

**Universidad Latinoamericana de Ciencia y Tecnología**  
**Bachelor of Science in Business Administration**

<b>Name of course</b>	<b>Managerial Decision Modeling</b>
<b>Code</b>	13-2001
<b>Credits</b>	3
<b>Administrative Instructions</b>	The course requires an extensive use of the Internet and electronic databases (EBSCO). It is required for the student to have Access to internet connection.

## **PURPOSE OF THE COURSE**

What are the basic principles and techniques of applied mathematical modeling for decision-making? Why is it important to use analytic methods? How do we recognize their assumptions and limitations? When do we employ them in decision-making models?

In this course, you will use the features of Microsoft Excel to study product costs, determine pricing, and track payroll. They will build spreadsheet models to help make informed business decisions. The course closes with the Monte Carlo simulation, a tool for understanding the effect of uncertainty on business decisions.

Upon completion of the course, you will: develop mathematical models that can be used to improve decision making within an organization, sharpen your ability to structure problems and to perform logical analyses, practice how to translate descriptions of decision problems into formal models, and investigate those models in an organized fashion. The emphasis will be on analyzing models that are widely used in diverse industries and functional areas, including finance, operations, and marketing.

## Competences

Units of Competence	Elements of Competence	Context in which the competence is applied
Disciplinary	The student will be able to:	The student shows the mastering

Competence:		of the competence in learning activities such as:
To analyze financial data influenced by internal and external factors in order to make short-term and long-term decisions.	Use spreadsheets to setup, analyze data and make business decisions.	<ul style="list-style-type: none"> <li>• Mastering Excel functions.</li> <li>• Mastering sensitivity analysis.</li> <li>• Setting up a spreadsheet for modeling scenarios.</li> <li>• Become familiar with the Monte Carlo simulation.</li> </ul>
<b>General Competence</b>		
To show competence for learning and for looking for personal and professional effectiveness,	Creative thinking	<ul style="list-style-type: none"> <li>• Uses his/her creativity in applying solving business administration problems faced in every day managerial situations.</li> </ul>
	Communication.	<ul style="list-style-type: none"> <li>• Communicates verbally, non-verbally and in writing with his/her peers, professor and general public, in a variety of forms and contexts.</li> </ul>
	Collaborate.	<ul style="list-style-type: none"> <li>• Collaborates and interacts with others with effectiveness and respect.</li> </ul>
	Reasoning.	<ul style="list-style-type: none"> <li>• Uses reasoning when synthesizing information, establishing arguments, evaluation alternatives and establishing conclusions, when communicating with peers and professors.</li> </ul>
	Uses information technology and communication.	<ul style="list-style-type: none"> <li>• Uses information technology and communications to do research, to organize, evaluate and communicate information.</li> </ul>
	Uses scientific methods and tools.	<ul style="list-style-type: none"> <li>• Uses scientific methods when doing research and before arriving to conclusions.</li> </ul>

## **Course Topics:**

- The Excel Environment
- Working with data: Basic Techniques
- Increasing Spreadsheet Readability
- Excel Formulas
- Advanced Excel Formulas
- Charts
- Importing data into Excel
- The Art of Spreadsheet Modeling
- Using Excel Solver
- Three Dimensional Formulas
- Monte Carlo Simulation

## **Teaching Methodology**

**SOCRATIC DIALOGUE:** Most of the sessions will follow an open discussion format under the Socratic dialogue, in which the professor assumes the conducting role of the discussion between him/her and the student, or as a mediator between students.

**ONLINE EDUCATION:** The student will learn through Reading the material, the interaction with the professor and students in class, and through electronic means.

**CASE METHODOLOGY:** The student will read and analyze the case, individually or in groups, in order to acquire knowledge about the topic, and to be capable of making decisions on scenarios where not all the information is available.

## Evaluation Methodology

The course grading is divided according to the following items:

<b>Activity</b>	<b>%</b>
Homeworks (10 – 5% each)	30%
Term project	40%
Forum (3 – 8.33% each)	25%
CEPA	5%
<b>Total</b>	<b>100%</b>

## Attendance

Attendance is mandatory. Failing to attend the class more than 3 times will automatically fail you. You must always let the professor know in advance if you are not going to make it to class; however, excusing yourself will not eliminate the attendance requirement.

