

Charles University
Faculty of Science

Study Plans

2021/2022

UNIVERSITAS
CAROLINA



Symbols listed in the study plans:

SZ1, SZ2, ... parts of the state examination

Indications for individual subjects:

[D] length of the course in days per semester

[H] length of the course in hours per semester

[T] scope of the course in weeks per semester

[+3D] extra teaching (in addition to the above), here 3 days per semester

P the course has a prerequisite

K the subject has a corequisite

Z the subject has interchangeability

N the subject has an incompatibility

O the subject matter is repeatable

!! the course is not taught in the academic year 2021/2022

ob rok the course is taught every two years

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7.46. Study program Ecology

Guarantor of the study program: prof. Mgr. Lukáš Kratochvíl, Ph.D.

Study specializations:

- Terrestrial ecology
- Hydrobiology

Recommended study plan

A. Parts of the state examination are listed for individual specializations

B. The total amount of credits for general obligatory courses: **72**

C. The minimum amount of credits for general elective courses: **13** (6 + 2 + 5)

D. Conditions for students to be able to take the two parts of the state examination

SZ1: MDIPL003 (Diploma thesis)

- complete successfully all the obligatory courses
- obtain the minimum amount of credits in all the groups of elective courses
- obtain the minimum of 120 credits.

SZ2: codes and title are listed for individual specializations

- complete successfully all the obligatory courses with the exception of MB100C4 (Diploma project IV)
- obtain the minimum amount of credits in all the groups of elective courses

General obligatory courses

Kód	Název	Výuka	Kr.	Dop. r.
MB160S01	Ecological seminar 1A	W 0/2 C	1	1.
MB100C1	Diploma project I	W 0/0 C	10	1.
MB162S03	Ecological seminar 1B	S 0/2 C	1	1.
MB100C2	Diploma project II	S 0/0 C	10	1.
MB162S04	Ecological seminar 2A	W 0/2 C	1	2.
MB100C3	Diploma project III	W 0/0 C	24	2.
MB162S05	Ecological seminar 2B	S 0/2 C	1	2.
MB100C4	Diploma project IV	S 0/0 C	24	2.
	Obligatory courses		72	

General elective courses

Kód	Název	Rozsah	Kr.	Sem.
Block 1 – Statistical and bioinformatics courses				
MB120C15E	Flash R course ^N	0/4[D] C	2	W
MB120P147E	R for life ^N	1/1 C+Ex	2	W
MB120C16	Course of work with molecular data in R	0/5[D] C	2	W
MB170C47	UNIX and work with genomic data	0/3[D] C	2	W
MG440P44	Data analysis in R and Python	1/2 Ex	4	W
MB120P85	Community ecology. Introduction to ecological theory.	2/2 Ex	4	S

<i>MB150P88E</i>	<i>The basics of Bioinformatics^{N 1}</i>	<i>2/2 Ex</i>	<i>5</i>	<i>S</i>
<i>Minimal credits: 6</i>				
Block 2 – Journal Club				
<i>MB162S02</i>	<i>Journal Club in Ecology and Evolution 1A</i>	<i>1/0 C</i>	<i>1</i>	<i>W</i>
<i>MB162S07</i>	<i>Journal Club in Ecology and Evolution 1B</i>	<i>1/0 C</i>	<i>1</i>	<i>S</i>
<i>MB162S06</i>	<i>Journal Club in Ecology and Evolution 2A</i>	<i>1/0 C</i>	<i>1</i>	<i>W</i>
<i>MB162S08</i>	<i>Journal Club in Ecology and Evolution 2B</i>	<i>1/0 C</i>	<i>1</i>	<i>S</i>
<i>Minimal credits: 2</i>				
Block 3 – Terrain excursions and practices				
<i>MB162T09</i>	<i>Ichthyological field course</i>	<i>0/3[D] C</i>	<i>2</i>	<i>S</i>
<i>MB120T64</i>	<i>Field course in botany</i>	<i>0/1[T] C</i>	<i>3</i>	<i>S</i>
<i>MB120T97E</i>	<i>Field excursion 'Vegetation of the central Europe'</i>	<i>0/1[T] C</i>	<i>2</i>	<i>S</i>
<i>MB170T22</i>	<i>Specialized field course in Zoology</i>	<i>1/0[T] Ex</i>	<i>3</i>	<i>S</i>
<i>Minimal credits: 5</i>				

¹ Newly included from 2021/22, it also applies to students enrolled in 2020/21.

