

Total Time (including reading): 45 minutes

1. (0.5p-ELIMINATORY) Create on your partition on the server a folder named **InfoEXAMExample**.

2. Introduce and formatting as requested in a new Word document the following text (text in borders).

Estimation of mean with confidence interval when the variance is known

Generally, knowing the mean of a sample \bar{x} , we can estimate the mean of population (μ) using confidence interval of the mean at α significance level. The most frequently used significance level is $\alpha=0.05$, for which $Z_{\alpha} = 1.96$. In this case, the confidence interval associated to the mean is given by the following formula:

$$\left[\bar{x} - 1.96 \frac{\sigma}{\sqrt{n}} ; \bar{x} + 1.96 \frac{\sigma}{\sqrt{n}} \right]$$

where σ is standard deviation of the population, and n is the sample size.

- a. (1 p) **Text formatting:** Font = Arial, Size = 10, Line spacing = 1.5, Simultaneously aligned to left and right (Exception: align the formula a center). **Document formatting:** page = A4, margins (top, bottom, left, right) = 2 cm.
- b. (1 p) Inclusion correctly the special elements (such as symbols and formulas).
- c. (0.25 p - ELIMINATORY) Save the file in the **InfoEXAMExample** folder as *WordExample*.

3. Include in a new Microsoft Excel file the data from the following table:

ID	Gender (M/F)	Glycemia (mg/dL)	HDLCol (mg/dL)
1	M	100	32
2	F	103	42
3	F	99	49
4	M	84	37
5	F	82	47
6	M	72	34
7	F	89	48
8	M	80	52
9	F	76	60
10	M	108	47

- a. (0.25 p - ELIMINATORY) Save the file in the **InfoEXAMExample** folder as *ExcelExample*.
- b. (1 p) We will defined a new dichotomial variable named HyperGlicemia. Include this new variable to the right of column named Glycemia. Use the following definition to display for each subject the value of HyperGlicemia:
IF Glycemia > 120 HyperGlicemia=Yes, otherwise HyperGlicemia=No
- c. (1 p - ELIMINATORY) Compute for Glycemia the following statistical parameters: arithmetic mean, standard deviation, standard error, and coefficient of variation.
- d. (1 p) Verity through proper graphical representation the relation between Glycemia and HDLChol.
- e. (1 p) Interpret the graphical representation obtained in the previous request. Put the interpretation under the graphical representation.
- f. (1 p) Is the HDLCol different in male group compared to female group? Save the results of the test(s) in a new sheet named *Test*.
- g. (1 p) In the *Test* file provide the following information:
- Null and alternative hypothesis.
 - Significance level.
 - Name of the test used.
 - Interpretation of results (statistical and clinical interpretation).