UNIVERSITÀ DEGLI STUDI DI PADOVA

Course unit English denomination	Notes for statistical data analyses
Teacher in charge (if defined)	Federico Ferraccioli
Teaching Hours	20
Number of ECTS credits allocated	3
Course period	January 2025
Course delivery method	☒ In presence ☐ Remotely ☐ Blended
Language of instruction	English
Mandatory attendance	☒ Yes (80 % minimum of presence) ☐ No
Course unit contents	- Statistical inference: hypothesis testing, interpretation of p-value, types of errors, power. Confidence intervals. The problem of multiple tests. - Basic methods: inference on proportions and means, comparisons of two or more samples. Non-parametric alternatives (Wilcoxon, Kruskall-Wallis). - Advanced methods: One-way or two-way analysis of variance. Introduction to regression models. Introduction to principal component analysis.
Learning goals	- Ability to conduct statistical analyses using some of the widely used techniques and interpret the results. - Ability to critically understand the main statistical methods used in the biological literature.
Teaching methods	- Lectures - Case studies on real data
Course on transversal, interdisciplinary, transdisciplinary skills	☒ Yes ☐ No
Available for PhD students from other courses	☒ Yes (with students of the PhD Programme in Biomedical Sciences) ☐ No
Prerequisites (not mandatory)	- Basics of probability - Main probability distributions - Basic statistical concepts (mean, variance, correlation, etc.)
Examination methods (in applicable)	Multiple choice test
Suggested readings	Lecture slides and other teaching materials made available online.

Additional information	Books : - M. C. Whitlock, D. Schluter, Analisi statistica dei dati biologici. -- Zanichelli, 2010. - B. Shahbaba, Biostatistics with R. An introduction to Statistics Through Biological Data. - Springer, 2012