UNIVERSIDADE FEDERAL DE SANTA CATARINA
PÓS-GRADUAÇÃO EM ECOLOGIA

SYLLABUS

SEMESTER 01 / 2026

1. COURSE IDENTIFICATION

CODE	COURSE	WEEKLY HOUR/CLASSES		TOTAL HOURS SEMESTER
ECO410032-41 000068DO/ME	**Basic Statistics**			60
	Number of students	minimum: 4	Maximum: 25	Credits: 4

2. TIMETABLE

March 16th to April 3rd 2026. Mornings (08:30–12:00h) Afternoons (14:00–17:00h, except Mondays until 15:45)

3. INSTRUCTORS

Prof. Nei Kavaguichi Leite, Profa. Simone Werner, Prof. Luis Carlos-Pinto

4. COURSE OFFER

Graduate Program in Ecology at UFSC

5. SYLLABUS

Sampling, collecting and displaying data. Types of data. Graphics and tables. Measures of central tendency, variability, and dispersion. Hypothesis testing, confidence intervals. Parametric tests: 't' test, Analysis of Variance. Non-parametric tests: chi-square, Mann-Whitney, Kruskal-Wallis, Friedman. Linear Regression and correlation.

6. GOALS

To train MSc and PhD students in their first steps in basic statistical analysis and inference. We expect that all students who finished the course will have a background to start learning Multivariate Data Analysis and Statistical Modeling.

7. PROGRAM CONTENT

- Ecological question and hypothesis;
- Sampling, collecting and displaying data. Types of data. Graphics and tables. Measures of central tendency and dispersion;
- Introduction to probabilistic models: discrete and continuous data;
- Inference, assumptions of parametric tests, non-parametric tests;
- t test, Analysis of Variance: single factor;
- Linear Regression and correlation.

8. TEACHING METHOD / PROGRAM DEVELOPMENT

The course will be offer during March 2024, in lectures in class.

9. EVALUATION METHOD

Quizes about descriptive statistics, probabilistic models, t test. Linear regression exercise.
The final grade will be composed of the sum of the Quizzes (30%) and the Linear Regression activity (70%).

10. SCHEDULE

	Morning (08:30–12:00h)	Afternoon (14:00–17:00h, except Mondays until 15:45)
Monday 16	Presentation and Introduction, Ecological question and hypothesis	Ecological question and hypothesis, Questionnaires about student's projects (hypothesis and main goals) before the course (attendance in person)
Wednesday 18	Sampling, collecting and displaying data. Types of data. Graphics and tables. Measures of central tendency and dispersion	Data bases versus spreadsheets. Data bases versus spreadsheets: exercises
Friday 20	Introduction to probabilistic models: discrete data, continuous data. **Assignment 1: discrete probability distributions quiz**	Inference **Assignment 2: continuous probability distributions quiz**
Monday 23	Assumptions of parametric tests	Comparing two means: *t* test **Assignment 3: t-test quiz**
Wednesday 25	Non-parametric tests: chi-square, Mann-Whitney, Kruskal-Wallis, Friedman	*t* test, independent samples, paired samples
Friday 27	Linear Regression and introduction to Linear Models, Correlation	Linear Regression and introduction to Linear Models, Correlation
Monday 30	Analysis of Variance: single factor and poshoc tests	ANOVA and poshoc tests in R and Linear Models in R: contrasts and interpretation
Wednesday 01	ANOVA with Randomized Blocks	Application of ANOVA: examples and exercises
Friday 03	Questionnaires about student's projects (hypothesis and main goals): presentation after (attendance in person)	Linear Regression exercise: exercise delivery, correction and discussion. **Assignment 4: Linear Regression Activity**

11. BASIC LITERATURE

Gotelli, N.J.; Ellison, A.M. Princípios de Estatística em Ecologia. 1ª Ed. Porto Alegre: Artmed, 532p, 2010.
IBGE. Normas de apresentação tabular. 3ª Ed. Brasília: IBGE, 61p, 1993.
Magnusson, W.E.; Mourão, G.; Costa, F.R.C. Estatística sem matemática. 2ª Ed. Londrina: Editora Planta, 214p, 2015.
Crawley, M. The R Book, 2 ed. Wiley.
Dytham, C. Choosing and Using Statistics: A Biologist's Guide. 3ª Ed. Chichester: Wiley-Blackwell, 320p, 2011.
Hector, A. The New Statistics with R - An Introduction for Biologists, 1ª Ed. Oxford: Oxford University Press, 199p, 2015.
Vieira, S. Análise de Variância (ANOVA). 1ª Ed. São Paulo: Editora Atlas, 206p, 2006.