San Pablo Catholic University (UCSP)
Undergraduate Program in
Computer Science
SILABO

Universidad Católica San Pablo
2022-II

MA203. Statistics and Probability (Mandatory)

1. General information

1.1 School	:	Ciencia de la Computación
1.2 Course	:	MA203. Statistics and Probability
1.3 Semester	:	4^{to} Semestre.
1.4 Prerrequisites	:	MA102. Calculus I. (3^{rd} Sem)
1.5 Type of course	:	Mandatory
1.6 Learning modality	:	Face to face
1.7 Horas	:	2 HT; 2 HP; 2 HL;
1.8 Credits	:	4

2. Professors

3. Course foundation

It provides an introduction to probability theory and statistical inference with applications, needs in data analysis, design of random models and decision making.

4. Summary

1. Variable Type 2. Descriptive Statistics 3. Inferential Statistics

5. Generales Goals

- An ability to design and conduct experiments, as well as to analyze and interpret data.
- An ability to identify, formulate, and solve real problems.

6. Contribution to Outcomes

This discipline contributes to the achievement of the following outcomes:

a) An ability to apply knowledge of mathematics, science. (**Usage**)

i) An ability to use the techniques, skills, and modern computing tools necessary for computing practice. (**Usage**)

j) Apply the mathematical basis, principles of algorithms and the theory of Computer Science in the modeling and design of computational systems in such a way as to demonstrate understanding of the equilibrium points involved in the chosen option. (**Assessment**)

7. Content

UNIT 1: Variable Type (6)	
Competences:	
Content	**Generales Goals**
• Variable Type: Continuous, discrete	• Classify the relevant variables identified according to their type: continuous (interval and ratio), categorical (nominal, ordinal, dichotomous). • Identify the relevant variables of a system using a process approach.
Readings: M.Ross (2014), Mendenhall (2014)	

UNIT 2: Descriptive Statistics (6)	
Competences:	
Content	**Generales Goals**
• Central Tendency (Mean, median, mode) • Dispersion (Range, standard deviation, quartile) • Graphics: histogram, boxplot, etc.: Communication ability.	• Use central tendency measures and dispersion measures to describe the data gathered. • Use graphics to communicate the characteristics of the data gathered.
Readings: M.Ross (2014), Mendenhall (2014)	

UNIT 3: Inferential Statistics (6)	
Competences:	
Content	**Generales Goals**
• Determination of the sample size • Confidence interval • Type I and type II error • Distribution type • Hypothesis test (t-student, means, proportions and ANOVA) • Relationships between variables: correlation, regression.	• Propose questions and hypotheses of interest. • Analyze the data gathered using different statistical tools to answer questions of interest. • Draw conclusions based on the analysis performed.
Readings: M.Ross (2014), Mendenhall (2014)	

8. Methodology
El profesor del curso presentará clases teóricas de los temas señalados en el programa propiciando la intervención de los alumnos. El profesor del curso presentará demostraciones para fundamentar clases teóricas. El profesor y los alumnos realizarán prácticas Los alumnos deberán asistir a clase habiendo leído lo que el profesor va a presentar. De esta manera se facilitará la comprensión y los estudiantes estarán en mejores condiciones de hacer consultas en clase.

9. Assessment
Continuous Assessment 1 : 20 % **Partial Exam** : 30 % **Continuous Assessment 2** : 20 % **Final exam** : 30 %

References

M.Ross, Sheldon (2014). *Introduction to Probability and Statistics for Engineers and Scientists*. 5th. Academic Press.
Mendenhall, Beaver (2014). *Introducción a la probabilidad y estadística*. 13th. Cengage Learning.