

Рабочая программа утверждена в составе учебного
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St Petersburg University

WORK PLACEMENT PROGRAMME

An Introductory Academic Work Placement in Biology and Environmental Studies

Language(s) of instruction

English

Workload in credit units: 5

Work programme registration number: 073832

St Petersburg

2023

Summary (*in Russian, English, other (if relevant) languages*)

Work placement for students of the Faculty of Medicine is conducted at the end of the first year of studies at the SPbU Biological Research Institute in Peterhof and at the SPbU Marine Biological Station (White Sea). The duration of work placement is 21 days. The main aim of work placement is to provide students with an understanding of the diversity of organisms and to reinforce the knowledge gained during the lecture course. During the work placement, students become acquainted with the invertebrates of aquatic and soil ecosystems and learn methods of collecting material, keeping it in the laboratory and examination with the aid of light-optical techniques.

The specific nature of the training in Peterhof involves an in-depth study of freshwater and soil fauna of invertebrates, the acquisition of skills in entomology and an introduction to the main biotic communities and plant families of the Leningrad region. This knowledge gives a complete picture of the diversity of living organisms in nature and introduces students to the local flora and fauna. In this work, students develop an understanding of the biocenological structure of freshwater bodies, soil, air space and gain experience in faunal and floristic studies. Summer field training enables students to learn practical methods of working with primary material in the field, observe and collect animals and plants, and analyse the data obtained. During the excursions, students learn about, among other topics, the medicinal plants that grow in the Leningrad region.

Material is collected in the vicinity of Old Peterhof: the territory of the SPbU Biological Research Institute, Novy Peterhof and its surroundings, and sometimes the parks of Lomonosov and Strelna.

The White Sea work placement, based at the Marine Biological Station of SPbU, includes fieldwork and laboratory classes. The specific nature of this work placement involves an in-depth study of marine and freshwater invertebrate faunas.

Field collection of the material involves sea excursions on motor and rowing vessels to various biotopes. The students collect the animals by hand or with the help of special fishing equipment. Biotopes in which animals are collected include rocky and muddy-sandy littoral, kelp forest, deep-sea substrates with muddy and rocky bottoms, mussel communities, littoral zone with filamentous algae, large volumes of water with planktonic organisms. One of the excursions involves collecting material in freshwater water bodies.

The laboratory classes consist of a theoretical part (lectures) and a practical part, during which students are introduced to the fauna of the White Sea and learn about the internal and external structure of animals and the features of their adaptation to different habitats.

The distribution of lesson topics by day is based on the tidal schedule, the weather and availability of free watercrafts at the station.

Section 1 Characteristics of work placement

1.1. Goal and objectives

The goal of this work placement is to provide the students with an overview of:

- the diversity of living organisms in nature;
- existing aquatic, soil and plant ecological systems;
- the relationship of organisms in ecosystems;
- the possibilities of using living organisms in experimental work.

The main objectives of the work placement are:

- 1 to teach the students the skills of using special scientific literature in their cognitive and professional activities;
- 2 to teach to apply their knowledge of natural science to their research activities;
- 3 to teach the students how to collect material, keep it in the laboratory and study it using light-optical techniques;

4. specific nature of the training in Peterhof involves an in-depth study of freshwater and soil fauna of invertebrates, the acquisition of skills in entomology and an introduction to the main biotic communities and plant families of the Leningrad region.

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1.2. Type of work placement *(the type of work placement must correspond to the current curriculum approved in accordance with the procedure established at SPbU)*

- Educational
- Work placement, including pre-graduation
- (specify)*

1.2.1. Type of work placement *(the type of work placement must meet educational standards)*
field *(specify)*

1.2.2. As part of the work placement for master's degree programmes, an introductory class is held at the Resource Centre of the SPbU Research Park

not provided (specify)

1.3. Modes of work placement (mode of conducting work placement (if available) must comply with educational standards)

On-site when conducting work placement in Peterhof; off-site – when conducting work placement at the SPbU Marine Biological Station (specify)

