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Federal State Autonomous Educational Institution for Higher Education

PEOPLES' FRIENDSHIP UNIVERSITY OF RUSSIA (RUDN University)

named after Patrice Lumumba

Institute of Environmental Engineering

educational division (faculty/institute/academy) as higher education programme developer

INTERNSHIP SYLLABUS

Educational practice

internship title

Educational practice

internship type

Recommended by the Didactic Council for the Education Field of:

05.04.06. Ecology and environmental Management

field of studies / speciality code and title

The student's internship is implemented within the professional education programme of higher education:

Environmental Engineering in Construction

higher education programme profile/specialisation title

1. INTERNSHIP GOAL

The goal of the Internship is to deepen and consolidate the knowledge gained in the study of the disciplines "General Ecology", "Soil Science", "Geography and Socio-Economic Geography", "Biology (Fundamentals of Zoology and Botany)", "Geology", "Construction", as well as acquiring the skills of mapping, field observations, collecting natural material, camera processing and interpretation of the received material.

2. REQUIREMENTS FOR LEARNING OUTCOMES

The internship implementation is aimed at the development of the following competences (competences in part):

Table 2.1. List of competences that students acquire during the internship

Competence code	Competence descriptor	Competence formation indicators (within this course)
GC 1	Able to carry out a critical analysis of problem situations based on a systematic approach, to develop an action strategy.	GC -1.1. Analyzes the task, highlighting its basic components
		GC-1.2. Identifies and ranks the information required to solve the problem
		GC-1.3. Searches for information to solve the task for various types of requests
		GC-1.4. Offers options for solving the problem, analyzes the possible consequences of their use
		GC-1.5. Analyzes ways to solve the problems of worldview, moral and personal character based on the use of basic philosophical ideas and categories in their historical development and socio-cultural context
GPC 1ə	Able to use philosophical concepts and methodology of scientific knowledge in the study of various levels of organization of matter, space and time.	GPC 1.1ə Knows the relationship between the intuitive, the unconscious and the conscious in scientific creativity, the social and psychological motives of scientific creativity; problems of moral evaluation of scientific creativity; bioethics; integrative trends of modern knowledge
		GPC 1.2ə Uses the provisions and categories of philosophy to evaluate and analyze various social trends, facts and phenomena related to the modern development of natural science and technology
		GPC 1.3ə Possesses the skills of historical and methodological analysis of scientific research and its results; all kinds of scientific communication; methods of conducting discussions and polemics, skills of public speech and written argumentative presentation of one's own point of view
GPC 2ə	Able to use special and new sections of ecology, geocology and nature management in solving research and applied problems of professional activity	GPC 2.1ə Has a systematic understanding of the theoretical and methodological foundations of environmental regulation
		GPC 2.2ə Knows the basic knowledge of the fundamental sections of biology in the amount necessary to master the basics in ecology and nature management
		GPC 2.3ə Owns modern methods for obtaining and evaluating geochemical information to solve theoretical and practical problems of environmental geochemistry in the field of ecology and nature management in order to

		protect the environment
PC 2	Able to diagnose environmental problems, develop standard environmental measures and practical recommendations for ensuring sustainable development, and assess the impact of planned structures or other forms of economic activity on the environment	PC 2.1 Able to predict possible adverse changes in the natural and man-made environment, to conduct a preliminary analysis of the consequences of the information obtained during the study
		PC 2.2 Able to analyze environmental monitoring data, draw preliminary conclusions about the state of the facility and the environment
		PC 2.3 Able to assess the impact on the environment of the designed enterprise and facilities, predict and evaluate the negative consequences
GPC 2c	Able to analyze, critically comprehend and present information, search for scientific and technical information, acquire new knowledge, including with the help of information technology	GPC 2.1c Uses modern databases, methods for obtaining and working with information of theoretical and empirical levels, GIS technologies
		GPC 2.2c Able to critically evaluate the received scientific and technical information in solving professional problems
		GPC 2.3c Able to apply the acquired new knowledge in the field of construction, the construction industry and housing and communal services
GPC 3c	Able to set and solve scientific and technical problems in the field of construction, the construction industry and housing and communal services based on knowledge of the problems of the industry and experience in solving them	GPC 3.1c Able to solve standard tasks of professional activity in the field of construction, construction industry and housing and communal services, incl. using geoinformation technologies
		GPC 3.2c Has the skills to solve scientific and technical problems in the professional field based on modern methods
		GPC 3.3c Able to apply professional knowledge in solving scientific and technical problems in the field of construction, the construction industry and housing and communal services

3. INTERNSHIP IN HIGHER EDUCATION PROGRAMME STRUCTURE

The internship refers to the core component of B2.O.01 block of the higher educational programme curriculum.

