

# OPM-3050 Introduction to Management Science and Operations Management

## Spring 2018

### Course Information

---

Course title: Introduction to Management Sciences and Operations Management  
Course Number: OPM-3050  
Prerequisite(s): MATH-1320, OPM-2070, and ITM-2000 or high level of Excel recommended  
Credits: 3  
Meeting Times: MWF 11:00-11:50

### Instructor Information

---

Name: Marta Moreno  
Email: marta.moreno@slu.edu  
Office hours: M,T,W,F 14:15 - 16:00 and by appointment  
Office: Padre Arrupe Hall, Attic.

### 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.

### Learning Objectives

---

After successfully completing this course, students shall be able to:

1. Students shall be able to formulate production and resource allocation problems as linear programming models.
2. Students shall be able to use business interpretation of computerized results.
3. Students shall be able to solve transportation and logistics models.
4. Students shall be able to use inventory models.
5. Students shall be able to schedule personnel and resources to projects.

### Text books

---

*An Introduction to Management Science, International Edition.* Anderson, Sweeney, Williams & Martin, Cengage Learning, 1<sup>st</sup> or 2<sup>nd</sup> edition. You can buy a hard copy, an e-book or e-chapters of the 1<sup>st</sup> edition (2011, ISBN 978-1-84480-595-2) at <http://www.cengagebrain.co.uk/shop/isbn/9781844805952>

and of the second edition (2014, ISBN 978-1-4080-8840-1) at <http://www.cengagebrain.co.uk/shop/en/GB/storefront/emea?cmd=catProductDetail&productID=207866130222752780213470957701196385842>

*Managerial Decision Modeling, International Edition.* Cliff T. Ragsdale. Thomson South-Western, 2007 (or any other edition).

*Introduction to Management Science, Global Edition,* 12th Bernard W. Taylor (ISBN 13: 978-1292092911) Pearson (or any other edition).

## Grading system:

---

Exams: Two midterms will be given during the semester. The final exam will contain some of the material learned during the whole course but will emphasize the material learned during the final third of the course. To pass this course it is necessary to have an average of 50 on these exams.

Excel Test: An Excel exam will be given in the computer lab.

Quizzes: At the end of each Wednesday class we will have a brief 10 minute quiz. The quiz will test subject matter learnt the previous week. I will drop your lowest two scores. The quizzes are not meant to be tricky or overly difficult, but to ensure that you are up to date on the course material and allow me to gauge this. There will be no make-up quizzes.

Cases: There will be weekly cases assigned that you can do in groups. Each group will have to do the presentation of one of the cases as part of their class grade. Late cases will not be accepted. The lowest two grades in cases will be dropped as well.

Grade Breakdown

- 20% class grade (cases, quizzes and presentation)
- 20/25% first midterm\*
- 20/25% second midterm\*
- 10% EXCEL exam
- 25% final exam

\*The lowest of the two grades will be assigned 20%, the other 25%

### Grading Scale

0-54.9	F	75-79.9	B-
55-59.9	D	80-84.9	B
60-64.9	C-	85-89.9	B+
65-69.9	C	90-94.9	A-
70-74.9	C+	95-100	A

## 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. (See the section “Things that you should do in order to get a good grade in this class”)

## Missed Exams Policy:

---

Midterm and final examinations must be written on their respective dates. No alternative examinations will be scheduled except in the case of excused medical absences. Cases of excused medical absences must be petitioned for through the Chair of the department. Make-up midterms are subject to approval by the professor, the Chair and the Department of Business and Economics. All changes to the final examination must be approved by the Academic Dean.

## Important Dates:

---

Jan.21 – Last day to drop a class without a grade of W or to add a class.  
Last day to choose audit (AU) or pass/no pass (P/NP) options.  
Feb.9 – First Midterm exam, 14:00.  
Mar.9 – Last day to drop a class and receive a grade of W.  
Mar.16 – Second Midterm exam, 14:00.  
Apr.4 – Excel Test, 11:00.  
Apr.4 – Registration for spring semester opens.  
Apr.30 – Last day of class for MWF classes.  
May.8 – Final Exam, 9:00.

For other important dates, visit

<https://www.slu.edu/madrid/academics/registrar/academic-calendar/spring-2018>

## COURSE OUTLINE

---

### **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 and Ranges of feasibility
- Interpretation of a sensitivity report

### **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 Transshipment Problems**

- The Transportation Problem
- The Assignment Problem
- The Transshipment 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. Project Scheduling**

- Creating a Project Network
- PERT
- Finding the critical path

### **10. Inventory models**

- The Economic Order Quantity (EOQ) model
- Choosing the optimal ordering schedule

### **Things that you should do in order to get a good grade in this class:**

---

- Don't miss classes, but if you ever have to miss one, ask one of your classmates (not me) for the notes as soon as possible and go over them before the next lecture.
- Do ALL the solved exercises. I can't emphasize this enough. All quantitative classes require practice and this is not an exception.
- Print the class packet and take notes on it, they will help you keep your class notes organized.
- Read the problems that we are going to go over in class before.
- Work every week, if possible, every day. If you don't have an assignment or exercises to practice (that would be very rarely), review your class notes and go over the problems we have solved in class on your own one more time.
- Feel free to pass by my office to ask me if something is not clear from the lecture before the next lecture, you will probably have trouble understanding this otherwise.
- If you haven't been able to reach me in my office hours, e-mail me your question, try to make it clear and concrete, but do not hesitate to send it to me. If the question is complicated and requires a long explanation, better wait until the next day I have office hours or try to make an appointment if you can't wait.
- Form study groups and make sure that all members participate and learn from each other. Experience shows that this kind of class is more effectively learned when you work in groups.
- Remember my office hours, they are very easy!!

