Marine Biology						
Identification number	Workload	Credit points	Term of studying		Frequency of occurence	Duration
MN-B-SM (E 4)	360 h	12 CP	1st or 2nd term of studying		Summer term, 1st half	7 weeks
1	Type of lessons		Contact times	Self-study times		Intended group size
	a) Lectures		21 h	42 h		max. 14
	b) Practical/Lab		155 h	113 h		max. 14
	c) Seminar		5 h	24 h		max. 14

2 Aims of the module and acquired skills

Students who successfully completed this module …

- have acquired detailed knowledge on the diversity of marine animals and plants incl. 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, tidel flats, rocky shore and deep sea).
- are able to use different sampling strategies and to analyse marine organisms during excursions to rock pools, tidal flat areas and rocky shore environments.
- are able to apply molecular techniques in marine biology such as next generation sequencing and transcriptomics
- 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

- Introduction to marine biology (oceanography, adaptations to abiotic and biotic environments, etc.)
- Analysis of 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 BiologischeAnstalt Helgoland (20.04. - 30.04.20) with expedition with boat for plankton, oral presentation of results of laboratory work and expeditions
- Eventually an expedition will be carried out with the research vessel RV Senckenberg in the coastal waters near Wilhelmshaven for studies of the benthic microbial food web (information will be given as soon as available)
- Deep-sea molecular biology using next generation sequencing and/or transcriptomics

4 Teaching/Learning methods

- Lectures; Practical/Lab (Project work); Seminar; Excursions; 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 on fundamental ecological principles is indispensable to participate in this module. In cases of doubt, please contact the module coordinator (see 10) before choosing this subject module.

6	Type of module examinations The final examination consists of two parts: Two hours written examination about topics of the lectures and the practical/lab part (70 % of the total module mark) and oral presentation (30 % of the total module mark)
7	Requisites for the allocation of credits Regular and active participation; Passed seminar paper; 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 Prof. Dr. Hartmut Arndt, phone 470-3100, e-mail: hartmut.arndt@uni-koeln.de Mails regarding technical aspects of the course: Dr. A. Scherwaß, anja.scherwass@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. H. Arndt, M. Hohlfeld, Dr. A. Scherwaß Literature: • Karleskint, G., Turner, R., Small, J.W. (2010 or 2013) Introduction to Marine Biology. 3rd or 4th edition. Thomson Brooks/Cole, Belmont CA • Knisely, K. (2013) A Student Handbook for Writing in Biology. 4th edition, Sinauer Associates • Additional reviews and original papers will be handed out during the module General time schedule: Week 1-2 (Mon.-Fri.): Lectures and practices in Cologne (06.04. – 17.04.); Week 3-4 (Mon.-Fri.): Field work and excursions at the Marine Biological Station on Helgoland Island (incl. field work on boats; 20.04. – 30.04.); Week 5-6 (Mon.-Fri.): Laboratory work and analysis of molecular data of marine fauna in Cologne as well as preparation for the seminar talk (12 min. for each presentation) and writing seminar paper; Week 7 (Mon.-Fri.): Preparation for the written examination Note: The module contains hand-on laboratory work conducted in small groups and is taught in course rooms and research laboratories. The module includes field-work in marine habitats. The module also contains some computer-based components. Introduction to the module: April 03, 2020 at 10:00 a.m., Cologne Biocenter, room -1.005 (first basement floor) Written examination: May 20, 2020, second/supplementary examination July 31, 2020; the latter date may vary if students and module coordinator agree. More details will be given at the beginning of the module.