

Module No. P 7	Module name Methods in Ecosystem Analysis
Module coordinator Prof. Dr. H. Rennenberg Email: heinz.rennenberg@ctp.uni-freiburg.de	
Additional teaching staff Prof. Bauhus, Prof. Boppré, Prof. Fink, Prof. Hildebrand, Prof. Mayer, Prof. Reif, Prof. Spiecker, Prof. Storch, Prof Pelz, Prof. Leibundgut	
Syllabus <p>This module focuses on the theory of experimentation and the practical application of a set of different approaches and methods to address questions in ecosystem analysis. In this module students will be given the opportunity to learn methods required in their MSc research. In addition, students will be familiar with fundamental concepts in experimentation such as accuracy, replication, reproducibility, documentation etc. Following a general introduction to the principles of experimental design and analysis, students will work in small groups according to research areas in which they envisage to undertake their MSc research. These small groups will learn research methods in the following areas:</p> <ul style="list-style-type: none"> • Forests and Climate Change (Tree Physiology, Meteorology, Hydrology, Soil Science, a. o.) • Forest Structure and Function (Silviculture, Forest Growth, Forest Botany, Tree Physiol. a. o.) • Population and Community Ecology (Zoology, Wildlife Ecology, Vegetation Ecology, a. o.) <p>In each of these areas, students will collect samples or data using a range of methods, analyse samples where applicable (in the field or the laboratory), and compile, screen, analyse and interpret data, to allow a critical appraisal of the whole process.</p>	
Learning goals and qualifications <p>Students will learn:</p> <ul style="list-style-type: none"> • Principles of experimental design and how to translate a research question into an experimental approach incl. the choice of appropriate methodology • Important steps in the research process from the formulation of hypotheses to the interpretation of data and the writing of a short research paper • To evaluate critically the accuracy, different types of errors and reproducibility of ecological measurements, the issue of scaling up of results etc. • To apply a range of methods confidently to particular areas of ecosystem research 	

Teaching and learning methods	
Lectures, practical exercises, field and lab work, tutorials, peer review	
Prerequisites	
A basic course in statistics	
Requirements for registration	
Distribution of work load	
<i>Contact hours</i>	80 h (Lectures, exercises, field and lab work)
<i>Independent learning</i>	65 h (data analysis and interpretation, writing of report)
Proposed assessment	
Report on experimental work conducted	
Link to learning resources	
Preliminary Reading	
Comments	