1.3.1. Additional characteristics of on-site training (mark the items that apply)

at SPbU:

- Educational and Scientific department of St Petersburg University
- SPbU Biological Research Institute (Peterhof) (specify)
- Administrative department of SPbU _____ (specify department)
- SPbU Clinic _____ (specify clinic)
- M. Gorky Scientific Library
- SPbU Research Park, Resource Centre _____ (specify)
- Small innovative enterprise _____ (specify)
- SPbU Publishing House
- SPbU Admissions Committee
- Other _____ (specify)

in an organisation located on the territory of St. Petersburg (within the framework of an agreement/contract, IS Partner)

other characteristics: _____ (specify)

1.3.2. Additional characteristics of the off-site work placement (select if available)

features of the event related to natural conditions: _____ (specify which ones)

expedition to educational and research bases, in a specialised organisation (within the framework of an agreement/contract, IS Partner)

other characteristics: _____ (specify)

1.4. Forms of work placement (select one option in agreement with the staff of the Department of Educational Programmes according to the academic schedule)

Continuous (by allocating a continuous period of study time in the academic schedule for all types of work placement)

Discrete with additional characteristics for the training (a possibility for combining discrete training by type and by period)

1.4.1. Additional characteristics of the form of work placement (choose one option)

The work placement takes place when students are not able to attend classes because they are outside of SPbU.

Work placement can be conducted in parallel with the academic classes.

1.5. Qualification requirements for work placement (specify)

Successful completion of work placement in Biology and Environmental Studies is based on the knowledge gained during the first academic year in zoology with the basics of parasitology,

developmental biology, cytology and histology, as well as basic knowledge of zoology, botany and general biology in the scope of the school curriculum.

The level of foreign language proficiency should be equivalent to the ability to work with foreign science literature and bibliographic information resources in foreign languages.

Knowledge of bibliography should be based on the ability to compile bibliographic descriptions and bibliographic lists of natural science literature, in accordance with the rules of the State Standard, citing the sources of references from the literature read.

Due to the limited number of places for work placement at the Marine Biological Station (16-18 people), a selection of those wishing to practice on the White Sea is being made. In the case of an excessive number of applicants, students will be selected for the work placement at Marine Biological Station according to their grades for the first semester of study and the absence of unfulfilled academic requirements.

1.5.1. Special admission conditions (*specify relevant ones, for example, mandatory medical examination*) not required

1.5.2. Work placement for students with disabilities is carried out by taking into account the particularities of their psycho-physical development, individual capacities and health status.

1.6. List of applicable professional standards in the field of professional activity (updated) and (or) list of generalised labour functions, employment functions, skills, competences, as viewed by potential employers.

As a result of the work placement, the students should

have knowledge of:

- current problems of zoology, botany and environmental science;
- possibilities for practical application of modern biological sciences in biomedical

research;

be capable of:

- planning the experiment, formulate the research objectives and interpret the results;
- determining the species identity of the biological material collected;
- working with scientific literature, abstract scientific literature;
- presenting and publicly defending their research findings and conclusions;

master:

- methods of collecting biological material and keeping it in a laboratory;
- methods of studying biological material using light-optical techniques;
- methods of identifying, dissecting and describing biological material;
- new integrative scientific knowledge obtained at the present stage of the

development of the science of the relationship of organisms in nature;

- principles of presenting their work results.

1.7. The list of professional competences that form the practical component of the programme results:

PKA-1 (defined academic competencies): is able to solve standard professional tasks using information, bibliographic resources, medical and biological terminology, information and communication technologies, taking into account basic information security requirements.

PKA-2 is capable of perceiving, summarising, analysing information, setting goals and selecting ways to achieve them, building a culture of thinking

PKA-3 is able to implement ethical and deontological principles in professional activity.

