Guidelines to *Statistics* course

This document covers the guidelines for a *Statistics* course based on problem solving. Its aim is to work through random elementary problems using the fundamentals of mathematical statistics. To do this, we provide a system of solved and proposed problems that will promote the development of statistical problem-solving skills.

The solved problems are introduced following the progressive nature of meaningful learning. For this reason, the procedures for solving problems and their solutions are analyzed together with their meanings. From an analytical perspective, the way to obtain the solutions is shown explicitly, allowing students to gain a better understanding of the procedures. However, this process does not exclude the use of computer software to speed up the problem-solving procedures.

This course does not teach the theoretical basis of statistics. For this reason, students should look for this information in references such as:

1. Triola, Mario F. Elementary Statistics. 11th edition (2009).
2. Douglas C., Montgomery. Applied Statistics and Probability for Engineers. 7th edition (2018).
3. Collaborative Statistics: http://cnx.org/content/col10522/latest/

Online textbook written by Barbara Illowsky and Susan Dean for non-statisticians. It presents the main concepts of statistics in a practical and intuitive way.

During the course, this subject should be studied using the following approach:

1. Study the solved problems. Review the theory underlying them, if appropriate.
2. Solve the proposed problems presented in each block.
3. Use the forum for each block to share the solutions to the proposed problems with other students. In these forums, all students can pose or answer questions. Peer collaboration is a very powerful tool for improving abilities associated to problem solving.

The content is presented in four blocks. The first block covers descriptive statistics. The second one addresses probabilities. The third is focused on probability distribution functions. The fourth deals with statistical inference.

As a supplementary activity, there will be an online session for students to attend if they want to. The topic of this session will be the use of probability distribution functions. For this, a

problem will be used to support the explanation. The session will be arranged by a teacher, and two or more students will take part, developing a demonstration exercise on probability functions. This activity will take place on *8 April, 2021, at 12.40-2.20 pm*.