Population Differentiation and Speciation					
Identification number	Workload	Credit points	Term of studying	Frequency of occurence	Duration
MN-B-SM (E 1)	360 h	12 CP	1st or 2nd term of studying	Winter term, 1st half	7 weeks

1	Type of lessons	Contact times	Self-study times	Intended group size
	a) Lectures	22 h	44 h	max. 9
	b) Practical/Lab	152 h	112 h	max. 2-3
	c) Seminar	6 h	24 h	max. 9

2 Aims of the module and acquired skills

Students who successfully completed this module …

- have acquired detailed theoretical and practical knowledge regarding population differentiation and speciation processes.
- have acquired first experiences on sample collection and preparation as well as producing, analyzing, interpreting, and presenting behavioral, morphological and molecular data
- are able to use a variety of different behavioral, ecological and molecular methods that are needed as baseline in projecting different kind of studies in the field of population differentiation and speciation..
- can independently carry out small scientific projects related to the topic of the module.
- have learned how to present research results in oral and written form and to critically discuss scientific publications related to the topic of the module on a professional level.
- are able to transfer skills acquired in this module to other fields of biology.

3 Contents of the module

- Current topics and methodologies to analyze population differentiation and speciation
- Selected concepts and methods in animal behavior, ecology and morphology
- Molecular analyses (from DNA extraction to phylogenetic tree/population genetic analyses)
- Statistical analysis, graphical presentation, and academic writing
- Setup of module topic-related field and laboratory experiments and data analyses
- Diverse methods of data presentation

4 Teaching/Learning methods

- Lectures; Practical/Lab (Project work); Seminar; Guidance to independent research; Training on presentation techniques in oral and written form

5 Requirements for participation

Enrollment in the Master´s degree course “Biological Sciences”

Additionally recommended: Knowledge of fundamental ecological and evolutionary principles is highly recommended.

6 Type of module examinations

The final examination consists of three parts: Two hours written examination about topics of the lectures and the practical/lab part (50 % of the total module mark), oral presentation (25 % of the total module mark) and seminar paper (25 % of the total module mark)

7	Requisites for the allocation of credits Regular and active participation; Each examination part at least "sufficient" (see appendix of the examination regulations for details)
8	Compatibility with other Curricula None
9	Significance of the module mark for the overall grade 15 % of the overall grade (see also appendix of the examination regulations)
10	Module coordinator PD Dr. Kathrin Lampert, phone 470-8290, e-mail: klampert@uni-koeln.de
11	Additional information Subject module of the Master´s degree course "Biological Sciences", Focus of research: (E) Ecology and Evolution Participating faculty: Prof. Dr. J. Borcherding, PD Dr. K. Lampert Location: The module will be split between the Ecological Research Station Rees (3 days) , Grietherbusch 3a, D-46459 Rees Grietherbusch, Germany and the Cologne Biocenter, Zülpicher Strasse 47b, Cologne Literature: • Lowe, A., Harris, S., Ashton, P. (2004) Ecological Genetics – Design, Analysis, and Application. Blackwell Scientific • Singer, F. (2016) Ecology in Action. Cambridge University Press • Additional selected book chapters will be recommended • Additional reviews and original papers will be handed out during the module. General time schedule: Week 1-6 (Mon.-Fri.):Lectures, practical/lab and preparation for the seminar talk (topic and date will be arranged individually) as well as writing seminar paper; Week 7 (Mon.-Fri): Preparation for the written examination Note: The module contains hand-on laboratory work conducted by small groups of students and is taught in the field and in research laboratories. The module does contain computer-based practicals/research as a main component. Introduction to the module: October 07, 2019 at 10 a.m., Cologne Biocenter, room - 1.004 (first basement floor) Written examination: November 22, 2019, second/supplementary examination February 14, 2020; the latter date may vary if students and module coordinator agree. More details will be given at the beginning of the module.