PKA-4 is able to understand and use knowledge of the modern scientific picture of the world, and modern scientific advances in teaching and professional activities, keeping their theoretical knowledge at a constantly high level

PKA-5 – is able to apply methods and means of cognition, learning and self-control to improve intellectual development, enhancement of cultural level and professional competence, preservation of one's health, moral and physical self-improvement

UK-6 (transferable skills): is able to apply methods and means of cognition, learning and self-control to improve intellectual development, enhancement of cultural level and professional competence, preservation of one's health, moral and physical self-improvement

UKS-3 (own transferable skills): is able to use methods for obtaining and processing information in the professional sphere, taking into account modern technologies of the digital economy, artificial intelligence and data science, as well as information security

UKS-4: is able to present information on professional activities in a language that is understandable to non-specialists, to interact with representatives of different cultures, including in the areas of mandatory use of the official language of the Russian Federation

1.8. Comparison of professional competencies with the content of professional standards and (or) generalised labour functions, employment functions, skills, skills according to potential employers (in relation to the listed professional standards or the opinion of potential employers)

Section 2. Organisation, structure and content of work placement

2.1. Organisation of work placement: a model with a brief description

This section describes the process of conducting and completing work placement.

The types and scope of study, the scope and duration of the practice and its place in the structure of the educational programme are specified in the current curriculum.

The study period and the timelines for the current monitoring of progress and interim assessments are indicated in the current curriculum and timetable.

2.1.1 Basic course

Complexity, amount of training and the size of student groups																		
Training period (module)	Students work in contact with the teacher											Independent study				Amount of active and interactive learning activities	Complexity	
	lectures	seminars	consultations	practical training	laboratory work	tests	colloquiums	continuous assessment	interim assessment	final assessment	under the guidance of a teacher	in the presence of a teacher	Independent study with the use of teaching materials	continuous assessment (independent study)	interim assessment (independent study)			final assessment (individual work)
MAIN TRAJECTORY																		
full-time education																		
Semester 2	0	0	0	0	0	0	0	0	2	-	106	4	56	0	12	-	40	5
TOTAL	0	0	0	0	0	0	0	0	2	-	106	4	56	0	12	-	40	5

Forms of continuous assessment, forms of continuous assessment						
Training period (module)	Forms of continuous assessment		Types of interim assessment		Types of final assessment (only for final assessment programmes and additional educational programmes)	
	Forms	Timeline	Types	Timeline	Types	Timeline
MAIN TRAJECTORY						
full-time education						
Semester 2			credit, orally, traditional form	according to interim assessment schedule		

Due to the limited number of places for work placement at the Marine Biological Station (16-18 people), there is a competitive selection process for those wishing to do work placement at the White Sea. In the case of an excessive number of applicants, students will be selected for the work placement at Marine Biological Station according to their grades for the first semester of study and the absence of unfulfilled academic requirements.

2.2. Structure and content of work placement

Training period (module): **Semester 2**

No	Name of topic (section, part)	Type of learning activities	Number of hours
Structure and content of training in Zoology			
1	The topic "Adaptation of hydrobionts to an aquatic lifestyle". Excursion "Invertebrates of streams and low-flowing freshwater bodies". Excursion "Invertebrates of lakes and shallow non-flowing water bodies".	Lectures	0
		Seminars / practical classes	0/0
		under the guidance of a teacher / in the presence of a teacher/independent work using teaching materials	7/1/9
2	Topic "Taxonomic composition of freshwater invertebrates". Practical work. Identification and sketching of material on molluscs and leeches. Acquisition of the initial skills of working with identifiers, exploring the range of available species. Registration of the results of the work. Practical work. Identification and sketching of material on molluscs and leeches (continued). <i>Lecture "Cnidarians, flatworms"</i> , oligochaetes of freshwater bodies". Features of the structure and biology of the freshwater inhabitants of these animal groups. Practical work. Identification of the material collected in these groups. Observations on the movement and feeding behaviour of turbellaria and hydra. Registration of the results of the work.	Lectures	0
		Seminars / practical classes	0/0
		under the guidance of a teacher / in the presence of a teacher/independent work using teaching materials	0/1/9
3	Topic "General lecture on insects". "Insects with incomplete transformation: dragonflies, mayflies". Excursion "Along the Ropsha-Novy Peterhof water system (Pink Pavilion)". "Insects with incomplete transformation: the order of bugs". Excursion "Collection	Lectures	0
		Seminars / practical classes	0/0
		under the guidance of a teacher / in the presence of a teacher / independent work	24/1/9