Within the higher education programme students also master other disciplines (modules) and / or internships that contribute to the achievement of the expected learning outcomes as results of the internship.

Table 3.1. The list of the higher education programme components that contribute to the achievement of the expected learning outcomes as the internship results.

Competence code	Competence descriptor	Previous courses/modules, internships*	Subsequent courses/modules, internships*
GC1	Able to carry out a critical analysis of problem situations based on a	Mathematical modelling Fundamentals of scientific research	

Competence code	Competence descriptor	Previous courses/modules, internships*	Subsequent courses/modules, internships*
	systematic approach, develop an action strategy	Educational practice	
GC2	Able to manage a project at all stages of its life cycle	Organization and management in construction	Industrial practice
GC3	Able to organize and manage the work of the team, developing a team strategy to achieve the goal.	Leadership and Team management	-
GC4	Able to apply modern communication technologies, including in a foreign language(s) for academic and professional interaction	Mathematical modelling Leadership and Team management Foreign language for professional communication	Foreign language for professional communication
GC5	Able to analyze and take into account the diversity of cultures in the process of intercultural interaction	Leadership and Team management	-
GC6	Able to identify and implement the priorities of their own activities and ways to improve it based on self-assessment	Leadership and Team management	
GC7	Digital technologies	Regulation System in Construction Digital technologies in Civil Engineering	Industrial practice
GPC 19	Able to use philosophical concepts and methodology of scientific knowledge in the	Fundamentals of scientific research Educational practice	Sustainable development of urban areas

Competence code	Competence descriptor	Previous courses/modules, internships*	Subsequent courses/modules, internships*
	study of various levels of organization of matter, space and time.		
GPC 2ᅇ	Able to use special and new sections of ecology, geoecology and nature management in solving research and applied problems of professional activity	Fundamentals of scientific research Urban water management and climate change adaptation Dynamics of environmental systems Educational practice	Regional geoecology and urban geoecology Regional and municipal waste management systems Sustainable development of urban areas Industrial practice
GPC 3ᅇ	Able to apply environmental research methods to solve research and applied problems of professional activity	Urban water management and climate change adaptation Project management	Urban development and environmental engineering surveys Industrial practice
GPC 4ᅇ	Able to apply regulatory legal acts and norms of professional ethics in the field of ecology and nature management	Regulation System in Construction Project management	Industry practice Environmental rationing Industrial practice
GPC 5ᅇ	Able to solve the problems of professional activity in the field of ecology, nature management and nature protection using information and communication, including geoinformation technologies	Mathematical modelling Organization and management in construction Digital technologies in Civil Engineering	Industrial practice
GPC 6ᅇ	Able to design, represent, protect and disseminate the results of their professional	Project management Industry practice	Industry practice

Competence code	Competence descriptor	Previous courses/modules, internships*	Subsequent courses/modules, internships*
	activities, including research		
GPC 1c	Able to solve problems of professional activity based on the use of theoretical and practical foundations, the mathematical apparatus of fundamental sciences	Mathematical modelling Fundamentals of scientific research Organization and management in construction Digital technologies in Civil Engineering Theoretical foundations and design methods of pipeline systems for water supply and sanitation	Industrial practice
GPC 2c	Able to analyze, critically comprehend and present information, search for scientific and technical information, acquire new knowledge, including with the help of information technology	Mathematical modelling Organization and management in construction Management of operation of water supply and sanitation systems Dynamics of environmental systems Educational practice	
GPC 3c	Able to set and solve scientific and technical problems in the field of construction, the construction industry and housing and communal services based on knowledge of the problems of the industry and experience in solving them	Theoretical foundations and design methods of pipeline systems for water supply and sanitation Educational practice	

Competence code	Competence descriptor	Previous courses/modules, internships*	Subsequent courses/modules, internships*
GPC 4c	Able to use and develop design, administrative documentation, as well as participate in the development of regulatory legal acts in the field of the construction industry and housing and communal services	Regulation System in Construction Industry practice	Industry practice
GPC 5c	Able to conduct and organize design and survey work in the field of construction and housing and communal services, carry out technical expertise of projects and supervision of their compliance	Digital technologies in Civil Engineering	Regional geocology and urban geocology
GPC 6c	Able to carry out research of objects and processes in the field of construction and housing and communal services	Fundamentals of scientific research	Industrial practice
GPC 7c	Able to manage an organization operating in the construction industry and housing and communal services, organize and optimize its production activities	Leadership and Team management	Sustainable development of urban areas
PC 1	Able to conduct an examination of design solutions for industrial and	Organization and management in construction	Life cycle analysis of cjnstruction object Hydrological Modelling

