OM 375 – Business Operations Management & Analytics
Spring Semester 2019
New Jersey Institute of Technology

Instructor: Pius Egbelu, Distinguished Professor of Management
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Class Hours: 11:30 AM – 2:20 PM, Tuesdays
Location: 108 KUPF

Office Hours: 10:00 AM – 11:00 AM, Tuesdays
>   1:00 PM – 2:00 PM, Wednesdays
>   All other times by appointment only.

COURSE DESCRIPTION

This course introduces students to the subject of decision modeling and how to apply decision modeling and process simulation techniques to solving various classes of problems that arise in operational functions in business settings. It covers various decision modeling techniques that range from deterministic to probabilistic models. Topics covered include linear programming and its extensions, simulation, network flow problems, decision analysis, queuing, inventory control, and forecasting. The emphasis in the course is on knowing what modeling skills and techniques to use to answer specific business operation and process questions, the use of computer tools and process simulation techniques (e.g., spreadsheets and simulation tools) to solve problems and on the interpretation and communication of model solutions.

Recommended Text

Nagraj Balakrishnan, Barry Render, and Ralph M. Stairs, Managerial Decision Modeling with Spreadsheets, 3rd Edition, Pearson

Course Learning Goals

- Provide students with the understanding of how to build mathematical decision models to solve problems that arise in business settings.

- Provide students with the knowledge and application of various mathematically based modeling and solution tools that are most appropriate for solving specific types of problems in business.

- Demonstrate and equip students with knowledge of the use of spreadsheet technique and other relevant software and technologies for solving decision models of problems found in business settings

Course Learning Outcomes

1. Demonstrate the ability to build mathematical decision models for various types of business problems.
2. Demonstrate the ability to use spreadsheet and other software tools to solve decision models of typical business problems.
3. Be able to identify modeling and solution techniques most suitable to solve different classes of decision problems.
4. Demonstrate the knowledge of how to interpret and communicate the results of decision models.

Tentative Schedule

Deviations may be necessary

Specificity on homework assignments will be provided as the course progresses

Week	Date	Topic	Recommended Reading	Homework Assignments	Comments
1	01/22	Introduction to Managerial Decision Modeling	Chapter 1		
2	01/29	Linear Programming Models: Graphical & Computer Methods	Chapter 2&3		
3	02/05	Linear Programming Sensitivity Analyses	Chapter 4		
4	02/12	Test 1			
5	02/19	Transportation, Assignment, and Network Models	Chapter 5		
6	02/26	Transportation, Assignment, and Network Models			
7	03/05	Transportation, Assignment, and Network Models.	Chapter 5		
8	03/12	Integer, Goal, and Nonlinear Programming Models	Chapter 6		
9	03/19	**Midterm Break**			
10	03/26	Integer, Goal, and Nonlinear Programming Models	Chapter 6		
11	04/02	Test 2			
12	04/09	Decision Analysis	Chapter 8		
12	04/16	Queuing Models	Chapter 9		
13	04/23	Simulation	Chapter 10		
14	04/30	Forecasting	Chapter 11		
15	05/07	**No classes – Friday Class Meets**			Last Day of Classes
16	05/14	*Final Exam Week*			Check University Exam Schedule Details

Teaching methods

The teaching method in the course will be a combination of lectures, discussions, and problem solving using designated software.

Assignment Submission and Lateness Policy

All assignments are due at the beginning of classes on the dates they are due. They must be submitted no later than their specified due dates. Except when circumstances beyond a student's control are involved, no grades will be earned for assignments submitted after their due dates. **No makeup assignment will be given.**

All pages constituting an assignment must be stapled together in the order in which the student expects the instructor to read the pages. Pages should also be numbered sequentially starting with the number 1. The name/ names of the person/persons submitting an assignment must be written on the assignment. The instructor will assume no responsibilities for assignments without names or assignments for which the order of the pages are not properly organized.

For assignments submitted online or by email, all files associated with an assignment must be consolidated into one single file. Only the consolidated single file must be submitted. The instructor will not accept any assignments in which multiple files are submitted.

Group Assignments and Projects

Unless otherwise stated, all projects in the course will be individually based. In other words, projects are to be done on individual basis.

For group projects where stated, group sizes of no more than three students are allowed per group. While it is possible for a student to work alone instead of joining a group, such single person teams are discouraged unless there are some mitigating factors beyond the student's control. Students are expected to form their own teams. However, the instructor reserves the right to get involved in the group formation process to ensure team balance and situations where some students are not invited into any teams. Grades earned on any assigned activity by a team will be posted as the grades of the individual team members. There will be no grade differentiation between members of a team unless the team submits a formal complaint reporting that a member had not made an honest contribution to the project.

Participation

A student enrolled in the course is expected to participate in all assigned activities associated with the course. These activities include exams, homework, readings, case studies, discussions, projects, plant tours, and any other activities that may be assigned from time to time. Responses to these activities must be submitted on or before their assigned deadlines or due dates.

