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Информация о владельце: **FRIENDSHIP UNIVERSITY OF RUSSIA (RUDN University)**

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named after Patrice Lumumba

Institute of Environmental Engineering

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

INTERNSHIP SYLLABUS

Industrial practice

internship title

Industrial 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:

- consolidation and deepening of professional knowledge acquired by students in the learning process;

- acquisition of practical skills and competencies, as well as experience, in the following areas of professional activity: design, survey, research, production, marketing, consulting, economic, legal, training, expert departments, departments, bureaus, centers, companies, institutions in the field ecology and nature management, educational organizations, professional educational organizations and educational organizations of higher education.

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 2	Selected according to the subject of research work by the student in the course of bibliographic research.	GC -2.1. able to formulate a project task based on the problem posed and a way to solve it
		GC-2.2. able to develop the concept of the project, formulates the goal, objectives, justifies the relevance, expected results and areas of their application
		GC-2.3. able to develop a project implementation plan taking into account possible risks, plans the necessary resources
GC 7	Digital literacy	GC7.1 Searches for the necessary sources of information and data, perceives, analyzes, memorizes and transmits information using digital means, as well as using algorithms when working with data received from various sources in order to effectively use the information received to solve problems
		GC7.2Evaluates information, its reliability, builds logical conclusions based on incoming information and data
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 2.1Able 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 2.2Able to analyze environmental monitoring data, draw preliminary conclusions about the state of the facility and the environment
		PC 2.3Able to assess the impact on the environment of the designed enterprise and facilities, predict and evaluate the negative consequences
PC 4	Able to develop design solutions and measures to ensure the safety of	PC4.1 Able to develop standard environmental measures, monitor the state of the environment to ensure the safety of industrial and civil construction projects

	industrial and civil construction projects	PC4.2 Possesses the skills of environmental design and preparation of special documentation at the pre-project stage of the project life cycle PC4.3 Able to carry out the necessary calculations for planning, modeling and forecasting the development of a territorial object
GPC 2э	Able to use special and new sections of ecology, geocology and nature management in solving research and applied problems of professional activity	GPC 2.1эHas a systematic understanding of the theoretical and methodological foundations of environmental regulation GPC 2.2эKnows the basic knowledge of the fundamental sections of biology in the amount necessary to master the basics in ecology and nature management GPC 2.3эOwns modern methods of obtaining and evaluating geochemical information for solving theoretical and practical problems of environmental geochemistry in the field of ecology and nature management in order to protect the environment
GPC3э	Able to apply environmental research methods to solve research and applied problems of professional activity	GPC 3.1эKnows how to identify and has the skills to solve problems, tasks of scientific research in the field of urban geography, environmental problems of cities GPC 3.2эOwns modern methods for assessing geocological information to solve theoretical and practical problems of nature management GPC 3.3эPossesses the skills of predicting meteoropropic reactions, assessing the climatic potential of regions, assessing the objectivity of climate change scenarios
GPC 4э	Able to apply regulatory legal acts and norms of professional ethics in the field of ecology and nature management	GPC 4.1.эOriented in the modern system of regulatory support for engineering and environmental surveys and environmental impact assessment of urban agglomerations GPC 4.2.эKnows the international practice of development and harmonization, as well as the application of environmental standards GPC 4.3.эHas the skills to analyze the need for environmental protection measures based on the application of environmental standards, the skills to select and apply indicators for environmental expertise and forms of environmental control based on environmental standards
GPC5э	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	GPC 5.1.э Knows the theoretical, methodological and practical foundations for the use of information technology in environmental expertise GPC 5.2.эOwns modern methods for assessing environmental information to solve theoretical and practical problems of environmental safety expertise of nature management GPC 5.3.эKnows how to choose and apply an algorithm for solving environmental problems and implements algorithms using software
GPC 1c	Able to solve problems of professional activity based on the use of theoretical	GPC 1.1cAble to apply the theoretical and practical foundations of fundamental sciences in solving professional problems

	and practical foundations, the mathematical apparatus of fundamental sciences	GPC 1.2cAble to conduct a preliminary analysis of the consequences of the information obtained during the study GPC 1.3cKnows how to solve professional problems based on the use of knowledge of the mathematical apparatus of fundamental sciences
GPC6c	Able to carry out research of objects and processes in the field of construction and housing and communal services	GPC 6.1cAble to conduct scientific and scientific-practical research in the field of construction and housing and communal services GPC 6.2cAble to evaluate the scientific and technical results obtained in Russia and (or) abroad in new and (or) promising scientific areas in the field of construction and housing and communal services GPC 6.3cPossesses the skills to perform research of objects and processes in the field of construction and housing and communal services