Recommended option courses

Kód	Název	Rozsah	Kr.	Sem.
<i>MB162P35</i>	<i>Basic bioacoustics^{!!}</i>	<i>1/0 Ex</i>	<i>2</i>	<i>W</i>
<i>MB162S11</i>	<i>Vector graphics: a tool for science</i>	<i>0/3[D] C</i>	<i>2</i>	<i>W</i>
<i>MB162C05</i>	<i>Practical Course of Evolutionary Genetics and Genomics</i>	<i>0/5[D] C</i>	<i>4</i>	<i>W</i>
<i>MB120P132</i>	<i>Datahandling and numerical analyses in biostratigraphy</i>	<i>2/2 C+Ex</i>	<i>4</i>	<i>W</i>
<i>MB120P44</i>	<i>Use of molecular markers in plant systematics and population biol.</i>	<i>3/0 Ex</i>	<i>3</i>	<i>W</i>
<i>MB120C45E</i>	<i>Molecular markers in systematics and plant population biology II</i>	<i>0/1[T] C</i>	<i>3</i>	<i>S</i>
<i>MB120P177</i>	<i>Transposable elements: from junk DNA toad to Prince Major Driver of biodiversity</i>	<i>2/2 C+Ex</i>	<i>4</i>	<i>W</i>
<i>MB170P62</i>	<i>Molecular Applications in Zoology</i>	<i>2/0 Ex [+1D]</i>	<i>4</i>	<i>S</i>

7.46.1. Specialization Terrestrial ecology

Study advisor for the specialization: RNDr. Ondřej Sedláček, Ph.D.

A. Parts of the state examination (topics are listed in SIS):

SZ1: MDIPL003 (Diploma thesis)

SZ2: MSZBN023 (Terrestrial Ecology)

B. The total amount of credits for specialized obligatory courses: **7**

C. The minimum amount of credits for specialized elective courses: **14** (6 + 8)

Specialized obligatory courses

Kód	Název	Výuka	Kr.	Dop. r.
MB120P113	Conservation Biology	S 3/0 Ex	4	1.
MB170P101	Macroecology	W 2/0 Ex	3	2.
Obligatory courses			7	

Specialized elective courses

Kód	Název	Rozsah	Kr.	Sem.
Block 1 – Systematically oriented courses				
MB160P06	Crustacean biology and diversity ^{ob rok}	2/0 Ex	3	S
MB162P40	Diversity of marine fishes	2/0 Ex	3	S
MB162P09	Ecology of Birds	2/0 C+Ex	3	S
MB162P39	Fish ecology	2/0 Ex	3	S
MB162P26	Insect ecology and conservation	2/0 Ex	3	S
MB120P146	Botany of non-vascular plants ^N	3/2 C+Ex	6	S
MB120P166	Introduction to plant systematics, evolution and ecology	2/0 Ex	3	W,S
MB120P170E	Medical Mycology	2/1 C+Ex	4	S
MB170P98	Diversity of Insects	2/0 Ex	3	W
MB160P66	Parasitology	2/0 Ex	3	W,S
<i>Minimal credits: 6</i>				
Block 2 – Evolutionary ecological courses				
MB162P24	Biological Invasions	2/0 Ex	3	W
MB162P11	Ecological Developmental Biology and Evolution of Phenotype	2/0 Ex	3	S
MB160P02	Ecology of lentic ecosystems ^{ob rok}	2/0 Ex	3	W
MB162P30	Ecology of the Cryosphere	2/0 Ex	3	S
MB162P28	Functional Community Ecology and Biogeography	2/0 Ex	3	S
MB162P27	Introduction to Polar Ecology	2/0 Ex	3	W
MB162P31	Stream Ecology ^{ZN}	2/0 Ex	3	W
MB120C14	Experimental plant ecology	1/2 C+Ex	4	S
MB120P165	Genomics of adaptation and speciation	2/2 C+Ex	4	S
MB120P22E	Methods in plant population biology	1/1 Ex	2	S
MB120P144	Plant breeding systems	2/2 C+Ex	3	S
MB120P172	Plant Epigenetics	2/4 C+Ex	4	W
MB120P94E	Population biology of plants	3/0 Ex	4	W
MB120P134	Quaternary palaeoecology	2/0 Ex	3	W
MB170P124	Basics of Evolutionary Biology ^N	2/0 Ex	3	W
MB170P106	Ethology and sociobiology	2/0 C+Ex [+1D]	5	W
MB170P84	Evolutionary and ecological immunology	3/0 C+Ex	4	W
<i>Minimal credits: 8</i>				