Students Evaluation and Grading Weight Distribution

A student's final letter grade on the course will be a weighted reflection of the student's performance in all the areas of evaluation. The weights allocations to the various components of evaluations are as given below:

Homework & Case Studies/problem Assignments -------------- 15%
Quizzes --- 15%
Participation --- 10%
Test #1   ------------ -- 20%
Test #2   --- 20%

Final Exam --- --- 20%
Total --- 100%

The general grading scale is as follows:

$\geq 90\%$ ------------------------- A
85% - < 90% -------------------- B+
80% - < 85% --------------------- B
75% - < 80% --------------------- C+
70% - < 75% -------------------- C
60% - < 70% --------------------- D
< 60% ------------------------------ F

Exams:

Three tests will be given in this course – two mid semester tests and one final. The final exam will be administered at a time and date designated by the University Registrar's final exam schedule. The tests will focus primarily on the topics covered in class. The tests will seek to evaluate students' understanding of concepts, problem formulation, interpretation of solutions, and derivation of managerial implications. Tests will be closed book and closed notes unless stated otherwise. Other than for health, emergencies and other serious circumstances beyond the student's control, make-up tests will not be given. However, any person seeking a make-up test must show evidence to support his/her claim for not being able to take the test at the regularly scheduled time. Such evidence might be a doctor's report, obituary with the student listed as a survivor, or police report to name a few.

Case Studies:

Cases will focus on building and analyzing decision models to re-enforce the basic materials covered in the course. These case studies may require the use of word processing, spreadsheet, and other statistical software tools. Some case studies will be for class discussions in which all students are expected to participate. Case study assignments are due at their designated times given on the course moodle site. Lateness penalties will apply as appropriate for assignments submitted late. Some case studies may be done individually or in groups of no more than three students. Unless specified otherwise, case studies will be performed individually. Where group assignments are allowed, students are responsible for forming their own groups.

Homework Assignments

There will be regularly assigned homework in the course. The homework will be based on instructor generated questions or questions drawn from the end of chapters of the recommended text book . The homework assignments are intended to re-enforce materials covered in class and test the student's mastery of what has been taught in the course. The assigned problems may be quantitative or qualitative in nature and will assess students' analytical and critical thinking skills as well as the basic understanding of the concepts of the subject matter.

The purpose of homework assignment is to give students the opportunity to practice problem solving and test their mastery of the subjects. No more than two problems picked at random will be graded for any assignment. The graded problems will not be preselected and communicated to

students ahead of time. Problems selected for grading will be done so at random at the time of grading. For any given homework assignment, only the grades earned on the selected problem(s) will count for the entire grade for a homework assignment. So, to ensure that you do not earn less than the full score on any assignment, make sure you solve all problems assigned.

Quizzes

Unannounced quizzes will be regular features of the course. Quizzes will be used as part of the instruments for assessing class attendance and participation. No makeup quizzes will be given except for cases involving circumstances beyond a student's control such university trip, job interview trips, deaths, and health related issues. In each case, supporting evidence from appropriate authorities will be required from the student.

Academic Integrity

The School of Management expects high level of academic integrity and personal responsibility from all students. Academic violation of the University honor code will not be tolerated because the value of an NJIT School of Management degree is dependent upon the integrity and quality of the work performed by students for the degree they seek, Therefore, it is absolutely necessary that all students maintain the highest level of academic standard and integrity on all works submitted as part of this course.

Academic violation of the University honor code can take one or combination of different forms. Plagiarism (i.e., using the work of others without proper attribution), cheating on exams and homework assignments, copying the work of others, fabrication of items, and claiming that an assignment has been submitted when indeed there is no evidence to support such claim.

If there is evidence that an academic violation has occurred, the student(s) involved will be reported to the appropriate university authority with a recommendation from the course instructor of what an appropriate sanction would be, including earning a failing grade in the course.

NJIT has rules and regulations governing academic misconduct. Students are required to be familiar with these set of student conduct rules. The rules can be found online under the Un**iversity's Academic Honesty Policy** at http://www.njit.edu/academics/pdf/academic-integrity-code.pdf.

Liability Matters

The instructor, School of Management, and/or the University cannot be held liable for any interactions between the individual students or group of students in this class with any person or organization associated or unassociated with the course in any manner that violates the University's expected student code of conduct. Students are liable for their actions.

Students with Disability

If you are a student with disability that requires special accommodations to meaningfully participate in any activities of this course, please obtain and present to the instructor a letter of accommodation issued by the **Accessibility Resources and Services** prior to the time of the activity. The Offices of the Accessibility Resources and Services is located at **205 Campbell Hall** here at NJIT campus. Information about Accessibility Resources and Services Offices can be found at the following website: **https://www.njit.edu/studentsuccess/accessibility/. The Office can be reached by phone at 973-596-5417, 973-596-2994 or 973-596-7093.**