	<p>of land and water bugs in the surrounding water bodies".</p> <p>"Insects with complete transformation: the order of beetles. Excursion "Collecting ground beetles and water beetles in the surrounding water bodies".</p> <p>"Insects with Complete Transformation: the order Diptera".</p> <p>Excursion "Collection of dipteran larvae".</p> <p>"Insects with complete transformation: Hymenoptera. Excursion "Social Insects".</p> <p>"Insects with complete transformation: the orders of caddisflies and butterflies".</p> <p>"Entomological aerial" excursion.</p>	using teaching materials	
4	<p>Topic "Geobionts". Arthropods' adaptation to life on land Diversity of soil forms (millipedes, chelicerae, insect larvae, etc.). Excursion "On the soil". Collection of millipedes and other soil fauna. Practical work. Identification of millipedes and, where possible, other elements of the soil fauna.</p>	Lectures	0
		Seminars / practical classes	0/0
		under the guidance of a teacher / in the presence of a teacher / independent work using teaching materials	4/0/9
Structure and content of work placement in Botany			
1	<p>Introductory lecture. Excursion "Ecological and morphological features of the family Ranunculaceae".</p> <p>Representatives of the families Caryophyllaceae, Brassicaceae and Apiaceae. Excursion "Trees and shrubs".</p> <p>Excursion "Ecological and morphological features of the Rosaceae and Fabaceae families".</p>	Lectures	0
		Seminars / practical classes	0/0
		under the guidance of a teacher / in the presence of a teacher/independent work using teaching materials	7/1/9
2	<p>Field trip "High Bog. Spruce forest. Pine forest".</p>	Lectures	0
		Seminars/practical classes	0/0
		under the guidance of a teacher / in the presence of a teacher/independent work using teaching materials	7/1/9
3	<p>A group of dicotyledonous plant families with a sympetalous corolla – Solanaceae, Scrophulariaceae, Lamiaceae, Boraginaceae.</p> <p>Excursion "The family Asteraceae as the largest dicotyledonous plant family".</p>	Lectures	0
		Seminars / practical classes	0/0
		under the guidance of a teacher / in the presence of a teacher/independent work	7/1/9

		using teaching materials	
4	Aquatic and semi-aquatic plants.	Lectures	0
		Seminars / practical classes	0/0
		under the guidance of a teacher / in the presence of a teacher / independent work using teaching materials	7/0/9
5	Monocotyledonous plants: families Juncaceae, Cyperaceae, Poaceae.	Lectures	0
		Seminars/practical classes	0/0
		under the guidance of a teacher / in the presence of a teacher / independent work using teaching materials	7/0/10
Structure and content of work placement in Zoology			
1.	During excursions and laboratory classes, students study the following animal groups and species from various biotopes at the SPbU Marine Biological Station (<i>e.g.</i> : rocky littoral: hydroid polyps – <i>Obelia loveni</i> ; - muddy-sand littoral: polychaete <i>Arenicola marina</i> ; - sublittoral red algae: sponges of the genus <i>Polymastia</i> ; - plankton inhabitants: echinoderm, polychaetes and molluscs larvae, hydromedusae, copepoda and Cladocera, scyphomedusae <i>Aurelia aurita</i> and <i>Cyanea capillata</i> ; etc.)	Lectures	0
		Seminars / practical classes	0/0
		under the guidance of a teacher / in the presence of a teacher / independent work using teaching materials	36/0/10

Section 3. Work placement arrangement

3.1. Methodological support

3.1.1. Types and forms of ongoing monitoring of academic performance and interim assessment

Continuous assessment (*mark if available and specify types and forms*)