Competence code	Competence descriptor	Previous courses/modules, internships*	Subsequent courses/modules, internships*
	civil construction projects, incl. and in the field of rational nature management	Project management Management of operation of water supply and sanitation systems	Modeling of water supply and wastewater disposal systems
PC 2	Able to diagnose environmental problems, develop standard environmental measures and practical recommendations for ensuring sustainable development, and assess the impact of planned structures or other forms of economic activity on the environment	Urban water management and climate change adaptation Assessments of water bodies environment of urban areas Urban Ecosystems Environmental control and monitoring of urban environment Educational practice Industry practice	Blue-green urban infrastructure Green areas and protected areas in the city Regional geoecology and urban geoecology Urban development and environmental engineering surveys Sustainable development of urban areas Industry practice Industrial practice
PC 3	Able to carry out and organize scientific research of objects of industrial and civil construction, incl. in the field of environmental management	Fundamentals of scientific research Theoretical foundations and design methods of pipeline systems for water supply and sanitation Project management	Social adaptation of persons with disabilities in the conditions of professional activity Life cycle analysis of cjnstruction object Blue-green urban infrastructure Green areas and protected areas in the city Regional geoecology and urban geoecology Urban development and environmental engineering surveys
PC 4	Able to develop design solutions and measures to ensure the safety of industrial and	Theoretical foundations and design methods of pipeline systems for water supply and sanitation	Regional and municipal waste management systems Environmental rationing

Competence code	Competence descriptor	Previous courses/modules, internships*	Subsequent courses/modules, internships*
	civil construction projects	Project management	Industrial practice
PC 5	Able to develop design solutions and organize design in the field of industrial and civil construction	Organization and management in construction Theoretical foundations and design methods of pipeline systems for water supply and sanitation Management of operation of water supply and sanitation systems Natural water conditioning systems Industry practice	Social adaptation of persons with disabilities in the conditions of professional activity Life cycle analysis of construction object Modeling of water supply and wastewater disposal systems Hydrological Modelling Industry practice

* To be filled in according with the competence matrix of the higher education programme.

4. INTERNSHIP WORKLOAD

The total workload of the internship is 3 credits (108 academic hours).

5. INTERNSHIP CONTENTS

Table 5.1. Internship contents*

Modules	Contents (topics, types of practical activities)	Workload, academic hours
Module 1. Organizational and preparatory	Getting an internship assignment from a supervisor	2
	Instruction on labor protection and fire safety	2
	Familiarization with the conditions of internship	2
	Familiarization with job responsibilities at the place of internship	2
	Acquaintance with the enterprise, organization	6
Module 2. Basic Independent work, incl. under the guidance of leaders from the faculty and organization	Bibliographic stage: collection, processing and systematization of literary material Writing a literature review	12
	Experimental research stage: performance of production tasks, observations, measurements, sampling.	30
	Processing and analysis of results	30
	Compilation of graphic and cartographic	10

Modules	Contents (topics, types of practical activities)	Workload, academic hours
	material	
	Writing an internship report	6
	Preparing for defence and defending the internship report	6
	TOTAL:	108

* The contents of internship through modules and types of practical activities shall be FULLY reflected in the student's internship report.

6. INTERNSHIP EQUIPMENT AND TECHNOLOGY SUPPORT REQUIREMENTS

The infrastructure and technical support necessary for the internship implementation include: vehicles, equipment for training field practices: compasses, scales, a psychrometer, a set of sieves, shovels, sample bags, weighing bottles, writing paper, rulers, measuring tapes, simple and colored pencils, graph paper, tracing paper, topographic maps and space images, magnifiers, cameras, GPS.

7. INTERNSHIP LOCATION AND TIMELINE

The internship can be carried out at the structural divisions of RUDN University (at Moscow-based organisations, as well as those located outside Moscow).

The internship at an external organisation (outside RUDN University) is legally arranged on the grounds of an appropriate agreement, which specifies the terms, place and conditions for an internship implementation at the organisation.

The period of the internship, as a rule, corresponds to the period indicated in the training calendar of the higher education programme. However, the period of the internship can be rescheduled upon the agreement with the Department of Educational Policy and the Department for the Organization of Internship and Employment of RUDN students.

