



Instructor: Dr. Florian Battke, Dr. Battke SCIENTIA, Life Science Services

Date: November 7-9, 2022

Time: 9:00-14:30 h

Location: ONLINE course

Please register with the school management.

COURSE OUTLINE

Introduction of basic statistical principles

- Basic concepts of statistical data analysis
- General descriptive statistics

Statistical methods

- Background and requirements of statistical methods:
 - Distributions and test statistics
 - Confidence intervals
 - General method of hypothesis testing
- Applying statistical methods:
 - Basics of hypothesis testing
 - Tests on outliers, Gaussian distribution and homogeneity of variance
 - Parametric and non-parametric hypothesis testing
 - Critical interpretation of test results
 - Analysis of variance (one way ANOVA)
 - Kruskal-Wallis / Friedmann test
 - Post-hoc tests
 - Two/three way ANOVA
 - Correlation and regression analysis
 - Linear and nonlinear regression
 - Curve fitting and weighting
 - Calibration curves
 - Comparison of regression models

plus exercises

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Agenda: Introduction to Biostatistics

Day 1

09:00 – 10:30

Basic statistical principles

- Basic concepts of statistical data analysis
- General descriptive statistics

10:30 – 10:45

Break

10:45 – 12:15

Statistical methods I

- Background and requirements of statistical methods:
 - Distributions and test statistics
 - Confidence intervals
 - General method of hypothesis testing

12:15 – 13:00

Lunch break

13:00 – 14:30

Statistical methods II

- Applying statistical methods:
 - Basics of hypothesis testing
 - Tests on outliers, Gaussian distribution and homogeneity of variance
 - Parametric and non-parametric hypothesis testing
 - Critical interpretation of test results

Day 2

09:00– 09:15	<u>Recapitulation</u>
09:15 – 10:30	<u>Exercises I</u> Introduction to analysis software (e.g. GraphPad Prism®) Exercises
10:30 – 10:45	Break
10:45 – 12:15	<u>Statistical methods III</u> ● Applying statistical methods: - Analysis of variance (one way ANOVA) - Kruskal-Wallis / Friedmann test - Post-hoc tests - Two/three way ANOVA
12:15 – 13:00	Lunch break
13:00 – 14:30	<u>Exercises II</u> Exercises

Day 3

09:00 – 10:30

Statistical methods IV

- Applying statistical methods:
 - Correlation and regression analysis
 - Linear and nonlinear regression
 - Curve fitting and weighting
 - Calibration curves
 - Comparison of regression models

10:30 – 10:45

Break

10:45 – 12:15

Exercises III

Exercises

12:15 – 13:00

Lunch break

13:00 – 14:30

Additional topics & methods

Discussion and exercises on miscellaneous topics & methods

Recapitulation