Interim assessment (*choose one form*)

test exam

3.1.2. Methodological materials for students

3.1.2.1. Methodological guidelines for work placement (*including current performance control, etc.*)

- a list of tasks for students to complete during their independent study;

- a suggested list of questions for self-checking and continuous assessment;

- a list of information resources to which students have access in their independent study:

3.1.2.2. Methodological guidelines for preparation for interim assessment (*including the preparation of training report, defending the report, etc.*)

- summary plans of lectures for the discipline;
- conditions for current and interim assessment in the discipline;

3.1.2.3. Materials for students' assessment of the content and quality of work placement (*questionnaires, etc.*)

An anonymous feedback questionnaire on the teaching of the course

Please fill in the feedback form. The generalised data of the questionnaires will be used to improve teaching. For each question, give the appropriate score on a scale of 1 to 10 (circle the score you have chosen). If necessary, enter your comments.

How satisfied are you with the content of the course as a whole?

1 2 3 4 5 6 7 8 9 10

Comment _____

How satisfied are you with the forms of teaching?

1 2 3 4 5 6 7 8 9 10

Comment _____

How would you rate the quality of the offered teaching and learning materials?

1 2 3 4 5 6 7 8 9 10

Comment _____

How satisfied are you with teachers' use of interactive and active learning methods?

1 2 3 4 5 6 7 8 9 10

Comment _____

Which of the topics of the course do you consider the most useful, valuable in terms of further learning and/or application in subsequent practical work?

What would you suggest changing in terms of methodology and content to improve the teaching of this course?

THANK YOU!

3.1.3. Methodological materials for work placement supervisors from SPbU and relevant organisations

- methodological guidelines for a practical class.

3.1.3.1. Methodology for current monitoring of academic performance and interim assessment

The teacher shall implement the continuous assessment of students' progress according to the schedule, using the time allocated for checking homework, results of independent study, counselling, etc.

The daily monitoring of the topic acquisition is carried out in the form of interviews on theoretical issues and the flora and fauna objects studied, assessing the quality of the fieldwork carried out and recording the selected objects (drawings, herbaria).

The work placement ends with a pass-fail assessment in the form of an oral interview, during which the teacher checks the mastery of the theoretical material, assesses the compliance of the mastered practical skills with the established list of skills and checks the student's knowledge of the methodology of their performance.

As part of interim assessment of students based on the results of work placement, commissions for conducting interim assessment are created.

The establishment of commissions for the interim assessment of students' progress in the main curriculum on the results of work placement is compulsory.

The commission for the interim assessment of students' progress based on the results of work placements consists of at least persons, including the chairperson of the commission.

Commissions for interim assessments of students based on the results of work placements may include:

- academic staff of the SPbU academic and research divisions who implement the relevant work placement course, but who have not conducted classes for these students, and are not supervisors of work placement;
- representatives of organisations that are relevant to the focus of the main curriculum;
- representatives of the organisations where the work placement was held.

Interim assessment is carried out in two stages:

Stage 1: submission of reporting documentation in accordance with the work programme of work placement;

Stage 2: Conducting assessment in a distance format using a distance learning technology: Blackboard system.

3.1.3.2. Evaluation method and criteria

The grading takes into account the completion of the work placement programme, the level of mastery of practical skills and overall performance of the student.

The intermediate assessment takes the form of an oral interview with a discussion of the biocenoses studied, as well as an assessment of the level of mastery of practical skills in identifying flora and fauna.

Criteria for evaluating the work placement:

"pass" - a fairly complete answer to the questions based on the results of work placement, correct identification of the proposed species of flora and fauna of the studied biocenoses, and competent use of special terminology.

"fail" - wrong answers to the questions, failure to identify the proposed object, unsatisfactory use of terminology.

Methodology for running test stages:

Stage 1:

During work placement, the student is required to fill in a diary on a daily basis. At the end of each working day, the records are certified by the direct mentor of the work placement base institution. At the end of the training, the final figures are recorded in the Work Placement Report.

