances the interest level as specific, real-world examples are discussed.

Your posts should include some type of citation (a website that you found especially helpful, an article, maybe a YouTube video that relates to a topic we are discussing) in addition to textbook chapters. Your grade will be based on the degree to which you demonstrate learning through *frequent* and *meaningful* discussion with your peers. My expectation is that you participate in each forum discussion on a minimum of **three** days each week; participation on any of the threads for that week will count. Make sure that you consistently engage your peers in sufficient detail.

To receive a passing grade, please post your initial response to at least one thread by midnight Wednesday night. Initial posts are expected to be around 150 words (not including the original DQ, links, references, etc.). Threaded discussions must be completed each week before midnight Sunday night.

Participation for a specific week must occur in that week. Rubrics for the evaluation of discussion participation will be posted on Blackboard.

Anticipated approximate time for class study and participate per week

Week	Alternative Instructional Equivalent (AIE) for Activity Approximate Anticipated time per week involved in class work.	Estimated hours
	Assignments/Class Activities (3) Course Materials Review and Discussion (2) Paper/Project Development (1)	6 hours
	Assignments /Class Activities (3) Course Materials Review and Discussion (2) Paper/Project Development (1)	6 hours

	Assignments /Class Activities (3) Course Materials Review and Discussion (2) Paper/Project Development (1)	6 hours
	Assignments /Class Activities (3) Course Materials Review and Discussion (2) Paper/Project Development (1)	6 hours
	Assignments /Class Activities (3) Course Materials Review and Discussion (2) Paper/Project Development (1)	6 hours
	Assignments /Class Activities (3) Course Materials Review and Discussion (2) Paper/Project Development (1)	6 hours
	Assignments /Class Activities (3) Course Materials Review and Discussion (2) Paper/Project Development (2)	7 hours
	Assignments /Class Activities (3) Course Materials Review and Discussion (2)	5 hours
	Hours spent in Class out of the total hours (on-ground classes)	32 hours
	TOTAL	48 hours

[Academic Integrity Policy](#)

University of the Incarnate Word is strongly committed to the nurturing of academic excellence. The University expects its students to pursue and maintain truth, honesty, and personal integrity in their academic work. Academic dishonesty, in any form, constitutes a serious threat to the freedoms, which define an academic community. The following definitions and guidelines have therefore been established to secure the maintenance of academic integrity at Incarnate Word.

[UIW Course Policies, Guidelines and Accommodations](#)

This course complies with all UIW academic policies and federal guidelines, including but not limited to: academic integrity, disability accommodations, pregnancy accommodations, Title IX non-discrimination, and class absences for religious observances. Current policy statements will be provided to all students through the learning management system and in information provided on the first day of class.

Hyperlink takes you to Blackboard, please click on UIW Course Policies, Guidelines and Accommodations tab.

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