## Module variant to: Computational Biology

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| **Module:** Quantitative Community Ecology | |
| **University/Department/Teaching Unit:** Freie Universität Berlin/Department of Biology, Chemistry, Pharmacy/Biology | |
| **Module coordinator: Felix May, Oksana Buzhdygan** | |
| **Prerequisites:** none | |
| **Learning objectives:**<br>After participation in this module the students will be able to approach research questions in community ecology independently. Specifically, they will have the skills to prepare, visualize and analyse multivariate data of ecological communities using modern graphical and statistical methods and tools. The students will gain experience in critically interpreting results in publications as well as in presenting findings of their own analyses in oral and written form. | |
| **Content:**<br>The course will cover the following topics and methods:<br>• Characterization of ecological communities using taxonomic and functional approaches (total and relative abundances, biodiversity indicators, functional traits, functional diversity)<br>• Graphical visualization of variation within and between communities.<br>• Statistics for multivariate data including ordination and cluster analysis.<br>• Linking biological and environmental data.<br>• Scale-dependence of biodiversity and approaches for standardized biodiversity comparisons. | |

| **Modes of instruction** | **Contact hours** (hours per week during the semester) | **Types of active participation** | **Workload** (in hours) | |
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| Lecture (V) | 1 | – | Class attendance (lecture)<br>Preparation, before and after (lecture) | 15<br>15 |
| Seminar (S) | 2 | Presentation and discussion | Class attendance (seminar)<br>Preparation, before and after (seminar) | 30<br>60 |
| PC-based seminars (SPC) | 2 | Development of an own model, programming, evaluation, solving exercises, critical discussion of results | Class attendance (SPC)<br>Preparation, before and after (SPC) | 30<br>70 |
| | | | Exam preparation and exam | 80 |

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| **Module assessment** | Written exam (60 minutes), wholly or partially in multiple-choice format; can also be carried out electronically or written report on research results (approx. 10 pages) or examination colloquium (approx. 20 minutes) | |
| **Language** | English | |
| **Regular attendance required** | Seminar and PC-based seminar: yes, lecture: attendance recommended | |
| **Total workload** | 300 hours | 10 credit points |
| **Duration** | one semester | |
| **Frequency** | irregular | |
| **Applicability** | Master's degree program M.Sc. Biology;<br>Master's degree program M.Sc. Biodiversity, Evolution and Ecology | |

Utilization in the following specializations (decision by the examining board):

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| Biodiversity, Evolution and Ecology | x |
| Genetics and Genomics | |
| Microbiology | X |
| Molecular- and Cellular Biology | X |
| Molecular Plant Sciences | X |
| Neurobiology | |
| Biology | x |