SAGRADO
Universidad del Sagrado Corazón

SYLLABUS

TITLE: Data Management

CODE: GIV 302

PREREQUISITES: GIV 301

CREDITS: 3 credits | 45 contact hours | 1 term

DESCRIPTION

In this course, students delve into the various techniques of data and information analysis parting from the research designs. The course establishes the difference between the concepts of information and data, and enables students to practice data collection and coding. It also promotes the integration of digital technology to process the collected data and perform the right procedures to reach valid conclusions. Students will determine, depending on the research question, the statistical treatment or qualitative analysis to which the data or information generated will be subjected. The processing of data includes its evaluation and the recognition of the best ways for its visualization. Through visualization, a way of presenting the explanations of the research question is proposed. This course has an experience linked to the Language Lab.

JUSTIFICATION

Data management is the final phase in the research process. For investigators, it entails demonstrating their mastery over their research question, its theoretical/contextual basis, and how appropriate the data collection method was. Data management also includes a level of understanding that allows for the interpretation of research materials and reaching conclusions that are not biased by the will or intention of the researcher, but rather stand for themselves and provide the spaces for solving the problem or answering the analysis question.

COMPETENCES

The course develops the following competences in students:

- **Exploration and research**
- **Critical questioning**
- **Ethical sense**

OBJECTIVES

After completion of the course, students will be able to:

1. Establish a relationship between the methodology design and the type of analysis applied to the data.

2. Explain research results orally, in writing, and through data visualization.

3. Organize their data so it reflects a story (storytelling) that makes research conclusions, presented as results of an analysis, comprehensible.

4. Assume an ethical position before data management and its applications.

5. Understand the different qualitative and quantitative (statistical) analyses and their use depending on the research context.

6. Describe, in a general way, the different types of qualitative and quantitative analyses, as well as the statistical treatment for descriptive data.

7. Recognize the main characteristics of inferential statistics.

8. Integrate the Information and Communication Technologies (ICT) in the data analysis process.

CONTENTS

I.   Qualitative and quantitative data analysis

  A. Relationship between problem statement, research questions, methodological design, and analysis

II. Qualitative data analysis

  A. General process of qualitative data analysis
    1. Descriptive, analytical, or interpretative approach to qualitative data
    2. Data organization, transcription, categorization, generation of meanings and relationships
      a) Analysis log
  B. Role of the researcher in the collection and analysis of qualitative data
  C. Introduction to content analysis
    1. Categorization and coding of information
    2. Thematic, semiotic, discursive
  D. Elements of rigor in qualitative research
    1. Dependence
    2. Credibility
    3. Transfer (applicability of results)
    4. Confirmation

III. Quantitative data analysis

    A. General process of quantitative data analysis
    B. Basic statistical concepts
        1. Probability:
            a) Relationship between events
            b) Calculation of probabilities
            c) Discrete or continuous distribution
        2. Variables
            a) Qualitative and quantitative
            b) Dimensions
            c) Discreet and continuous
            d) Scales
    C. Data collection and visualization
        1. Measures of position: standard score, quartiles, and percentiles
        2. Outliers
        3. Pie and Pareto charts, histograms, and ogive and Box Plot diagrams
    D. Descriptive statistics: measures and interpretation
        1. Definition
        2. Frequency distribution
        3. Contingency table (cross tabs)
        4. Comparison of percentages
        5. Central tendency measures (mean, median, and mode)
        6. Variability: standard deviation and variance
    E. Introduction to inferential statistics
        1. Hypothesis testing
        2. Exploration of parametric and non-parametric measurements
            a) Non-parametric measurements
                1) Confidence intervals (%)
                2) Chi-square
            b) Parametric measurements
                1) Confidence intervals (amplitude and range)
                2) T-test
                3) Multivariate analysis of variance (MANOVA)

IV. Technological tools and Information and Communication Technologies (ICT) related to research designs

    A. Programming, applications, and supporting technological tools such as Excel, R, NVivo, others.

V. Final research report according to its qualitative, quantitative, mixed, or creative project approach

    A. Elements to consider when preparing the report (writing style, grammar, integration of diagrams, tables, graphs, etc.)

    B. Ethical aspects to consider

METHODOLOGY

The following strategies from the active learning methodology are recommended:

- Conferences
- Exercises
- Group work
- Team teaching

EVALUATION

Compositions	25%
Oral presentations	20%
Partial assignments	25%
Final project or exam	30%
Total	100%

LEARNING ASSESSMENT

The institutional assessment rubric is applied to the course's core activity.

BIBLIOGRAPHY

TEXT

Larson, R., Farber, B. (2019). *Elementary statistics. Picturing the World* (7th ed.).

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REFERENCES

Cadenas, D. M. R. (2016). El rigor en la investigación cualitativa: Técnicas de análisis, credibilidad, transferibilidad y confirmabilidad. *Sinopsis Educativa. Revista venezolana de investigación*, *7*(1), 17-26.

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Hernández-Sampieri, R., Mendoza, C. (2018). Metodología de la investigación. Las

   rutas cuantitativa, cualitativa y mixta, Editorial McGraw Hill.

Lucca Irizarry, N., Berríos Rivera, R., González y González, E., & Lincoln, Y. S. (2009).

   Investigación cualitativa: fundamentos, diseños y estrategias. Ediciones SM.

Nolberto Sifuentes, V. A., Ponce Aruneri, M. E. (2008). *Estadística inferencial aplicada*.

   Universidad Nacional Mayor de San Marcos, Facultad de Educación, Unidad de

   Post Grado.

   https://edgarmartinlarosa.files.wordpress.com/2013/07/est_inf_aplicada.pdf

Rendón-Macías, M. E., Villasís-Keeve, M. Á., & Miranda-Novales, M. G. (2016).

   Estadística descriptiva. *Revista Alergia México*, *63*(4), 397-407.

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Rey Graña, C., Ramil Díaz, M. (2007). *Introducción a la estadística descriptiva* (2nd ed.).

   Netbiblo, S.L.

   https://ruc.udc.es/dspace/bitstream/handle/2183/11897/8497451678.pdf?sequence=2

For more information resources related to the course's topics, access the library's webpage http://biblioteca.sagrado.edu/

REASONABLE ACCOMMODATION

For detailed information on the process and required documentation you should visit the corresponding office. To ensure equal conditions, in compliance with the ADA Act (1990) and the Rehabilitation Act (1973), as amended, any student in need of reasonable accommodation or special assistance must complete the process established by the Vice Presidency for Academic Affairs.

ACADEMIC HONESTY, FRAUD, AND PLAGIARISM

Any student who fails to comply with the Honesty, Fraud, and Plagiarism Policy is exposed to the following sanctions: receive a zero in the evaluation and/or repetition of

the assignment, an F(*) in the course, suspension, or expulsion as established in the document *Política de Honestidad Académica* (DAEE 205-001) effective in August 2005.