### Rubric for in class attendance (2% per live session)

Points per session	Criteria
2	<p><b>Attendance:</b> The student showed up in time and remained in class throughout the class.</p> <p><b>Participation:</b> The student read the material and actively participated, significantly enhancing the learning experience for him/her and classmates. The student actively listened to his/her peers and commented on their opinions.</p>
1.5	<p><b>Attendance:</b> The student showed up in time but did not remain in class throughout the class OR the student showed up late for class.</p> <p><b>Participation:</b> The student actively participated, significantly enhancing the learning experience for him/her and classmates. The student actively listened to his/her peers and commented on their opinions.</p>
1	<p><b>Attendance:</b> The student showed up in time and remained in class throughout the class.</p> <p><b>Participation:</b> The student did not actively participate. Sometimes, the student was distracted by electronic devices or by talking to other classmates.</p>

<b>0.5</b>	<p><b>Attendance:</b> The student showed up in time and remained in class throughout the class.</p> <p><b>Participation:</b> The student did not actively participate. All the time, the student was distracted by electronic devices or by talking to other classmates.</p>
<b>0.25</b>	<p><b>Attendance:</b> The student showed up in time but did not remain in class throughout the class OR the student showed up late for class.</p> <p><b>Participation:</b> The student did not actively participate. All the time, the student was distracted by electronic devices or by talking to other classmates.</p>

### **Rubric for in online check in (1% per online session)**

Points per session	Criteria
<b>1</b>	<p><b>Attendance:</b> The student checked in during the week.</p> <p><b>Participation:</b> The student posted his goals, learning experiences or difficulties of the week.</p>
<b>0.5</b>	<p><b>Attendance:</b> The student checked in during the week, BUT HE/SHE DID NOT</p> <p><b>Participation:</b> The student posted his goals, learning experiences or difficulties of the week.</p>
<b>0</b>	<p><b>Attendance:</b> The student did not check in during the week. NOR</p> <p><b>Participation:</b> The student posted his goals, learning experiences or difficulties of the week.</p>

### **Homeworks (10 of 3%)**

After individually studying each chapter, and discussing your learning with the instructor, the student will practice his/her new learned skills. Using the link provided by the instructor, the student will complete the online homeworks. After completing the homework, the student will automatically receive a score. On the next session, the student will discuss the homework exercises with the instructor

**Discussion Forums (3 of 8.33% each)**

**Rubric for Forum 1: Autobiography and course objectives.**

Points	Criteria
5%	<p><b>Post:</b> The student submitted a paragraph presenting himself to the instructor: full name, place of birth, place of work, as well next academic and professional objectives. The student submitted a second paragraph describing the nature of his internship project.</p> <p><b>Form:</b> The student participated in the forum on a timely manner, always using a scholarly tone appropriate for an Ulacit business student.</p>
4%	<p>The student does not comply with one of the following items:</p> <p><b>Post:</b> The student submitted a paragraph presenting himself to the instructor: full name, place of birth, place of work, as well next academic and professional objectives. The student submitted a second paragraph describing the nature of his internship project.</p> <p><b>Form:</b> The student participated in the forum on a timely manner, always using a scholarly tone appropriate for an Ulacit business student.</p>
3%	<p>The student does not comply with two of the following items:</p> <p><b>Post:</b> The student submitted a paragraph presenting himself to the instructor: full name, place of birth, place of work, as well next academic and professional objectives. The student submitted a second paragraph describing the nature of his internship project.</p> <p><b>Form:</b> The student participated in the forum on a timely manner, always using a scholarly tone appropriate for an Ulacit business student.</p>
2%	<p><b>Post:</b> The student submitted a late participation on the forum.</p>
1%	<p>The student does not comply with three of the following items:</p> <p><b>Post:</b> The student submitted a paragraph presenting himself to the instructor: full name, place of birth, place of work, as well next academic and professional objectives. The student submitted a second paragraph describing the nature of his internship project.</p> <p><b>Form:</b> The student participated in the forum on a timely manner, always using a scholarly tone appropriate</p>

	for an Ulacit business student.
<b>0%</b>	The student does not participate on the forum.