### **Things that you shouldn't do in this class:**

---

- Be late to the lectures, it is very disruptive to the other students and very disrespectful. Also, you miss the most important part of the lecture, where I say what we are going to do and sometimes do a short review of what we did in the previous class.
- Use your phone during the lectures, whether it is for texting or using internet or, obviously, talking, it is extremely disrespectful. I will not allow it.
- Come to my office hours before you have tried to understand the material on your own going over your class notes and doing a few Solved Exercises.
- Think that by just coming to class, you have all the work done. If you don't practice, you will not learn the material.
- Try to study everything two days before the test. It is impossible to really understand this topic by rushing over the material in a few hours.
- Skip homework and/or quizzes. Not only you will learn a lot doing them; homework and quizzes grades can help you if your final grade is borderline.
- Copy the homework from someone else. Not only it will be considered a violation of the academic honesty code, but it is completely useless. The only purpose of the homework is to help you learn.

## **Academic Honesty Policy Statement:**

---

*Academic integrity is honest, truthful and responsible conduct in all academic endeavors.* The mission of Saint Louis University is "the pursuit of truth for the greater glory of God and for the service of humanity." Accordingly, all acts of falsehood demean and compromise the corporate endeavors of teaching, research, health care and community service via which SLU embodies its mission. The University strives to prepare students for lives of personal and professional integrity, and therefore regards all breaches of academic integrity as matters of serious concern.

The governing University-level Academic Integrity Policy can be accessed on the Provost's Office website at: [http://www.slu.edu/Documents/provost/academic\\_affairs/University-wide%20Academic%20Integrity%20Policy%20FINAL%20%2006-26-15.pdf](http://www.slu.edu/Documents/provost/academic_affairs/University-wide%20Academic%20Integrity%20Policy%20FINAL%20%2006-26-15.pdf).

As a member of the University community, you are expected to know and abide by these policies, which detail definitions of violations, processes for reporting violations, sanctions and appeals.

## **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](http://spain.slu.edu/academics/learning_resources.html).

Students with a documented disability who wish to request academic accommodations **must** contact Disability Services to discuss accommodation requests and eligibility requirements. Once successfully registered, the student also must notify the course instructor that they wish to access accommodations in the course. Please contact Disability Services at [disabilityservices-madrid@slu.edu](mailto:disabilityservices-madrid@slu.edu) or +915 54 58 58, ext. 230 for an appointment. Confidentiality will be observed in all inquiries. Once approved, information about the student's eligibility for academic accommodations will be shared with course instructors via email from Disability Services. For more information about academic accommodations, see "Student Resources" on the SLU-Madrid webpage.

Note: Students who do not have a documented disability but who think they may have one are encouraged to contact Disability Services.

## **Student Outcome Assessment:**

---

In order to maintain quality academic offerings and to conform to accreditation requirements, SLU-Madrid regularly assesses its teaching, services and programs for evidence of student learning. For this purpose, SLU-Madrid keeps representative examples of student work from all courses and programs on file, including assignments, papers, exams, portfolios and results from student surveys, focus groups and reflective exercises. Copies of your work for this course may be kept on file for institutional research, assessment and accreditation purposes. If you prefer SLU-Madrid not to retain your work for this purpose, you must communicate this decision in writing to your professor.

## **Title IX**

---

Saint Louis University and its faculty are committed to supporting our students and seeking an environment that is free of bias, discrimination, and harassment. If you have encountered any form of sexual misconduct (e.g. sexual assault, sexual harassment, stalking, domestic or dating violence), we encourage you to report this to the University. If you speak with a faculty member about an incident of misconduct, that faculty member must notify SLU's Title IX deputy coordinator, Marta Maruri, whose office is located on the ground floor of Padre Rubio Hall, Avenida del Valle, 28 (mmaruri@slu.edu; 915-54-5858 ext. 213) and share the basic fact of your experience with her. The Title IX deputy coordinator will then be available to assist you in understanding all of your options and in connecting you with all possible resources on and off campus.

If you wish to speak with a confidential source, you may contact the counselors at the SLU-Madrid's Counseling Services on the third floor of San Ignacio Hall (counselingcenter-madrid@slu.edu; 915-54-5858 ext. 230) or Sinews Multipletherapy Institute, the off-campus provider of counseling services for SLU-Madrid (www.sinews.es; 91-700-1979) To view SLU-Madrid's sexual misconduct policy and for resources, please visit the following web address:  
<http://www.slu.edu/Documents/Madrid/campus-life/SLUMadridSexualMisconductPolicy.pdf>