7.46.2. Specialization Hydrobiology

Study advisor for the specialization: RNDr. Martin Černý, Ph.D.

A. Parts of the state examination (topics are listed in SIS):

SZ1: MDIPL003 (Diploma thesis)

SZ2: MSZBN022 (Ecology — Hydrobiology)

B. The total amount of credits for specialized obligatory courses: **0**

C. The minimum amount of credits for specialized elective courses: **19** (6 + 13)

Specialized elective courses

Kód	Název	Rozsah	Kr.	Sem.
Block 1 – Systematically oriented courses				
MB160P06	Crustacean biology and diversity ^{ob rok}	2/0 Ex	3	S
MB162P38	Diatomology	1/3[D] C	3	S
MB162P40	Diversity of marine fishes	2/0 Ex	3	S
MB160P11	Ecology of Cyanobacteria and Algae	2/0 Ex	3	W
MB162P39	Fish ecology	2/0 Ex	3	S
MB160P55	Zooplankton Ecology	2/0 C	3	S
MB120P146	Botany of non-vascular plants ^N	3/2 C+Ex	6	S
MB120P166	Introduction to plant systematics, evolution and ecology	2/0 Ex	3	W,S
MB120T119	Marine phycology course	0/1[T] C	3	S
MB120P10	Phycology I	3/2 C+Ex	6	W
MB120P89	Phycology II	3/2 C+Ex	6	S
<i>Minimal credits: 6</i>				
Block 2 – Evolutionary ecological courses				
MB120P113	Conservation Biology	3/0 Ex	4	S
MB170P101	Macroecology	2/0 Ex	3	W
MB162P24	Biological Invasions	2/0 Ex	3	W
MB162P11	Ecological Developmental Biology and Evolution of Phenotype	2/0 Ex	3	S
MB160P02	Ecology of lentic ecosystems ^{ob rok}	2/0 Ex	3	W
MB162P30	Ecology of the Cryosphere	2/0 Ex	3	S
MB162P28	Functional Community Ecology and Biogeography	2/0 Ex	3	S
MB162P27	Introduction to Polar Ecology	2/0 Ex	3	W
MB162P31	Stream Ecology ^{ZN}	2/0 Ex	3	W
MB120C14	Experimental plant ecology	1/2 C+Ex	4	S
MB120P165	Genomics of adaptation and speciation	2/2 C+Ex	4	S
MB120P22E	Methods in plant population biology	1/1 Ex	2	S
MB120P144	Plant breeding systems	2/2 C+Ex	3	S
MB120P172	Plant Epigenetics	2/4 C+Ex	4	W
MB120P94E	Population biology of plants	3/0 Ex	4	W
MB120P134	Quaternary palaeoecology	2/0 Ex	3	W
MB170P124	Basics of Evolutionary Biology ^N	2/0 Ex	3	W
<i>Minimal credits: 13</i>				

7.47. Study program Immunology

Guarantor of the study program: prof. RNDr. Jan Černý, Ph.D.