### **Rubric for Forum 2: Leadership and Ethics**

<b>Points</b>	<b>Criteria</b>
<b>5%</b>	<p><b>Post:</b> The student answers the question to the case using an article from Ebsco. The article is clearly relevant to the course subject. The student provides the references in APA style format.</p> <p><b>Form:</b> The student participated in the forum on a timely manner, always using a scholarly tone appropriate for an Ulacit business student.</p>
<b>4%</b>	<p><b>Post:</b> The student answers the question using another source, other than Ebsco. The article is clearly relevant to the course subject and created interest in the rest of the classmates. The student provides the references in APA style format.</p> <p><b>Form:</b> The student participated in the forum on a timely manner, always using a scholarly tone appropriate for an Ulacit business student.</p>
<b>3%</b>	<p><b>Post:</b> The student does not answer the question appropriately. The student provides the references in APA style format.</p> <p><b>Form:</b> The student participated in the forum on a timely manner, always using a scholarly tone appropriate for an Ulacit business student.</p>
<b>2%</b>	<b>Post:</b> The student submitted a late participation on the forum.
<b>1%</b>	<b>Post:</b> The student does not answer the question appropriately. The student provides no references.
<b>0%</b>	The student does not participate on the forum.

### **Learning Reflections: (3 total –5% each)**

Description: At the end of specific periods, create a 150-200 word reflective statement describing how the learning during the reading period has affected your thought processes, development, and



professional disposition. This statement should be a forum for you to reflect on your personal learning process—challenges, moments of discovery, life experiences, readings, and interactions.

### Learning Reflection Rubric

5%	4%	3%	2%	1%	0%
<p>The reflection shows a deep understanding of the material and an honest self-assessment on how the learnings have impacted the student's life.</p> <p>The reflection includes references.</p> <p>The reflection was submitted on time.</p>	<p>The reflection shows a deep understanding of the material and an honest self-assessment on how the learnings have impacted the student's life.</p> <p>The reflection does NOT include references.</p> <p>OR</p> <p>The reflection was NOT submitted on time.</p>	<p>The reflection shows a deep understanding of the material and an honest self-assessment on how the learnings have impacted the student's life.</p> <p>The reflection does NOT include references.</p> <p>AND</p> <p>The reflection was NOT submitted on</p>	<p>The paragraph is a synthesis of the material reviewed during the last weeks. There is not auto assessment in the process. It includes a reference.</p>	<p>The paragraph is a synthesis of the material reviewed during the last weeks. There is not auto assessment in the process.</p> <p>Does not include a reference</p>	<p>No learning reflection was posted.</p>

**CEPA (5%):** Students should fill the online course evaluation, which is a reflection of the teaching-learning process they are going through. This evaluation will be available on Blackboard during weeks 12 and 13 and is worth 5% of the grade.

### ACADEMIC HONESTY

ULACIT endorses high ideals and rigorous standards of academic life. For the effects of this course, it is expected that participants avoid dishonest behavior such as fraud or plagiarism. Fraud includes making up data, falsifying bibliography, using projects elaborated by third parties, obtaining unauthorized help in classified tasks or for other persons to do your work. Plagiarism includes

literally copying phrases, sentences, paragraphs and fragments of printed materials, Internet, and other sources, without giving credit to the original author; as well as paraphrasing without citing the source. **Plagiarism will make you immediately fail the course.**

## **ATTENTION TO DIVERSITY**

The curricular approach at ULACIT focuses on the development of competencies through the completion of projects, allowing students to fulfill the academic requirements based on their own learning styles, abilities, and individual interests. The primary responsibility of learning is placed on the student; the instructor is responsible for setting course expectations from start, offering the required support to satisfy them, and awarding a level of flexibility that allows each student to choose how he or she will fulfill the course goals and work at his own pace in the completion of the projects assigned. Furthermore, the instructor will provide the required learning materials, along with continuous feedback using the rubrics designed for each project. The feedback is of a qualitative as well as quantitative nature. The use of technological tools and collaborative work allows the professor to tailor the educational process to the abilities of each student. If you have any additional special educational needs, please contact the Director of the Center of Student Counseling and Psychology, writing an e-mail to the following address: [diversidad@ulacit.ac.cr](mailto:diversidad@ulacit.ac.cr).