At the end of the training, the mentor of the base institution writes a review of the student's work, indicating the observations and suggestions that have been made. The diary is submitted to the head of the department and the chief medical officer of the medical facility, who certifies the testimonial with the signature and seal of the clinic.

The results of stage 1 are assessed by a pass or fail grade, based on the submission of reporting documentation in accordance with the work programme of the work placement.

Stage 2:

Students with a stage 1 result of "passed" are eligible for stage 2. The duration of the 2nd stage is 45 minutes. For the second stage, each trainee is given a test assignment in the relevant area of specialisation. The results of the test are assessed as "pass" or "fail".

Correspondence between the SPbU assessment and the ECTS assessment using the absolute grading scale (Order of 20.07.2018 No. 7293/1)

Total percentage of completion, %	SPbU assessment for the test	ECTS assessment	SPbU assessment for the exam
90-100	pass	A	excellent
80-89	pass	B	good
70-79	pass	C	good
61-69	pass	D	satisfactory
50-60	pass	E	satisfactory
less than 50	fail	F	unsatisfactory

3.1.3.3. Evaluation tools: testing and assessment materials and tools *(types and examples)*

Materials:

- List of practical skills and techniques:

At the end of the work placement students should be able to:

- plan the experiment, formulate the research objectives and interpret the results;
- determine the species identity of the biological material collected;

At the end of the work placement, students should master:

- methods of collecting biological material and keeping it in a laboratory;
- methods of studying biological material using light-optical techniques;
- methods of identifying, dissecting and describing biological material;
- principles of presenting their work results.

- Questions for the final test refer to all the biological and environmental aspects of the plants and animals studied:

For work placement in Peterhof:

Adaptation of hydrobionts to an aquatic lifestyle
 Taxonomic composition of freshwater invertebrates
 Insects with incomplete complete transformation
 Geobionts
 Raised bog Spruce forest. Pine forest.
 Aquatic and semi-aquatic plants.
 Plants of the monocotyledonous and dicotyledonous classes
 Medicinal plants of the Leningrad region
 Identification of studied plant and animal species by appearance

For work placement at the Marine Biological Station

Aquatic and semi-aquatic plants.
 Raised and low-lying bogs
 Medicinal plants of Karelia
 Adaptation of hydrobionts to an aquatic lifestyle
 Taxonomic composition of freshwater invertebrates
 Taxonomic composition of marine invertebrates
 Inhabitants of stony and sandy littoral
 Planktonic organisms
 Identification of studied plant and animal species by appearance

3.1.3.4. Recommended form of the work placement report

There is no requirement for the completion of the work placement report.

3.2. Staffing

3.2.1. Education and (or) qualification of staff teachers and other persons authorized to manage work placement *(mandatory section for work placements at the SPbU Research Park)*

Persons authorised to carry out work placement	Education/qualification
Employees of SPbU:	
<ul style="list-style-type: none"> • Work placement Coordinator • Work placement Supervisor 	Lecturers holding a doctoral (candidate of sciences) degree and an academic title, who passed the established procedure of recognition and awarding the academic title of professor or associate professor, should be assigned to teach this course. Teachers involved in the practical sessions should have a basic education and/or degree corresponding to the profile of the discipline they are teaching.
<ul style="list-style-type: none"> • Research supervisor/Director of the clinic 	
<ul style="list-style-type: none"> • Director of the Research Park Resource Centre 	
Employer representatives (IS Partner) <i>(determined by the current agreement/contract)</i>	
<ul style="list-style-type: none"> • Work placement Supervisor 	
<ul style="list-style-type: none"> • Tutor 	
<ul style="list-style-type: none"> • Other 	

3.2.2. Provision of educational support staff and/or other staff *(mandatory section for work placement at the SPbU Research Park (to be clarified with the relevant department))*

Department assistant -1

yes no

(specify a staff member if the answer is "yes")

educational support staff and (or) other personnel	Education/qualification
Employees of SPbU:	
<ul style="list-style-type: none"> • Tutor 	
<ul style="list-style-type: none"> • Clinic Specialist 	
<ul style="list-style-type: none"> • Specialist of the Research Park Resource Centre 	
<ul style="list-style-type: none"> • Other 	

3.3. Material and technical support *(specify the list of equipment)*

3.3.1. Characteristics of classrooms (rooms, facilities) for work placement

A lecture room with 20-30 seats and a set of desks and chairs.

