

Population Genetics and Molecular Evolution					
Identification number	Workload	Credit points	Term of studying	Frequency of occurrence	Duration
MN-B-SM (C 1)	360 h	12 CP	1 st or 2 nd term of studying	Summer term, 1 st half	7 weeks
1	Type of lessons		Contact times	Self-study times	Intended group size
	a) Lectures		48 h	96 h	max. 16
	b) Practical/Lab		48 h	127 h	max. 16
	c) Seminar		5 h	36 h	max. 16
2	Aims of the module and acquired skills Students who successfully completed this module ... <ul style="list-style-type: none"> • have acquired detailed knowledge on fundamental concepts and theoretical models in population genetics and molecular evolution. • are able to measure, statistically evaluate and interpret genetic data and put these in the context of molecular evolution. • are skilled in the analysis of polymorphism data from natural populations and 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 <ul style="list-style-type: none"> • Principles of population genetics, population genomics and molecular evolution • Statistical tests of genetic data • Mathematical modeling • Intra- and interspecific comparative analyses of genome sequences • Analysis of gene variant and expression data • Work with polymorphism data (e.g., VCF file format and VCF-tools) 				
4	Teaching/Learning methods <ul style="list-style-type: none"> • Lectures; Practical/Lab (Project work); Seminar; Computer exercises; 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: Good mathematical and quantitative skills are highly recommended.				

Population Genetics and Molecular Evolution (MN-B-SM [C 1]) continued

6	<p>Type of module examinations</p> <p>The final examination consists of three parts: 30 min oral examination about topics of the lectures (50 % of the total module mark), oral presentation (25 % of the total module mark) and seminar paper (weekly home work exercises, aggregate to 25 % of the total module mark)</p>
7	<p>Requisites for the allocation of credits</p> <p>Regular and active participation; Each examination part at least "sufficient" (see appendix of the examination regulations for details)</p>
8	<p>Compatibility with other Curricula</p> <p>None</p>
9	<p>Significance of the module mark for the overall grade</p> <p>15 % of the overall grade (see also appendix of the examination regulations)</p>
10	<p>Module coordinator</p> <p>Prof. Dr. Thomas Wiehe, phone 470-1588, e-mail: twiehe@uni-koeln.de</p>
11	<p>Additional information</p> <p>Subject module of the Master´s degree course "Biological Sciences", Specialization: (C) Computational Biology</p> <p>Participating faculty: Dr. S. Laurent, Prof. Dr. M. Nothnagel, Dr. D. Valenzano, Prof. Dr. T. Wiehe</p> <p>Literature:</p> <ul style="list-style-type: none"> • Information about textbooks and other reading material will be given on the ILIAS representation of the course (https://www.ilias.uni-koeln.de/ilias/goto_uk_cat_2815610.html) <p>General time schedule: Weeks 1-6 (Mon.-Fri., approx. 4 hours contact time per day): Lectures, practical/lab, writing seminar paper (= weekly home work exercises) and preparation for the seminar talk held in week 6; Week 7 (Mon.-Fri.): Preparation for the oral examination</p> <p>Note: The module contains hand-on laboratory work conducted by small groups of students and is taught in research laboratories. The module contains computer-based practicals/research as a main component.</p> <p>Introduction to the module: April 12, 2021 at 9:15 a.m., Center for Molecular Biosciences (COMB), Computer pool (ground floor) or online (in this case, further information/link will be sent to your Smail-Account); for preparation to the module before this introduction see ILIAS link under literature.</p> <p>Oral examination: May 31, 2021, second/supplementary examination August 06, 2021; the latter date may vary if students and module coordinator agree. More details will be given at the beginning of the module.</p>

Corona note! Depending on the Corona situation during the summer term, practical work may be skipped either totally or in part. In this case, some or all practical parts will be replaced by adequate alternatives so that (i) the workload and (ii) the principle content of the modules remained unchanged.