## **Instructor**

### **Luis Carlos Fournier MBA**

I am a professional with more than 20 years of experience in Finance and Banking. I had the opportunity to work in Retail, Corporate, Second Tier and Investment Banking and accumulate experience in Structuring, Financial Modelling, Business Valuation and Country Analysis.

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## Educational Resources

The course has the following education technology to continuously support the teaching-learning process:

- a) On-line education platform Blackboard, which includes tools for synchronic and asynchronic communication between the professor and the students, as well as areas to make available to students grades, files, web pages and evaluations.
- b) Printed resources in the Alberto Cañas Escalante Library.
- c) Virtual EBSCO Library, from which it is possible to access scientific papers in full text for research papers.

## BIBLIOGRAPHY:

Required

- McClave, James et al (2017). *Statistics for Business and Economics* 13<sup>th</sup> Edition. Pearson
  - Harvard Business Quantitative Methods Online Course. Retrieve from <http://cb.hbsp.harvard.edu/cb/product/3252-HTM-ENG> Harvard
  - Business School Spreadsheet Modeling Online Course.(2012).  
<http://courseware.hbs.edu>

Suggested

- Soubeiga, Eric (2013). *Mastering Financial Modelling* (1<sup>st</sup> Edition) McGraw-Hill Education
- American Psychological Association. (2009). *Publication manual of the American Psychological Association* (6th ed.). Washington, D.C.: Author.



## Class Schedule

Week	Content	Teaching Strategy	Learning Activities
1	Course Introduction The Excel Environment Mode 1 s	Individual review of syllabus. Discussionwith professor regarding the syllabus and course objectives.	Read syllabus Term project discussion
2	Model structure	Individual review of syllabus. Discussionwith professor regarding the syllabus and course objectives.	Homework no 1
3	Model structure	Individual review of syllabus. Discussionwith professor regarding the syllabus and course objectives.	<b>1<sup>st</sup> Draft due – Term project.</b>
4	The Excel Environment	Individual review of syllabus. Discussionwith professor regarding the syllabus and course objectives.	Homework no 2
5	Working with data: Basic Techniques	Individual study of lesson. Individualcompletion of exercises. Discussion with tutor.	Review lesson Perform quantitative exercises.

6	Increasing spreadsheet readability	Individual study of lesson. Individual completion of exercises. Discussion with tutor.	Homework no 3
7	Excel Functions	Individual study of lesson. Individual completion of exercises. Discussion with tutor.	Review lesson <b>2<sup>nd</sup> Draft due – Term project.</b>
8	Advanced Excel Functions	Individual study of lesson. Individual completion of exercises. Discussion with tutor.	Homework no 4
9	Advanced Excel Functions	Individual study of lesson. Individual completion of exercises. Discussion with tutor.	

10	Charts Importing Data into Excel	Individual study of lesson. Individual completion of exercises. Discussion with tutor.	Homework no 5
11	The Art of Spreadsheet Modeling	Individual study of lesson. Individual completion of exercises. Discussion with tutor.	<b>Final Draft due – Term project.</b>
12	Using Excel Solver	Individual study of lesson. Individual completion of exercises. Discussion with tutor.	Homework no 6
13	Three Dimensional Formulas	Individual study of lesson. Individual completion of exercises. Discussion with tutor.	
14	Monte Carlo Simulation  <b>HOLIDAY EASTER WEEK</b>	Individual study of lesson. Individual completion of exercises. Discussion with tutor.	Homework no 7
15	Wrapup	Individual study of lesson. Individual completion of exercises. Discussion with tutor.	<b>Term project delivery</b>