3.3.2. Characteristics of classroom equipment, including non-specialized computer equipment and general-use software

Interactive whiteboard and multimedia equipment with remote control.

Desk lamps.

3.3.3. Characteristics of specialized equipment *(mandatory section for work placements at the SPbU Research Park)*

The following equipment and tools are used during the training:

Classroom equipment:

1. Optics: minimum of one binocular with illuminator (MBS-9, MBS-10 or similar models) per two students.
2. 3-4 microscopes ("Biolam") with illuminators per group.
3. Aquariums, cages, micro aquariums for keeping animals; compressors, nets.
4. Spreading boards, entomological pins and boxes.
5. Forceps; pipettes and rubber bulbs; laboratory utensils (Petri dishes, Koch dishes, crystallisers, cuvettes, aquariums).
6. Containers for holding fixed material (weighing bottles with ground-in covers of different volumes, culture dishes);
7. Aquarium water pumps and air compressors.

Equipment for fieldwork:

1. Water nets, cuvettes for material analysis.
2. "Carriers" (material bottles).
3. Forceps, zoology "spoons", bulbs for large pipettes.
5. Air nets.
8. Spades and trowels
9. Eclectors for collecting soil fauna.

Work placement at the SPbU Marine Biological Station also includes the provision of watercrafts

3.3.4 Characteristics of specialised software

not required

3.3.5 List, quantity, and characteristics of required consumables *(specify the consumables list)*

1. Fixatives: alcohol, chloroform, formaldehyde.
2. Killing jars and chloroform.
3. Cotton wool for making insect mattresses.
4. Filter paper.

3.4. Information support *(coordination with the M. Gorky Scientific Library of SPbU is mandatory)*

3.4.1 List of mandatory literature

During the work placement, students are provided with up-to-date textbooks, manuals and guides available at work placement facilities.

1. Markina V.V., Biology. Guidelines for work placement [Electronic resource]: study guide / Markina V.V., Oborotistov Y.D., Lisatova N.G. et al. Edited by V.V. Markina - M.: GEOTAR-Media, 2015. - 448 p. (Маркина В.В., Биология. Руководство к практическим занятиям [Электронный ресурс] : учебное пособие / Маркина В.В., Оборотистов Ю.Д., Лисатова Н.Г. и др. ; Под ред. В.В. Маркиной - М. : ГЭОТАР-Медиа, 2015. - 448 с.)

Access mode: <http://proxy.library.spbu.ru:2564/book/ISBN9785970434154.html>

1. Tikhomirov I. A. Small workshop on invertebrate zoology: workshop / I. A. Tikhomirov, A. A. Dobrovolsky, A. I. Granovich. - M.; St. Petersburg: KMK Scientific Press Ltd., 2005 -. (Тихомиров И. А. Малый практикум по зоологии беспозвоночных : практикум / И. А. Тихомиров, А. А. Добровольский, А. И. Гранович. - М. ; СПб. : Товарищество научных изданий КМК, 2005 - .)

Part 1. / М. А. Тихомиров, А. А. Dobrovolsky, А. I. Granovich. - М.; St. Petersburg: KMK Scientific Press Ltd., 2005. - 302 p. (**Ч.1.** / М. А. Тихомиров А. А. Добровольский, А. И. Гранович. - М; СПб. : Товарищество научных изданий КМК, 2005. - 302 с.)

