VETERINARY • PUBLIC • HEALTH • INSTITUTE

UNIVERSITÄT BERN

Basic Statistics with NCSS Software

Tuesday May 16th 9:00-10:00 Kick-off session
Tuesday May 30th and Thursday June 1st 2023
08:30 – 12:30 Course sessions

Location: Ilias Podcasts & Zoom for Exercises

https://ilias.unibe.ch/goto_ilias3_unibe_crs_2683842.html

Lecturers from VPH Institute, Vetsuisse Bern

- For anyone who wants to formulate hypothesis, visualize and analyze data
- Software NCSS 2-years license is provided (user-friendly stats package)
- Participants need a Laptop PC with Windows Vista/Win7-11 (or later) https://www.ncss.com/download/ncss/updates/ncss-2023/requirements/
- Mac & Linux Users: Windows emulation required (extra costs, Windows license required, Remote Desktop possible) http://www.ncss.com/support/windows-on-a-mac
- Course fees **due until Monday 15th May (value date)**
    - 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 May 1th 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.
2. Course meeting	4 hours	Theoretical highlights and discussion of questions on theoretical lectured concepts; Questions and discussion of practical exercises.
3. Course meeting	4 hours	Theoretical highlights and discussion of questions on theoretical lectured concepts; Questions and discussion of practical exercises.