

ForBio/UiB course: Systematics and Evolution of Marine Invertebrates

Course coordinators:

Prof. Manuel Malaquias (on behalf of the University Museum and Department of Biological Sciences, University of Bergen, Norway)

Associate Professor Nataliya Budaeva (on behalf of ForBio – Research School in Biosystematics and the University Museum, University of Bergen, Norway)

Lecturers:

Prof. Manuel Malaquias (University of Bergen, Norway; course coordinator))

Ass. Prof. Nataliya Budaeva (University of Bergen, Norway; course coordinator)

Prof. Andreas Hejnol (University of Jena, Germany / University of Bergen, Norway)

Ass. Prof. Aino Hosia (University of Bergen, Norway)

Dr. Luis Martell (University of Bergen, Norway)

Prof. Elena Temereva (Lomonosov Moscow State University, Russia)

Dr. Nina Mikkelsen (University of Bergen, Norway)

Ass. Prof. Andreas Altenburger (The Arctic University of Norway)

Prof. Henrik Glenner (University of Bergen, Norway)

Dr. Kenneth Meland (University of Bergen, Norway)

Ass. Prof. Nicolas Straube (University of Bergen, Norway)

Dr. Oleksandr Holovachov (Natural History Museum of Stockholm, Sweden)

Dr. Antonina Kremenetskaia (P. P. Shirshov Institute of Oceanology, Russia)

Dr. Jon Hestetun (NORCE Norwegian Research Centre AS)

Dr. Francisca Carvalho (University of Bergen, Norway)

Teaching assistants:

Monisha Bharate, PhD candidate (University of Bergen, Norway)

Miguel Meca, PhD candidate (University of Bergen, Norway)

Provisional course structure:

Day 1 (26-09-2022)	Seminars	Lecturer	Time (to be updated)
Lecture 1:	Introduction to the course. Tree of life, classifications, systematics, and principles of phylogeny	Manuel Malaquias	
Lecture 2:	Phylogeny and Evo-Devo of Metazoans	Andreas Hejnol	
Lecture 3:	Relationships of basal lineages: Porifera	Jon Hestetun, Francisca Carvalho	
Lecture 4:	Relationships of basal lineages: Cnidaria, Ctenophora, and Placozoa	Aino Hosia, Luis Martell	
Day 2 (27-09-2022)	Laboratories	Lecturer	Time
Laboratory 1	Morphology and comparative anatomy of Porifera	Jon Hestetun, Francisca Carvalho	
Laboratory 2	Morphology and comparative anatomy of Cnidaria and Ctenophora	Aino Hosia, Luis Martell	
Day 3 (28-09-2022)	Seminars and laboratories	Lecturer	Time
Lecture 5:	Bilateria: Phyla Acoelomorpha and Xenoturbellida and the lophotrochozoan phylum Mesozoa and clade Rousphozoa (Platyhelminthes, Gastrotricha)	Andreas Hejnol	
Lecture 6:	The Gnathifera (phyla Gnathostomulida, Micrognatozoa, Rotifera and Aconthocephala)	Andreas Hejnol	
Laboratory 3:	The Bilateria phyla Acoelomorpha, Platyhelminthes, and Gastrotricha	Andreas Hejnol	
Laboratory 4:	The Gnathifera phyla Rotifera and Aconthocephala	Andreas Hejnol	

Day 4 (29-09-2022)	Seminars and laboratories	Lecturer	Time
Lecture 7:	The lophotrochozoan «clade» Polyzoa (Cycliophora, Entoprocta, Ectoprocta)	Elena Temereva	
Lecture 8:	The trochozoan phyla Brachiopoda and Phoronida	Elena Temereva	
Laboratory 5:	Comparative morpho-anatomy of the phyla Ectoprocta, Brachiopoda, Phoronida	Elena Temereva	
Day 5 (30-09-2022)	Seminars and laboratories	Lecturer	Time
Lecture 9:	The phylum Annelida (including Echiura, Sipuncula and Myzostomida)	Nataliya Budaeva	
Lecture 10:	The trochozoan phylum Nemertea	Elena Temereva	
Laboratory 6:	Comparative morpho-anatomy of annelid and nemertean worms	Nataliya Budaeva, Elena Temereva	
Day 6 (03-10-2022)	Seminars and laboratories	Lecturer	Time
Lecture 11:	The Phylum Mollusca (Gastropoda, Bivalvia, Scaphopoda, Monoplacophora, Cephalopoda)	Manuel Malaquias	
Lecture 12:	The Phylum Mollusca: the Aplacophora clades Polyplacophora, Solenogastres, Caudofoveata	Nina Mikkelsen	
Laboratory 7:	Comparative morpho-anatomy of Mollusca	Manuel Malaquias & Nina Mikkelsen	
Day 7 (04-10-2022)	Seminars and laboratories	Lecturer	Time
Lecture 13:	The Ecdysozoa “clade” Nematodea (Nematoda, Nematomorpha)	Oleksandr Holovachov	
Lecture 14:	The Scalidophora phyla (Kinorhyncha, Priapulida, Loricifera)	Andreas Altenburger	
Laboratory 8:	Comparative morphology of nematodea	Oleksandr Holovachov	

Laboratory 9:	Comparative morphology of scalidophorans	Andreas Altenburger	
Day 8 (05-10-2022)	Seminars and laboratories	Lecturer	Time
Lecture 14:	The Panarthropoda: Chelicerata and Crustacea	Henrik Glenner	
Lecture 15:	The Panarthropoda: Onychophora and Tardigrada	Henrik Glenner	
Laboratory 10:	Comparative morphology of panarthropod clades (Chelicerata, Crustacea, Onychophora)	Henrik Glenner & Kenneth Meland	
Day 9 (06-10-2022)	Seminars and laboratories	Lecturer	Time
Lecture 16:	Deuterostomia: Phylum Echinodermata and Hemichordata	Antonina Kremenetskaia	
Laboratory 11:	Comparative morpho-anatomy of Echinodermata (Asterozoa: Asterozoa, Echinozoa: Echinozoa)	Antonina Kremenetskaia	
Day 10 (07-10-2022)	Seminars and laboratories	Lecturer	Time
Lecture 17:	The phyla Chaetognatha and Chordata (Urochordata and Cephalochordata)	Nicolas Straube	
Lecture 18:	The phylogeny of Metazoa: a synthesis	Manuel Malaquias	
Laboratory 12:	Comparative morpho-anatomy of protochordates (Urochordata and Cephalochordata)	Nicolas Straube	