8. RESOURCES RECOMMENDED FOR INTERNSHIP

Main readings:

1. Экология города : [учеб пособие] / В. Л. Вершинин. – 2-е изд., испр. и доп. – Екатеринбург : Изд-во Урал. ун-та, 2014. – 88 с.
<http://elar.urfu.ru/bitstream/10995/35193/1/978-5-7996-1349-5.pdf>
2. Экологическая карта Москвы и Московской области на 2019 год.
<https://tion.ru/blog/ekologicheskaya-karta-moskvy/>
3. Алейникова А.М., Макарова М.Г., Гайворон Т.Д., Маршева Н.В., Парахина Е.А. География. Учебно-методическое пособие Москва, РУДН, 2018. 55 с.
4. Изучение природных экосистем. Самостоятельные работы для летней полевой практики «Природные экосистемы». Учебно-методическое пособие для студентов экологических специальностей (под редакцией Уланской Ю.В.) М.: Изд-во РУДН, 2015, с. 1-148

Additional readings:

1. Абрамова Л.И., Березина Н.А. Летняя практика по ботанике. М.:

Изд-во МГУ, 1988.

2. Агроклиматический справочник по Московской области. М.: Московский рабочий, 1967. - 135 с.
3. Алехин В.В, Растительность и геоботанические районы Московской и сопредельных областей. М.: МОИП, 1947. - 70 с.
4. Атлас Московской области. М.: ГУГК, 1976. 38 с.
5. Классификация и диагностика почв СССР. М.: Колос, 1977. – 484 с.
6. Ковда В.А.. Основы учения о почвах. В 2-х томах. М.: Наука, 1973.
7. Леса Москвы. Опыт организации мониторинга/Л.П. Рысин, Г.А. Полякова, Л.И. Савельева и др. – М.: 2001. – 148 с.
8. Маевский П.Ф.. Флора средней полосы европейской части России. - 10-е издание, М.: Товарищество научных изданий КМК, 2006 – 600 с.
9. Определитель сосудистых растений центра европейской России/ И.А. Губанов, К.В. Киселева, В.С. Новиков, В.Н. Тихомиров. 2-е изд., дополн. и перераб. – Аргус, 1995. – 560 с.
10. Станис Е.В., Карпухина Е.А., Огородникова Е.Н., Жмылев П.Ю. Природные экосистемы средней полосы России / Учебно-методическое пособие по проведению учебной практики. Для студентов экологических специальностей. – М.: Издательский дом «Энергия», 2007. – 152 с.
11. Станис Е.В., Карпухина Е.А., Машковцев Б.И.,Полынова Г.В. Природные экосистемы Подмосковья /Методические указания по проведению учебной практики. Для студентов экологических специальностей. – М.: Издательский дом «Энергия», 2004. – 94 с.
12. Станис Е.В., Карпухина Е.В., Макарова М.Г. Изменение территории новой Москвы и сохранение природного наследия С-Пб, Материалы XIV Международного семинара «Геология, геоэкология, эволюционная география». Изд. РПГУ им. А.И.Герцена, 2015, с. 258-262

Internet sources

1. Electronic libraries (EL) of RUDN University and other institutions, to which university students have access on the basis of concluded agreements:

- RUDN Electronic Library System (RUDN ELS)
<http://lib.rudn.ru/MegaPro/Web>
- EL "University Library Online" <http://www.biblioclub.ru>
- EL "Yurayt" <http://www.biblio-online.ru>
- EL "Student Consultant" www.studentlibrary.ru
- EL "Lan" <http://e.lanbook.com/>
- EL "Trinity Bridge"

2. *Databases and search engines:*

- electronic foundation of legal and normative-technical documentation
<http://docs.cntd.ru/>

- Yandex search engine [https:// www .yandex.ru/](https://www.yandex.ru/)

- Google search engine <https://www.google.ru/>

- Scopus abstract database <http://www.elsevierscience.ru/products/scopus/>

The training toolkit and guidelines for a student to do an internship, keep an internship diary and write an internship report:*

1. Safety regulations to do the internship (safety awareness briefing).
2. Machinery and principles of operation of technological production equipment used by students during their internship; process flow charts, regulations, etc. (if necessary).
3. Guidelines for keeping an internship diary and writing an internship report.

*The training toolkit and guidelines for the internship are placed on the internship page in the university telecommunication training and information system under the set procedure.

9. ASSESSMENT TOOLKIT AND GRADING SYSTEM* FOR EVALUATION OF STUDENTS' COMPETENCES LEVEL AS INTERNSHIP RESULTS

The assessment toolkit and the grading system* to evaluate the level of competences (competences in part)formation as the internship results are specified in the Appendix to the internship syllabus.

* The assessment toolkit and the grading system are formed on the basis of the requirements of the relevant local normative act of RUDN University (regulations / order).

DEVELOPERS:

Associate Professor of the
Department of environmental
management

position, educational department



signature

Kucher D.E

name and surname.

HEAD OF EDUCATIONAL DEPARTMENT:

Director of the Department
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