DSCI-305 Introduction to Management Science and Operations Management
Spring 2013

Course Information

Course title: Introduction to Management Sciences and Operations Management
Course Number: DSCI-305-M01
Course description: Focus on the use of quantitative methods and models of potential means to facilitate managerial decision-making in modern business enterprises. Study of the most widely utilized operations research/management science and production planning models, along with their solution techniques. Use of computers and decision-science software to aid management decision-making.

Prerequisite(s)  MATH-132, DSCI-207 and ITM-200 or high level of Excel recommended

Instructor Information

Name: Marta Moreno
Email: morenom@slu.edu
Biography: Terminal Degree: Ph.D Econometrics (Universidad Carlos III de Madrid)
Office hours: MWF 13:00-16:00 and by appointment. Padre Arrupe Hall, First Floor

Learning Objectives

Functional Goals

1. Students are able to formulate pertinent problems as linear programming models.
2. Students are able to apply computer software to solve management science models.
3. Students are able to use business interpretation of computerized results.

Decision-Making Goals

4. Students are able to solve transportation and logistics problems.
5. Students are able to use inventory models.
6. Students are able to schedule personnel and resources to projects.

Text books


Grading system:

Two midterms and one final will be given. They will emphasize the material presented in class but will also cover the reading assignments. It is necessary to pass this course to have at least 75% of the cases done and an average grade of at least 50 in exams. Late cases will not be accepted.

Additional • 15% cases, quizzes
Information

- 25% first midterm
- 25% second midterm
- 10% EXCEL exam
- 25% final exam

Attendance:

Although not mandatory, I strongly urge you to attend all classes. On the other hand, you will be responsible for any announcements, information, problems or course changes that are made in all lectures. Reading chapters will be assigned for each lesson, it is your responsibility to prepare the classes beforehand.

Academic Honesty Policy Statement:

The University is a community of learning whose effectiveness requires an environment of mutual trust and integrity, such as would be expected at a Jesuit, Catholic institution. As members of this community, students, faculty, and staff members share the responsibility to maintain this environment. Academic dishonesty violates it. Although not all forms of academic dishonesty can be listed here, it can be said in general that soliciting, receiving, or providing any unauthorized assistance in the completion of any work submitted toward academic credit is dishonest. It not only violates the mutual trust necessary between faculty and students but also undermines the validity of the University's evaluation of students and takes unfair advantage of fellow students. Further, it is the responsibility of any student who observes such dishonest conduct to call it to the attention of a faculty member or administrator.

Examples of academic dishonesty would be copying from another student, copying from a book or class notes during a closed-book exam, submitting materials authored by or editorially revised by another person but presented as the student’s own work, copying a passage or text directly from a published source without appropriately citing or recognizing that source, taking a test or doing an assignment or other academic work for another student, tampering with another student’s work, securing or supplying in advance a copy of an examination without the knowledge or consent of the instructor, and colluding with another student or students to engage in an act of academic dishonesty.

Where there is clear indication of such dishonesty, a faculty member or administrator has the responsibility to apply appropriate sanctions. Investigations of violations will be conducted in accord with standards and procedures of the school or college through which the course or research is offered. Recommendations of sanctions to be imposed will be made to the dean of the school or college in which the student is enrolled. Possible sanctions for a violation of academic integrity include, but are not limited to, disciplinary probation, suspension, and dismissal from the University. The complete SLU Academic Honesty Policy can be found at the following link: http://spain.slu.edu/academics/academic_advising/docs/Academic_integrity.pdf

Accommodation Statement

In recognition that people learn in a variety of ways and that learning is influenced by multiple factors (e.g., prior experience, study skills, learning disability), resources to support student success are available on campus. Students who think they might benefit from these resources can find out more about:

Course-level support (e.g., faculty member, departmental resources, etc.) by asking your course instructor.

University-level support (e.g., tutoring/writing services, Disability Services) by visiting the Academic Dean’s Office (San Ignacio Hall) or by going to http://spain.slu.edu/academics/learning_resources.html.

Students who believe that, due to a disability, they could benefit from academic accommodations are encouraged to contact Disability Services at +34 915 54 58 58, ext. 204, send an e-mail to counselingcenter-madrid@slu.edu, or to visit the Counseling Office (San Ignacio Hall). Confidentiality will be observed in all inquiries. Course instructors support student accommodation
requests when an approved letter from Disability Services has been received and when students discuss these accommodations with the instructor after receipt of the approved letter.

Important Dates:

Jan. 23 – Last day to drop a class without a grade of W or to add a class.
Feb. 7 – Last day to choose audit (AU) or pass/no pass (P/NP) options.
Feb. 14 – Registration for summer semester opens.
Feb. 15 – First Midterm exam. 14:00.
Mar. 11 – Last day to drop a class and receive a grade of W.
Mar. 15 – Second Midterm exam. 14:00.
Mar. 15 – Last day to submit transfer application for fall semester.
Apr. 9 – Registration for fall semester opens
May 7 – Final Exam, 9:00.

For other important dates, visit http://spain.slu.edu/academics/academic_calendar/spring_2013.html
1. **Introduction to Decision Theory**
   - Problem Solving and Decision Making
   - Introduction to Quantitative Analysis
   - Models of Cost, Revenue and Profit

2. **Introduction to Linear Programming**
   - Maximization and Minimization Problems
   - Graphical Solution Procedure
   - Formulating Spreadsheet Models

3. **Linear Programming: Sensitivity Analysis**
   - Sensitivity Analysis – Ranges of optimality
   - Sensitivity Analysis – Shadow Prices

4. **Linear Programming: Problems with more than two variables**
   - Modelling with more than Two Decision Variables

5. **Linear Programming Applications**
   - Marketing Applications
   - Financial Applications
   - Production Management Applications
   - Blending Problems

6. **Transportation, Assignment and Transhipment Problems**
   - The Transportation Problem
   - The Assignment Problem
   - The Transhipment Problem

7. **Integer Linear Programming**
   - Types of Integer Programming
   - Applications Involving 0-1 Variables

8. **Decision analysis**
   - Structuring the Decision Problem
   - Decision Making with and without Probabilities
   - Decision Analysis with Sample Information
   - Computing Branch Probabilities

9. **Waiting Line Models**
   - Structure of a Waiting Line System
   - Waiting Line Models

10. **Simulation**
    - Risk Analysis
    - Inventory Simulation
    - Waiting Line Simulation