

module code /
module title

DataAnal / Experimental Design and Data Analysis

date / version of the module
description 25.05.22

1 INFORMATION ON THE MODULE	
1a	module code DataAnal
1b	module title (German title) Experimental Design and Data Analysis
1c	module title (English title) Experimental Design and Data Analysis
1d	credit points 9
1e	responsible for the module Prof. Dr. Thomas Hoffmeister
1f	type of module compulsory module
1g	programs using the module M.Sc. Ecology
1h	organizational unit offering the module Klicken Sie hier, um Text einzugeben.
1i	content-related prior knowledge or skills basic knowledge in statistics is recommended
1j	learning contents <ul style="list-style-type: none"> - The consequences of experimental design for data analysis - Null, alternative, and research hypotheses - Designs for manipulative experiments and correlative studies - Independence of data points, replication, pseudo-replication and randomization - Controls, factorial and block designs, crossover and split-pot designs - Linear models with one or more continuous or factorial variables - Generalized linear models with one or more continuous or factorial variables - GLMs with repeated measurements, generalized linear mixed models - Model selection, MAM, Akaike

1k learning outcomes/
competencies/
targeted competencies

Students are able to develop adequate experimental designs for research hypotheses and to critically analyze and improve existing experimental designs.

They can handle data and prepare them for data analysis using R.

They can apply linear, generalized linear, repeated measures and mixed models in an adequate fashion to data and interpret them both, statistically and biologically. They can report results from statistical analyses in a scientific fashion and can analyze and criticize statistical results towards their adequacy.

1l calculation
of student workload
*(part a: calculation of presence
time and working hours)*

The total amount of the presence time and working hours of the module has to be calculated additionally in the detailed calculation a) to c).

**a) detailed calculation:
SWS / presence time/working hours in each course of the module**

<input checked="" type="checkbox"/>	1	lecture(s) with	2	SWS/ contact hours	28	hours of presence time	
<input checked="" type="checkbox"/>	1	seminar(s) with	1	SWS/ contact hours	14	hours of presence time	
<input checked="" type="checkbox"/>	1	exercise(s) with	3	SWS/ contact hours	42	hours of presence time	
<input type="checkbox"/>		internship(s) with		sum of working hours			
<input type="checkbox"/>		seminar(s) with		SWS/ contact hours		total hours of presence time	
<input type="checkbox"/>		laboratory/laboratories with		SWS/ contact hours		total hours of presence time	
<input type="checkbox"/>		tutorial(s) with		SWS/ contact hours			
<input type="checkbox"/>		excursion(s) with		SWS contact hours in total		working hours	
<input type="checkbox"/>		other form of course (e.g. block seminar), namely this:					
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	with	SWS / with totally		contact hours	<input type="checkbox"/> presence time	<input type="checkbox"/> working hours	

		<p>= sum of presence time and working hours:</p> <p>84 hours, 6 SWS</p>
	<p>calculation of student workload</p> <p>(part b: preparation time and follow-up work/self-study)</p>	<p>b) working hours for preparation/follow-up work of the course(s) and/or self-study</p> <p>= sum of working hours:</p> <p>146 hours</p>
	<p>calculation of student workload</p> <p>(part c: exam preparation etc.)</p>	<p>c) exam preparation (incl. examination)</p> <p>= sum of working hours:</p> <p>40 hours</p>
	<p>calculation of student workload</p> <p>(total amount of hours including a) - c))</p>	<p>Total amount of the presence time and working hours a) to c):</p> <p>270 hours</p>
1m	<p>description of possible optional courses in the module</p>	<p><u>Can a student choose between different courses within the module?</u></p> <p>NO</p> <p><u>Short description of selection option</u></p> <p>Klicken Sie hier, um Text einzugeben.</p>
1n	<p>language(s) of instruction</p>	<p><input type="checkbox"/> German <input checked="" type="checkbox"/> English <input type="checkbox"/> Spanish <input type="checkbox"/> French</p> <p><input type="checkbox"/> Other, namely this:</p> <p>Klicken Sie hier, um Text einzugeben.</p>
1o	<p>frequency</p>	<p>(regular cycle module is offered) e.g.: winter semester, yearly or summer semester, yearly or each semester</p> <p>winter semester yearly</p> <p>Klicken Sie hier, um Text einzugeben.</p>
1p	<p>duration</p>	<p>Other, namely this:</p> <p>4 weeks block course (including the examination)</p>
1q	<p>Literature (optional)</p>	<p>Klicken Sie hier, um Text einzugeben.</p>

1r	more information on the module (<i>optional</i>)	Klicken Sie hier, um Text einzugeben.
2 INFORMATION ON THE MODULE EXAMINATION (see also AT Art. 5 section 8)		
2a	type of examination	<input type="checkbox"/> module exam; i.e. exam with only one component (MP) <input checked="" type="checkbox"/> combination exam, i.e. exam with several components (administered by instructors) (KP) <input type="checkbox"/> partial exam; i.e. exam with several components (administered by registrar) (TP)
2b	exam components or prerequisites (<i>type, number</i>)	<p><i>PL</i> = graded component of the examination <i>SL</i> = ungraded component of the examination, coursework <i>PVL</i> = prerequisite of the examination (see AT Art. 5 Section 10)</p> <input checked="" type="checkbox"/> PL 1 <input checked="" type="checkbox"/> SL 1 <input type="checkbox"/> PVL justification
2c	Give this information for combination examinations only: Weights (in percentage) of component grades	<p>PL 1: Klicken Sie hier, um Text einzugeben. PL 2: Klicken Sie hier, um Text einzugeben. PL 3: Klicken Sie hier, um Text einzugeben. PL 4: Klicken Sie hier, um Text einzugeben.</p> <p>If necessary, further comments: Klicken Sie hier, um Text einzugeben.</p>
2d	form of examination (see AT BPO/AT MPO Art. 8, 9 and 10)	<input type="checkbox"/> Assignment <input checked="" type="checkbox"/> Oral examination (single) <input checked="" type="checkbox"/> Presentation, oral <input checked="" type="checkbox"/> Written examination <input checked="" type="checkbox"/> Group examination, oral <input type="checkbox"/> Presentation and written assignment <input type="checkbox"/> Portfolio <input type="checkbox"/> Project report <input type="checkbox"/> Bachelor Thesis <input type="checkbox"/> Internship report <input type="checkbox"/> Colloquium <input type="checkbox"/> Master Thesis <input type="checkbox"/> Other (concrete definition is given in the examination regulations): Presentation for SL, Written examination or oral examination for PL
2e	language(s) of instruction	<input type="checkbox"/> German <input checked="" type="checkbox"/> English <input type="checkbox"/> Spanish <input type="checkbox"/> French <input type="checkbox"/> Other, namely this: Klicken Sie hier, um Text einzugeben.