

Modul number	Modul name	Responsible lecturer
MHYWI05	Statistical Learning for Earth System Sciences	Prof. Dr. Jakob Zscheischler Jakob.zscheischler@tu-dresden.de
Qualification objectives	Students know the basic concepts of statistical learning. They can explain and apply the differences between various approaches to statistical learning. Furthermore, they can implement these concepts in the programming language R and apply them to new problems.	
Contents	Contents of the module are the basic concepts of statistical learning: regression, classification, dimensionality reduction, bias and variance trade-off as well as multiple testing. Further contents are the discussion and consolidation of the concepts presented as well as their application to datasets from the Earth system sciences.	
Teaching and learning methods	2 hours of lecture per week, 1 hour of exercise per week, self-study. The courses are held in English.	
Prerequisites for participation	Knowledge of mathematics, statistics and probability theory at the bachelor level is required.	
Applicability	The module is a compulsory elective module in the Master's degree programs Hydro Science and Engineering and Hydrology, which must be selected in compliance with the annex to the relevant Examination Regulations.	
Requirements for earning credit points	Credit points are earned when the module examination is passed. The module examination consists of a term paper equating to 30 hours. The examination language is English.	
Credit points and grades	Participants can earn five credit points for this module. The module grade corresponds to the grade of the examination.	
Module frequency	The module is offered each summer semester.	
Workload	The workload comprises a total of 150 hours.	
Module duration	The module comprises one semester.	