Chapter 2 - Test yourself

QUESTIONS ASKED

- Am I aware of the basics of scientific writing required to write an informative report?
- Do I remember the basics of mathematics?
- How do I use statistics to plan and analyze my field or experimental data?

BACKGROUND INFORMATION

- YouTube, by maverickjang: Learn how to write scientific papers in under 4 minutes
- YouTube, by thinkwell: Calculus I in 20 minutes
- YouTube, by GCFLearnFree: Excel 2010: Charts

INSPIRATION

This is just a self-awareness exam that takes less than 10 minutes to answer. In its simplest and shortest form, which is the one presented here, it is a pen-and-paper test. The idea came during a discussion with my colleague Raul Primicério. We felt that some students were over-confident about their basic knowledge and skills before they started the introductory courses. This made our teaching task more difficult. Hopefully, this test will encourage students to review past knowledge at secondary school or college levels.

Santos, J. 2015. CONΣERV IT 1.0 – Student Manual: A Training System for Aquatic Conservation Managers. Septentrio Educational 2015(2). DOI: http://dx.doi.org/10.7557/se.2015.2

THE ASSIGNMENT

Proficiency test

This test is optional and *anonymous*. The purpose of the exercise is to assess the background of the whole group of students. This will help us shape the contents of the introductory courses. Therefore, we need *honest* answers, and it is acceptable to write "I don't know".

Question 1. *Background.*
Write shortly about your professional and academic background, including major subjects and years of study at University level.

Question 2. *Computers and information technology*. (Subject dealt with in Bio-3551.)
Rate your knowledge as none (N), basic (B) or advanced (A) in the following areas. For each area state also which software and tasks you are most familiar with.
Word processing -
Spreadsheet (computation, graphics) -
Programming language –
E-mail –
Internet browsing –
Reference or literature databases –

Question 3. *Scientific writing*. (Subjects dealt with in Bio-3552, Bio-3551 and other introductory courses.)

a) Have you ever written a thesis or scientific paper? State how many.
b) When writing a species name, which of the following options seem to be in the proper format: HOMO SAPIENS, Homo sapiens, homo sapiens, homo s., or homo-sapiens? How would you type it?
c) In 2001, Mary Smith, Liu Scott and Karim Wilson wrote an article with title "Growth of fishing nations" which was published in pages 40-50 of the first volume of the scientific journal "Development Policy". If you are writing a scientific paper, how would you normally cite this work in a) the body text and b) in the reference list?
d) Imagine that you have performed an observational study in a subject of your preference, and that you are now going to write a 50-page thesis. What would be the major sections (chapters) of that work, and what content would fit better in each of these sections? (For instance, a short description of the major findings would be made in the Abstract or Summary section.) *Maximum* 100 words.

Question 4. *Mathematics and statistics*. (Subjects dealt with in Bio-3551, Bio-3553, Bio-3555 and other courses.)

a) Given the following four number series [2, 4, 6, 28] determine its arithmetic mean (average) as well as the median.

b) Represent the series of numbers of the previous question in a pie-chart.

c) What is the solution of the following expression $y=a.e^b$, given that a=5 and b=0?

d) You made an experiment with a group of 100 fast snails, and observed that on average they had covered 5 m after one hour, 10 m after two hours, 15 m after three hours,...., and 50 m after ten hours. How would you express relationship between the expected distance covered (d) and time (t) for a single snail in a short mathematical notation? What are the units of the derivative of this function?

e) During your field work you measured the Productivity ($/worker) of three types of enterprises, small, medium and large. You noticed that there were large variations in productivity within each of these groups. Which statistical analysis would you use to compare the group means? What would your null-hypothesis (H_0) be? What would be the sampling design of your next survey?