Managerial Analytics

A.Y. 2019/2020

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Extended syllabus
What is analytics and how to use it to take better informed decisions?

**Purposes**

- Present and discuss some widely used analytical tools useful to examine and resolve decision problems in a business context.
- Dedicate attention to the formulation of well-posed decision problems, to the implementation of decision techniques and their analysis by means of electronic spreadsheet and other dedicated software.
- Interpret the output of analytical models to propose appropriate solutions and take “good decisions”.

**Prerequisites**

- Basics of calculus (bachelor level).
- Familiarity with the software Excel is welcome.
Remark

This course has been conceived for strengthen analytical skills of students enrolled in the Master Program in Management offered by the Department of Management.

However, the participation of students enrolled in other programs and international students is highly welcome!

Bachelor students should be aware that the techniques used in class, the teaching methodologies and the examination procedures are designed for a master’s level course.
Teaching material

Most of the teaching material will be made available online by the instructor:

- Slides
- Case studies
- Excel sheets
- Other recommended readings

Textbooks

(you can also use the 4.th edition available at the BEC)


We shall cover only few chapters of these books.
Moodle platform

We will use intensively the Moodle (online) platform offered by Ca’ Foscari.

All students willing to take the exam are requested to enroll in the online Moodle course **MANAGERIAL ANALYTICS - EM1305**. (here)

To this aim, you need to insert the enrollment key “MA1920”, when requested.

All the materials, readings, exercises, slides, case studies, mandatory quizzes, ... will be uploaded on this platform.
Organization of the lectures

I will make a blended use of slides (theory, case description) and Excel (implementation of methodologies, discussion of results and solutions).

Usually, the materials related to the forthcoming class are posted in advance. Therefore, you can download them and have them ready (maybe even read them!) before the class.

This course emphasizes applications over theory: we will make intensive use of software during classes. You are encouraged to bring your own laptop in order to experience "live" the methodologies.

We will organize three flipped classes. Participants will be expected to read at home and then discuss a proposed case study where the methodologies seen in class will be at work.
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Examination policy (attending students)

The final grade is assessed on a 30-point basis. 18 points are the minimum grade to receive the 6 ECTS related to this course.

- Student’s commitment (10%): the instructor monitors and evaluates the participation/commitment of students.
- Moodle Quizzes / Exercises (20%): students will be offered quizzes and/or exercises to be solved individually.
- Group work (30%): students will be divided into work groups. The evaluation will be based on a written report.
- Oral exam (40%): students will be offered theoretical questions or short exercises related to the materials analyzed in class. Also the topic covered in the group work will be part of the oral examination.
Examination policy (not-attending students)

Although highly recommended, participation in classes is not strictly mandatory.

Not-attending students will be required to perform activities on Moodle (20% final grade), an individual assignment (whose topic has to be discussed with the instructor in advance) with a final written report (30%) and an oral exam (50%).
Ongoing evaluation

As clearly stated in the syllabus, ongoing evaluation of commitment is part of the grade for attending students (10%).

I will base my evaluation on the discussion taking place during classes and, especially, during the flipped classes.

Attending students are supposed to actively take part at the discussions. In particular, attendance of at least two out of three of the flipped classes is highly recommended.

Classes marked as flipped, will be announced in advance, as well as the related reading material.
Mandatory activities on Moodle (Quizzes)

This activity is mandatory for both attending and not-attending students (20% of the final grade).

I will post on Moodle two mandatory quiz sessions.

Quizzes:

- Each quiz is composed by 10 multiple-choice questions.
- Each quiz can be run without any limitation on the number of trials.
- The grade will be the highest score achieved.
- The deadline for the quizzes coincides with the deadline for enrollment in the exam list of the call for the exam.
Group works

This activity is mandatory for attending students and is evaluated by the instructor (30% of the final grade).

- Groups should consist of 3-6 persons.
- Topic: The group itself is in charge to propose me interesting cases, inspired by personal experiences, where the techniques developed during the course may be fruitfully applied.
- Output: I expect each group to write a report (8-10 pages).
- Grade: The final grade (on a scale from 0 to 10) for the group work will be based on the written report.
Some practical instructions on group works

- Before the 11th of October 2019, identify the members of the group (3-6) and a reference person (responsible to interact with me). Note that by that time, we will have covered big part of the program.
- Choose the topic and the name for the group work.
- This activity is conceived for attending students only: the final report must be uploaded on Moodle before the 31st of October.
Oral examination

A large part of the final grade is based on a oral examination (40% for attending and 50% for not-attending students).

Students will be requested to answer theoretical and/or practical questions related to the material analyzed in class; possibly, by relying on the software used during the course.

Therefore, students are supposed to be able to apply knowledge and understanding related to the material covered during the lectures.

Also the material covered in the group work (or individual assignment) will be discussed during the oral examination.

The oral examination is evaluated on a scale from 0 to 10 points.
Grading policy - Summary

Summarizing, the grading for the course works as follows:

<table>
<thead>
<tr>
<th>Component</th>
<th>Points</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commitment</td>
<td>0 - 10</td>
<td>10%</td>
</tr>
<tr>
<td>Online activities (x2)</td>
<td>0 - 10</td>
<td>20%</td>
</tr>
<tr>
<td>Group work (*)</td>
<td>0 - 10</td>
<td>30%</td>
</tr>
<tr>
<td>Oral exam (**)</td>
<td>0 - 10</td>
<td>40%</td>
</tr>
</tbody>
</table>

(*): for not-attending students, the group work is replaced by an individual assignment to be discussed with the instructor.

(**): for not-attending students, the oral exam takes 50% of the weight, whereas the commitment takes 0%. 
Covered topics and structure of the course

1. Managerial analytics in a nutshell. Descriptive, Predictive and Prescriptive analytics.
2. Prescriptive analytics: data-based techniques for taking informed decisions
3. Methodologies based on multicriteria decision analysis and real applications
4. Decision trees: classical representation, simulations and recent development of Machine Learning
5. Artificial intelligence and its role in solving new challenges in the field of management
Tentative scheduling (... very tentative!)

- First week
  - Analytics in Management
  - SMART Methodology
- Second week
  - First case study: Big Cruises [Flipped Class]
  - AHP methodology
- Third week
  - Decision Trees
- Forth week
  - Second case study: Real Options [Flipped Class]
  - Monte Carlo Simulations for Decision Trees
- Fifth week
  - Artificial Intelligence and Managerial Applications
  - Decision Trees & Machine Learning
  - Third Case Study: ML at work [Flipped Class]
Ca Foscari is an Inclusive University

• If you have a motor, visual, auditory or other disability, or a specific learning disorder, we invite you to do two things:
  1. Talk to your course instructor
  2. Contact the office of disability support services: disabilita@unive.it

• Contact the office of disability support services (disabilita@unive.it) for general information: to find out what you are entitled to by law, and to request support and accommodation - www.unive.it/disabilita