VETERINARY • PUBLIC • HEALTH • INSTITUTE

UNIVERSITÄT BERN

Basic Statistics with NCSS Software

Thursdays 7th, 14th and 21st October 2021
08:00 – 12:00

Location: Ilias Podcasts & Zoom for Exercises

https://ilias.unibe.ch/goto.php?target=crs_2128152&client_id=ilias3_unibe

Lecturers from VPH Institute, Vetsuisse Bern

- For anyone who wants to formulate hypothesis, visualize, analyze data and interpret results
- Refresh statistical knowledge learned some time ago
- NCSS 2 years license is provided (spreadsheet based, menu-driven, easy to use statistical software package). The NCSS installation requires local administrator rights
- Participants should bring along a Laptop PC with XP/Vista/Win7
- Mac & Linux Users: A full Windows emulation is required (which might imply extra costs, Windows license is required) http://www.ncss.com/support/windows-on-a-mac

- Course fees
  - Individuals from VPHI and Swiss Federal Food Safety and Veterinary Office (BLV): free of charge
  - Students and researchers from the Vetsuisse Faculty (BE, ZH) and affiliated institutions: **50 SFr.**
  - External participants: **100 SFr.**

For students and researchers of the Vetsuisse Faculty: the internal reference number of your project is needed for billing purposes. If in doubt, please contact your secretary before registering. **The registration is only valid via Ilias (link above) and with the internal reference number of your project. The registration is binding**. Registration / cancellations are possible **until Sunday September 20st EOD. If you would like to register after this deadline, an additional 50 SFr fee will apply.**

For additional information on the course or registration process please contact:

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Course topics

Module 1 - Data import, data management

Learning objectives

- Data preparation in Excel or Text (ASCII, CSV formats), variable coding, missing values
- Types of data (continuous or numerical; categorical or binary data)
- Importing data (bases) into NCSS (**File** *open, import, save, export*)
- Data management, data merging, creating new variables, variable recoding and transformations in NCSS (**Data** *sort, recode, transform, recalc*)

Module 2 – Descriptive statistics, hypothesis testing and simple tests

Learning objectives

- Principles of hypothesis testing. Outcome variables and explanatory variables
- Identification of the correct statistical test, assumptions. Difference between independent and dependent observations
- Descriptive statistics: frequencies (2x2 contingency tables), histogram, means and variances, various graphs & box plots (**Analysis /** *descriptive statistics*)
- Tests for continuous outcomes (t-tests, Mann-Whitney U)
- Tests for binary outcomes (Chi2 tests, Mantel-Haenszel-test)

Module 3 – Analysis of continuous and binary outcomes

Learning objectives

- Comparison of means/medians between groups (**Analysis / ANOVA /** *One-way Analysis of Variance, Kruskal-Wallis test*)
- Correlation between continuous variables (**Analysis /** *Correlation / Correlation Matrix)*
- Linear Regression, Analysis of Residuals (**Analysis /** *Regression / Linear Regression*
- Analysis of binary outcomes (**Analysis /** Regression / *Logistic Regression)*

Module 4 – Analysis of dependent data (optional, depending on time and interest)

Learning objectives

- Experimental settings with repeated measures (**Analysis / ANOVA /** *Repeated-measures ANOVA*)
- Analysis of matched binary outcomes (**Analysis /** Regression / *Logistic Regression / Conditional Logistic Regression)*

Recommended books (on which most exercises are based):

Hüsler & Zimmermann "Statistische Prinzipien..." 4. Auflage 2006, and Dawson & Trapp "Basic & Clinical Biostatistics" 4th Ed. 2004. More details on the course schedule etc. will be provided for registered course participants in the week before the course.

Self-study hours required per course content:

Theorical Framework (PowerPoint Presentations)	**4 hours**
Podcasts	**1 hour**
Practical exercises	**5 hours**

Scheduled Online meetings via Zoom:

1. Kick-off meeting	1 hour	Introduction to NCSS; Break down of ILIAS course contents.	**07.10.2021**
2. Course meeting	4 hours	Theoretical highlights and discussion of questions on theoretical lectured concepts; Questions and discussion of practical exercises.	**14.10.2021**
3. Course meeting	4 hours	Theoretical highlights and discussion of questions on theoretical lectured concepts; Questions and discussion of practical exercises.	**21.10.2021**