

Module Name Marine and Molecular Ecology						
Type of Module ○ Advanced Module				Module Code Marine Ecology		
Identification Number MN-B-SM (E 4)	Workload 360 h	Credit Points 12 CP	Term 2 nd term of studying	Offered Every Summer term. 1st half	Start summer term only	Duration 7 weeks
1	Course Types a) Lectures b) Practical/Lab c) Seminar		Contact Time 21 h 155 h 5 h	Private Study 42 h 113 h 24 h	Planned Group Size 12 12 12	
2	Module Objectives and Skills to be Acquired Students who successfully completed this module <ul style="list-style-type: none"> • have acquired detailed knowledge on the diversity of marine animals and plants incl. of the macrofauna, meiofauna, microfauna and nanofauna, as well as algae in pelagic and benthic habitats and on the functioning of different marine ecosystems (incl open sea, tidal flats, rocky shore and deep sea). • are able to use different sampling strategies and to analyze marine organisms during excursions to rock pools, tidal flat areas and rocky shore environments. • are able to apply to evaluate and analyze molecular biological data of sequencing efforts such as next generation sequencing of samples from marine systems • 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	Module Content <ul style="list-style-type: none"> • Introduction to marine biology (oceanography; adaptations to abiotic and biotic environments; ecology marine communities from pelagial to benthic systems, from the sunlit ocean and coral reefs to the deep-sea, and from viruses to megafauna; etc.) • Typical life forms and communities of marine habitats (pelagial, muddy and sandy sediments, rocky shore, trenches of the North Sea) • Trophic interactions, development of organisms • Field course at the Biologische Anstalt Helgoland (11 days) with potential expeditions with research boat/vessel, oral presentation of results of laboratory work and expeditions • Molecular biology of marine organisms, single-cell-sequencing/working with results of high-throughput-sequencing 					
4	Teaching Methods Lectures; Practical/Lab; Seminar; Excursions; Guidance to independent research; Training on presentation techniques in oral and written form					

<p>5</p>	<p>Prerequisites (for the Module)</p> <p>Enrollment in the Master's degree course "Biological Sciences", taking part in the winter term with lectures in the part "Ecology, Evolution and Environment"</p> <p>Additional academic requirements</p> <p>Taking part in the winter term tutorial module "Ecology, Evolution and Environment" is highly recommended. Knowledge on fundamental ecological principles and molecular ecology is indispensable to participate in this module. In cases of doubt, please contact the module coordinator (see 10) before choosing this subject module.</p>
<p>6</p>	<p>Type of Examination</p> <p>The final examination consists of two parts: written examination on topics of lectures and the practical/lab part (1 hour; 50 % of the total module mark), oral presentation (20 min; 50 % of the total module mark)</p>
<p>7</p>	<p>Credits Awarded</p> <p>Regular and active participation; Each examination part at least "sufficient" (see appendix of the examination regulations for details)</p>
<p>8</p>	<p>Compatibility with other Curricula</p> <p>International Master in Environmental Sciences (third semester module)</p>
<p>9</p>	<p>Proportion of Final Grade</p> <p>12 % of the overall grade (see also appendix of the examination regulations)</p>
<p>10</p>	<p>Module Coordinator</p> <p>Prof. Dr. Hartmut Arndt, phone 470-3100, e-mail: teach-ecology@uni-koeln.de</p>
<p>11</p>	<p>Further Information</p> <p>Subject module of the Master's degree course "Biological Sciences", Specialization: (E) Ecology, Evolution, and Environment</p> <p>Participating faculty: Prof. Dr. H. Arndt, Dr. Frank Nitsche, M. Hohlfeld</p> <p>Literature: Karleskint, G., Turner, R., Small, J.W. (2010 or 2013) Introduction to Marine Biology. 3rd or 4th edition. Thomson Brooks/Cole, Belmont CA; Additional reviews and original papers will be handed out during the module</p> <p>Information about textbooks and other reading material will be given on the ILIAS representation of the course</p> <p>General time schedule: Week 1 (Apr 3- Apr 6, 9-17): Lectures in Cologne, week 2-3 (Apr 11 (4:00) – Apr 21 (24:00): Field work and excursions at the Marine Biological Station on Helgoland Island (incl. field work on boat/vessel); week 4-5: creating/working on molecular data of marine fauna in Cologne; week 6: preparation for the seminar talk (10 minutes for each presentation at the end of this week) and writing seminar paper; week 7 (Mo-We): preparation for the written examination on Wednesday).</p> <p>Note: The module contains hand-on laboratory work conducted in small groups and is taught in the field, in course rooms and in research laboratories. The module does not contain computer-based practicals/research as a main component. For the excursion to Helgoland Island (11 days), a contribution of 10€ per day per student (110€) is required for transport (train, ferries) and accommodation.</p> <p>Introduction to the module: Thursday before the start of the module at 10:00 a.m. (March 30, Cologne Biocenter, room -1.005 (first basement floor)</p> <p>Written examination: May 17 (10.00), 2023, second/supplementary examination August 04, 2023; the latter date may vary if students and module coordinator agree. More details will be given at the beginning of the module.</p>