3.3.4.2 List of additional literature

2. Ivanov A. V. Large workshop on invertebrate zoology: in 3 volumes / A. V. Ivanov, Y. I. Polyansky, A. A. Strelkov. - M.: Vysshaya Shkola, 1981 – 1985. (Иванов А. В. Большой практикум по зоологии беспозвоночных: в 3-х т. / А. В. Иванов, Ю. И. Полянский, А. А. Стрелков. - М.: Высшая школа, 1981 - 1985.)

Part 1: Protozoa, sponges, coelenterates, creteworms, flatworms, nemertines, roundworms. - 3rd ed., revised edition, for Biology specialists of universities. - 504 p. (**Ч. 1** : Простейшие, губки, кишечнополостные, гребневики, плоские черви, немертины, круглые черви. - 3-е изд., перераб. и доп., для биологических спец. ун-тов. - 504 с.)

Part 2: Types: Ringworms, Arthropods / A. C. Monchadsky. - 3rd ed. revised and supplemented, for Biology specialists of universities. - 1983. - 543 p. (**Ч. 2** : Типы : Кольчатые черви, Членистоногие / А. С. Мончадский. - 3-е изд., перераб. и доп., для биологических спец. ун-тов. - 1983. - 543 с.)

Part 3: Types: Sipunculidae, Molluscs, Tentaculate, Echinoderms / ref. V. I. Zdun. - 3rd ed., revised edition, for Biology specialists of universities. - 1985. - 392 p. (**Ч. 3** : Типы : Сипункулиды, Моллюски, Щупальцевые, Иглокожие / рец. В. И. Здун. - 3-е изд., перераб. и доп., для биологических спец. ун-тов. - 1985. - 392 с.)

3. Freshwater invertebrates of Russia and neighbouring territories: an identifier / Zoological Institute of the Russian Academy of Sciences; Edited by S. Y. Tsalolikhina. - St. Petersburg: [without publisher], 1994 - . (3. Определитель пресноводных беспозвоночных России и сопредельных территорий: определитель / Зоол. ин-т Рос. АН; Под ред. С. Я. Цалолихина. - СПб. : [б. и.], 1994 - .)

Vol. 1: Lower invertebrates / L. V. Ivanova [et al.]; ed. S. Y. Tsalolikhin; Russian Academy of Sciences (St. Petersburg), Zoological Institute. - St. Petersburg: Publishing House of the Zoological Institute of the Russian Academy of Sciences, 1994. - 395 p. (**Т. 1** : Низшие беспозвоночные / Л. В. Иванова [и др.]; ред. С. Я. Цалолихин ; Российская академия наук (СПб), Зоологический институт. - СПб. : Изд-во Зоологического института РАН, 1994. - 395 с.)

4. Raikov B. E. **Zoological excursions:** popular science literature / B. E. Raikov, M. N. Rimsky-Korsakov. - 7th ed. - Moscow: Topical, 1994. - 640 p. (Райков Б. Е. **Зоологические экскурсии** : научно-популярная литература / Б. Е. Райков, М. Н. Римский-Корсаков. - 7-е изд. - М. : Топикал, 1994. - 640 с.)

5. Guide to entomological practice: textbook / A. K. Brodsky [et al.]; ed. V. P. Tyshchenko. for students and teachers of universities, pedagogical and agricultural institutes. - L.: Publishing House of Leningrad University, 1983. - 230 p. (Руководство по энтомологической практике: учебное пособие / А. К. Бродский [и др.] ; ред. В. П. Тыщенко. - , для студентов и преподавателей университетов, педагогических и сельскохозяйственных институтов. - Л. : Изд-во ЛГУ, 1983. - 230 с.)

3.4.3 List of other information sources

1. Student counsellor - GEOTAR-Media Publishing Group

<http://cufts.library.spbu.ru/CRDB/SPBGU/resource/252>

2. SPbU Research Park <http://researchpark.spbu.ru/>

3. University Information System, Russia URL: <http://www.cir.ru/index.jsp>

4. Medical database – www.medline.com

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