Georg-August-Universität Göttingen **Module M.INC.1006: Data analysis for field biologists**	6 C 8 WLH

Learning outcome, core skills: In this module, we provide an introduction to data analysis in the R programming environment. We cover data collection and organization, sampling designs in observational studies and statistics. We will work with a collection of field datasets, while also introducing how to find and work with open-access ecological and environmental data. We visualize our data throughout and develop skills in reproducible coding and version control. The course participants will learn how to use classical hypothesis testing, linear regression and Generalized (mixed) linear models. If progress allows, we will introduce models that can be used to correct for varying detection probability and approaches to extract, analyses and visualize spatial data. Students will learn how to use data science tools to address research questions, implement version control to back up work, code collaboratively and write reproducible workflow reports. Core skills acquired: Ability to organize, transform and process data in R, ability to critically judge sources of bias resulting from data collection and analysis, ability to choose appropriate tools for the analysis of different types of data (e.g., categorical vs. continuous variables), skills to graphically present key messages, ability to report and interpret statistical results.	**Workload:** Attendance time: 112 h Self-study time: 68 h

Course: M.INC.1006.Lec **Data analysis for field biologists** (Lecture)	5 WLH
Course: M.INC.1006.Ex **Data analysis for field biologists** (Exercise)	3 WLH
Examination: Assignments (max. 25 pages) M.INC.1006.Mp: Data analysis for Field Biologists	6 C

Examination requirements: Participants understand data structures and are able to organize, visualize and summarize data. They can judge on the quality of sampling designs, can apply statistical models, can use the R language to create and execute reproducible workflows, are able to troubleshoot code errors and write efficient and well-annotated code. They can visualize data and models, and are able interpret and report statistical results.	

Admission requirements: none	**Recommended previous knowledge:** No previous knowledge of R and R Studio is required. Basic skills of organizing and processing data in spreadsheet programs such as Excel are useful.
Language: English	**Person responsible for module:** Prof. Dr. Johannes Kamp Dr. Gergana Daskalova
Course frequency: each winter semester; (Block course)	**Duration:** 1 semester[s]

Number of repeat examinations permitted: twice	**Recommended semester:** 1
Maximum number of students: 15	