Categorial data analysis

Academic Year: (2023 / 2024) **Review date: 25-04-2023**

Department assigned to the subject: Statistics Department

Coordinating teacher: GALEANO SAN MIGUEL, PEDRO

Type: Electives ECTS Credits : 6.0

Year : 4 Semester :

REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

Statistical Inference Techniques I
Statistical Inference Techniques II
Regression Methods

OBJECTIVES

1. Understanding the basic techniques for analyzing categorical data.
2. Knowing and managing statistical programs for the analysis of categorical data.
3. Using the methodology for the analysis of real data.

1. Capacity for analysis and synthesis.
2. Modeling and resolution of problems.
3. Oral and written communication.

DESCRIPTION OF CONTENTS: PROGRAMME

1. Introduction: Distributions and inference for categorical data.

2. Contingency tables: Description and inference.

3. Introduction to generalized linear models.

4. Logistic regression models and alternatives.

5. Models for multinomial responses.

6. Log-linear models and alternatives.

7. Models for paired samples.

LEARNING ACTIVITIES AND METHODOLOGY

Theory (4 ECTS). Theoretical classes with support material available on the Web.
Practice (2 ECTS) Problem-solving classes and labs.

ASSESSMENT SYSTEM

Final exam: 50%.
Partial exam: 30%.
Solving exercises and practices: 20%.

% end-of-term-examination:	0
% of continuous assessment (assigments, laboratory, practicals…):	100

BASIC BIBLIOGRAPHY

- Agresti, A Categorical Data Analysis, New York: John Wiley & Sons, 2013 (third Edition)
- Agresti, A. An introduction to Categorical data analysis, John Wiley & Sons,, 2007
- Andersen, E.B Introduction to the Statistical Analysis of Categorical Data, Springer, 1997
- Collett D. Analysis of Binary Data, Chapman & Hall., 2003

- Cox D.R. & Snell E.J. Analysis of Binary Data, Chapman & Hall, 1989

- Cox D.R. & Snell E.J. Analysis of Binary Data, Chapman & Hall, 2018

- Kateri, M Contingency Table: Analysis Methods and Implementation Using R, Birkhäuser, 2014

- Zelterman, D Models for Discrete Data, Oxford University Press, 2006 (revised edition)

ADDITIONAL BIBLIOGRAPHY

- Bishop, Y. M., Fienberg, S. E., Holland, Paul W. Discrete Multivariate Analysis: Theory and Practice, Springer (Originally published by MIT Press, 1975), 2007

- Hosmer, D.W. and Lemeshow, S. Applied Logistic regression, Willey, 2000

- McCullagh, P. and Nelder, J.A. Generalized Linear Models, Second Edition, London: Chapman & Hall, 1989

- Stokes, M.E., Davis, C.S. and Koch, G.G. Categorical Data Analysis Using The SAS System, Second Edition, NC: SAS Institute Inc., 2000

BASIC ELECTRONIC RESOURCES

- Alan Agresti . Website for CATEGORICAL DATA ANALYSIS, 3rd edition: http://www.stat.ufl.edu/~aa/cda/cda.html