Module variant to: Foundations of Biodiversity, Evolution and Ecology

Module: Integrative Taxonomy	
University/Department/Teaching Unit: Freie Universität Berlin/Department of Biology, Chemistry, Pharmacy/Biology	
Module coordinator: Dr. Robert Lücking	
Prerequisites: none	
Learning objectives: The discovery, description, naming and identification of species is fundamental in biodiversity research as well as in the management and conservation of biological diversity. Goals of this module are that participants (1) have an overview of current approaches to species discovery and delimitation, using molecular and morphological characters and evolutionary approaches; (2) understand the principles of biological classification and the role of taxon concepts, as well as the basic rules of nomenclature; and (3) become familiar with taxonomic workflows, including the use of specimens (from herbaria and other types of biological collections) and the data associated with them. Students will be able to access available online resources and data bases supporting various types of analyses and and learn how to use the most important electronic tools that support the elaboration of taxonomic treatments and checklists and dynamic taxonomic information systems.	
Content: Theoretical concepts and approaches to species delimitation and biological classification will be the subject of the seminar part. In the tutorial, we will use examples from plants, fungi, lichens and algae to understand the principals of phylogenetics and classification and to perform integrative taxonomy, by elaborating morphological character matrices from specimens and connecting them to available molecular phylogenetic information, for quantitative analysis or to generate species descriptions. Complementary to this we will examine existing names, along with their protologues and type specimens (using the BGBM collections and electronic sources) and learn about the concept of accepted names vs. synonyms according to the International Code of Botanical Nomenclature. The EDIT Platform for Cybertaxonomy and many other tools will help us to integrate information, structure the character data and develop the foundation for taxonomic treatments that build upon the best available insights on species limits.	

Modes of instruction	**Contact hours** (hours per week during the semester)	**Types of active participation**	**Workload** (in hours)	
Seminar (S)	1	–	Class attendance (seminar)	15
			Preparation, before and after (seminar)	15
Practice sessions (Ü)	2	Carrying out and documenting experiments	Class attendance (practice session)	30
			Preparation, before and after (practice session)	15
			Exam preparation and exam	75
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		yes		
Total workload		150 hours		5 credit points
Duration		one semester		
Frequency		irregular		
Applicability		Master's degree program M.Sc. Biology; Master's degree program M.Sc. Biodiversity, Evolution and Ecology		

U. Lücking

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

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