Module: Experimental designs in ecological field studies

Module code: lök390
Credit points: 6.0 KP
Workload: 180 h

Used in course of study:
- Master’s Programme Landscape Ecology > Vertiefungsmodule drittes Fachsemester

Contact person:
- Ellen Kiel
- Ines Wolpmann

Module responsibility:
- Ellen Kiel
- Ines Wolpmann

Authorized examiners:
- Ellen Kiel
- Ines Wolpmann

Module counselling:
- Ellen Kiel

Entry requirements:
- Basic courses of Ecology (1st and 2nd semesters LÖK)
- Skills in determining aquatic organisms, e.g. via Bachelor modules
  - Knowledge of forms
  - Running water ecology
  - Aquatic habitats
  - Master course in the module “Aquatic Ecology”
  - Comparable courses at other universities

Skills to be acquired in this module:
- Qualification to independently plan field experiments suitable for answering current ecological questions (individuals, populations, communities)
- Methodological competence/independence in performing field experiments
- Qualification to independently analyse the experiments in the laboratory guided by hypotheses and using adequate methods, materials and statistical methods
- Competence in presenting results on a scientific level (scientific report presenting and discussing the method; scientific publication; both in English)
- Impartment of manifold methodological skills in the field of aquatic ecology, experimental field research (autecological, population-ecological and synecological research approaches)
- Impartment of extended expertise in planning experiments in general and their analysis in the field of animal ecology (application and linking of acquired skills; generalisable knowledge)
- Practical experience in analysing field experiments in general (comprising laboratory phases, access to literature and databases, preparation of scientific publications)
- Preparation of Master and Ph.D. theses requiring skills in experimental field research

Module contents:

1st course phase (theoretical preparation and planning)
- Picking up current ecological research topics related to aquatic habitats (e.g. in streams and ditches), the respective system is selected prior to the start of the course and should change
- Specification of questions and frame conditions by the course lecturer concerning current research questions in the fields of autecology, population ecology, and synecology
- Instructions for literature research and the respective analysis by students
- Summary and presentation of the current standard of knowledge (structured brief reviews presented to the course participants by students and commented by the lecturer as well as preparation of a synopsis as part of the term paper or the oral examination (see below))
- Concrete formulation of questions and working hypotheses based on literature research

2nd course phase (practical preparation and planning; laboratory and field work)
- Preparatory inspection of the investigation area accompanied by the lecturer
- Independent development of a concept of methods (advised by the lecturer)
- Independent practical preparation of experiments (calibrate equipment, prepare solutions, prepare trapping jars, determine aquatic data etc.), analysis steps (e.g. prepare laboratory equipment), and logistics (transportation, entry permissions etc.)
- Description of methods for all working steps in writing
- Independent realization of planning (advised by lecturer)
- Report on all procedures including reflection

3rd course phase (further development and application of acquired knowledge; theoretical phase)
- Common discussion about the possibilities of and limits to applying the procedure to concrete questions concerning other habitats, other animal associations etc.

Reader’s advisory:

Additional scientific publications and materials with examples of relevant research work will be made available via StudIP as an E-reserve of reference literature prior to the start of the course. 

**Links**
- [TIEE](http://www.esa.org/tiee/misc/about.html)

**Language of instruction**
- English

**Duration (semesters)**
- 2 Semester

**Module frequency**
- jährlich

**Module capacity**
- unlimited

**Reference text**
- Independent literature research on specific questions and methods by students.

**Modulart**
- Wahlpflicht

### Examination

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<tr>
<th>Final exam of module</th>
<th>Time of examination</th>
<th>Type of examination</th>
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<tr>
<td>Final exam of module</td>
<td>as agreed</td>
<td>Oral examination or housework</td>
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1. oral or written presentation of the method design
2. documentation of experimental procedure, data analysis and data processing
3. oral or written subject-specific analysis of the planning in respect of the relevant questions and elaborated hypotheses
4. interdisciplinary analysis of the experiments (oral or in writing)

### Course type

<table>
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<tr>
<th>Course type</th>
<th>Comment</th>
<th>SWS</th>
<th>Frequency</th>
<th>Workload attendance</th>
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<tr>
<td>Lecture</td>
<td></td>
<td>1.00</td>
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<td>14 h</td>
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<tr>
<td>Exercises</td>
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<td>3.00</td>
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**Total time of attendance for the module**

- 56 h