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Basic Statistics with NCSS Software

Thursday April 4th 14-15h Kick-off session
Tuesdays April 16th and 30th 2024
08:00 – 12:00

Location: Ilias Podcasts & Interactive Online Zoom Meetings for Exercises

https://ilias.unibe.ch/goto_ilias3_unibe_crs_2981105.html

Zoom: <https://unibe-ch.zoom.us/j/68933394399?pwd=S0FnaGN2RTVTcTJKVTN4S3lwRXh6dz09>

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-2022/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
 - 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) with the internal reference number of your project (or an alternative private billing address). The registration is binding.** Registration / cancellations are possible **until Sunday March 17th 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:

Theoretical Framework (PowerPoint Presentations)		4 hours
Podcasts (to watch before online sessions)	-	1 hour
Practical exercises (to do before online sessions)		5 hours

Scheduled Online meetings via Zoom:

1. Kick-off meeting	1 hour	Introduction to NCSS; Break down of ILIAS course contents.	04.04.2024
2. Course meeting	4 hours	Theoretical highlights and discussion of questions on theoretical lectured concepts; Questions and discussion of practical exercises.	16.04.2024
3. Course meeting	4 hours	Theoretical highlights and discussion of questions on theoretical lectured concepts; Questions and discussion of practical exercises.	30.04.2024