Swedish University of Agricultural Sciences

P000085, Data handling and high-quality illustrations for publications, 3.0 Hp

Syllabus

Finalized by: Finalized by: FUN, 2024-01-16, 2024-01-16

Level within study regulation:

Third cycle

Grading scale:

Pass / Failed

Course language:

Swedish

Entry requirements:

Admitted to a postgraduate program in biology, animal sciences, or related subjects, or to a residency program in veterinary medicine. Documented previous course in R is required.

Objectives:

On completion of the course, the student should be able to:

- Assess their data, choose and create suitable graphs with R.
- Use GIS software to visualize data points on a map and add geographical and cultural elements.
- Create multi-panel figures for publications and presentation with R.
- Merge and update datasets in R without the need to modify the source data files.
- Plan for code and raw data submission by creating Digital Object Identifiers (DOIs) to be used for publications.

Content:

1. A practical overview of handling data in R, including merging datasets directly from the original data files within R. During the course this knowledge will be used to automatically update illustrations and maps. Learning a proper Data handling strategy is important to minimize the usual multiple versions of the dataset(s) that are created by many students. At the same time, it is important to preserve the original data to prevent irreversible errors due to manual handling. This is of particular interest in many projects where data is added and updated continuously.
2. A practical and theoretical background to choose suitable figures to convey graphically the nature of a specific dataset and what to avoid.
3. An introduction for students to plot their data-points on maps in vector- and raster data formats using GIS software. Visualizing data on maps is an important part of many projects in the one health field.
4. An introduction to open science, with an emphasis on reproducible data and scripts, and sharing these through DOIs.

The course will use free software within the R environment, including packages such as tidyverse, dplyR, tidyR, and ggplot2. For GIS, QGIS will be used. For DOI and data sharing, GitHub will be used. The #tidytuesday project on GitHub will be the primary source of example datasets. Theoretical lectures will be mixed with presentations and hands-on workshops. Students will work in groups to solve given problems that tie back to the lectures using #tidytuesday data. A final individual project will be given where the students will use their own data (when available) or use the #tidytuesday datasets to implement the learning objectives and present their project. Teaching will be conducted as a one week on-campus class followed by an independent project that will be presented via zoom.

Modes of assessment:

The course objectives will be examined through independent project presentations and individual written reports on the use of different techniques included in the course. - If a student has failed an examination, the examiner has the right to issue supplementary assignments. This applies if it is possible and there are grounds to do so.

- The examiner can provide an adapted assessment to students entitled to study support for students with disabilities following a decision by the university. Examiners may

also issue an adapted examination or provide an alternative way for the students to take the exam.

- If this syllabus is withdrawn, SLU may introduce transitional provisions for examining students admitted based on this syllabus and who have not yet passed the course.
- For the assessment of an independent project (degree project), the examiner may also allow a student to add supplemental information after the deadline for submission. Read more in the Education Planning and Administration Handbook.

Organisation:

Department of Animal Biosciences

Supplementary information

Other information:

- The right to participate in teaching and/or supervision only applies for the course instance the student was admitted to and registered on.
- If there are special reasons, students are entitled to participate in components with compulsory attendance when the course is given again. Read more in the Education Planning and Administration Handbook.