Computing and data analysis in Geosciences

1	**Module**	**Computing and data analysis in Geosciences (Schlüsselqualifikation/ Wahlpflichtnebenfach)**	**5 ECTS**
2	Teaching Style	Block course (V/Ü), 2 weeks, 4 SWS The module is offered as two weeks block course at the beginning of the semester (usually 1st-12th October).	5 ECTS
3	Instructors	Prof. Dr. W. Kießling Prof. Dr. M. Steinbauer M.A. Ling.-Inf. C. Krause	
4	Responsible	Prof. Dr. W. Kießling	
5	Content	During this intensive user-oriented module students will learn key statistical skills and programming techniques relevant for Geosciences (Correlations, regression models, ANOVA, multivariate methods). The block course comprises a set of lectures that explain analytical concepts and procedures, as well as practical sessions where students can use the software and scripting routines to achieve large scale data analysis and standalone implementation processes. Statistical analyses and handling of large quantities of data will be conducted in different software applications including R (www.r-project.org). The course also covers the professional management of large data sets in databases as well as visualisation of analytical results.	
6	Learning outcomes and competences	After the course, students should be able to 1) Use the statistical program R to *apply* the treated statistical methods, 2) *compare* the covered analytical methods and *reflect* on underlying common principles, 3) critically *judge* and *visualise* the results of a statistical model, 4) *learn* novel analytical approaches and software (not covered by the course) faster and/or more comprehensively. Student will be prepared for analysing and visualising own data during their Bachelor thesis.	
7	Prerequisites	• Basic computer skills • Mathematics for natural sciences	
8	Course Schedule	5th Semester Bachelor Geosciences; 1st Semester Master Geosciences	
9	Target Group	Bachelor Geosciences, Master Geosciences	
10	Exam details	Active participation and successfully conducted exercises	
11	Grading	The module is without grading	
12	Course frequency	Annually each fall/winter semester	
13	Work Load	Active Participation in two weeks: 60 h	
14	Scope of Time	2 weeks	
15	Language	English	
16	Literature	Will be provided during the course	