Recommended study plan

- A.** Parts of the state examination are listed for individual specializations
- B.** The total amount of credits for general obligatory courses: **102**
- C.** The minimum amount of credits for general elective courses: **6** (3 + 3)
- D.** Conditions for students to be able to take the two parts of the state examination
- SZ1:** MDIPL003 (Diploma thesis)
- complete successfully all the obligatory courses
 - obtain the minimum amount of credits in all the groups of elective courses
 - obtain the minimum of 120 credits.
- SZ2:** MSZBN044 (Immunology)
- complete successfully all the obligatory courses with the exception of MB100C4 (Diploma project IV)
 - obtain the minimum amount of credits in all the groups of elective courses

General obligatory courses

Kód	Název	Výuka	Kr.	Dop. r.
MB150P77E	Histology ^N	S 3/0 Ex	4	1.
MB150P14E	Immunology ^N	W 2/0 Ex	3	1.
MB151C15E	Immunology — a practical course ^{KN}	W 0/1[T] C	3	1.
MB100C1	Diploma project I	W 0/0 C	10	1.
MB150S04	Seminar on Immunology	W 0/2 C	1	1.
MB100C2	Diploma project II	S 0/0 C	10	1.
MB150S13	Seminar on Immunology	S 0/2 C	1	1.
MB150P78	Advances in Immunology ¹	W/S 2/0 C	2	1. – 2.
MB150P78	Advances in Immunology ¹	W/S 2/0 C	2	1. – 2.
MB151P108	Clinical Cases in Immunology ^{ob rok}	S 2/0 Ex	3	1. – 2.
MB151P80	Cytometry ^N	W 2/1 C+Ex	4	1. – 2.
MB151P132	Immunology of Infectious Diseases	W 2/0 Ex	3	2.
MB150P90E	Innate immunity	W 2/0 Ex	3	2.
MB100C3	Diploma project III	W 0/0 C	24	2.
MB150S14	Seminar on Immunology	W 0/2 C	1	2.
MB151P99E	Animal models in immunology	S 2/0 Ex	3	2.
MB100C4	Diploma project IV	S 0/0 C	24	2.
MB150S15	Seminar on Immunology	S 0/2 C	1	2.
Obligatory courses			102	

¹ The student completes a repeatedly enrollable subject at least twice during the study.

General elective courses

Kód	Název	Rozsah	Kr.	Sem.
Block 1 – General courses				
MB140P88E	General Microbiology	2/0 Ex	3	S
MB160P80E	General Parasitology: from Viruses to Animals	3/0 Ex	4	W
MB150P88E	The basics of Bioinformatics ^N	2/2 Ex	5	S
<i>Minimal credits: 3</i>				
Block 2 – Immunology				
MB170P84	Evolutionary and ecological immunology	3/0 C+Ex	4	W
MB151P103E	Immunology — a systems biology view	2/0 Ex	3	S
MB160P75E	Parasite Immunology ^{ob rok}	2/0 Ex	3	W
<i>Minimal credits: 3</i>				

Recommended option courses

Kód	Název	Rozsah	Kr.	Sem.
Advances Molecular and cell biology				
MB150P85	Epigenetics	2/0 Ex	3	W
MB151P125	Molecules of Life & Mutations	2/3[D] Ex	3	S
MB150P09E	Proteins of Signaling Cascades ^N	2/0 Ex	3	S
MB150P91E	RNA structure and function	2/0 Ex	3	S
Techniques				
MB100P07	Electron Microscopy Methods for Biology ^{N ob rok}	0/2 C	2	S
MB120C15E	Flash R course ^N	0/4[D] C	2	W
MB151P130	Genomics — Approaches and Algorithms ^N	2/2 C+Ex	5	W
MB150C27E	Histology — A Practical Course ^N	0/2[D] C	1	S
MB140P86	Methods of functional genomics	4/0[D] Ex	3	S
MB151P129	Methods in Genomics ^N	2/2 C+Ex	5	S
MB150P120E	Molecular mechanisms of regulated cell death ^N	2/0 Ex	3	W
MB140C35	Practical molecular biology	0/1[T] C	3	S
MB120P147E	R for life ^N	1/1 C+Ex	2	W