3. INTERNSHIP IN HIGHER EDUCATION PROGRAMME STRUCTURE

The internship refers to the core component of B2.B.02 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 systematic approach, develop an action strategy	Mathematical modelling Fundamentals of scientific research Educational practice	-
GC2	Able to manage a project at all stages of its life cycle	Organization and management in construction	-
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	Mathematical modelling Leadership and Team management Foreign language for professional	-

Competence code	Competence descriptor	Previous courses/modules, internships*	Subsequent courses/modules, internships*
	foreign language(s) for academic and professional interaction	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	-
GPC 1a	Able to use philosophical concepts and methodology of scientific knowledge in the study of various levels of organization of matter, space and time.	Fundamentals of scientific research Educational practice Sustainable development of urban areas	-
GPC 2a	Able to use special and new sections of ecology, geocology 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 geocology and urban geocology Regional and municipal waste management systems Sustainable development	-

Competence code	Competence descriptor	Previous courses/modules, internships*	Subsequent courses/modules, internships*
		of urban areas	
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	-
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	-
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	-
GPC 6ᅇ	Able to design, represent, protect and disseminate the results of their professional activities, including research	Project management Industry practice	-
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	-

Competence code	Competence descriptor	Previous courses/modules, internships*	Subsequent courses/modules, internships*
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	-
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	-
GPC 5c	Able to conduct and organize design and survey work in the field	Digital technologies in Civil Engineering Regional geocology and urban geocology	-

Competence code	Competence descriptor	Previous courses/modules, internships*	Subsequent courses/modules, internships*
	of construction and housing and communal services, carry out technical expertise of projects and supervision of their compliance		
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	-
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 civil construction projects, incl. and in the field of rational nature management	Organization and management in construction Project management Management of operation of water supply and sanitation systems Life cycle analysis of construction object Hydrological Modelling Modeling of water supply and wastewater disposal systems	-
PC 2	Able to diagnose environmental problems, develop standard environmental measures and practical recommendations for ensuring	Urban water management and climate change adaptation Assessments of water bodies environment of urban areas Urban Ecosystems Environmental control and monitoring of urban	-

Competence code	Competence descriptor	Previous courses/modules, internships*	Subsequent courses/modules, internships*
	sustainable development, and assess the impact of planned structures or other forms of economic activity on the environment	environment Educational practice Industry practice Blue-green urban infrastructure Green areas and protected areas in the city Regional geocology and urban geocology Urban development and environmental engineering surveys Sustainable development of urban areas	
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 construction object Blue-green urban infrastructure Green areas and protected areas in the city Regional geocology and urban geocology Urban development and environmental engineering surveys	-
PC 4	Able to develop design solutions and measures to ensure the safety of industrial and civil construction projects	Theoretical foundations and design methods of pipeline systems for water supply and sanitation Project management Regional and municipal waste management systems Environmental rationing	-
PC 5	Able to develop design solutions and organize	Organization and management in construction	-

Competence code	Competence descriptor	Previous courses/modules, internships*	Subsequent courses/modules, internships*
	design in the field of industrial and civil construction	<p>Theoretical foundations and design methods of pipeline systems for water supply and sanitation</p> <p>Management of operation of water supply and sanitation systems</p> <p>Natural water conditioning systems</p> <p>Industry practice</p> <p>Social adaptation of persons with disabilities in the conditions of professional activity</p> <p>Life cycle analysis of construction object</p> <p>Modeling of water supply and wastewater disposal systems</p> <p>Hydrological Modelling</p>	

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

4. INTERNSHIP WORKLOAD

The total workload of the internship is 12 credits (432 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	Bibliographic stage: collection, processing and systematization of literary material	90
	Writing a literature review	90

Modules	Contents (topics, types of practical activities)	Workload, academic hours
guidance of leaders from the faculty and organization	Experimental research stage: performance of production tasks, observations, measurements, sampling.	90
	Processing and analysis of results	60
	Compilation of graphic and cartographic material	48
Writing an internship report		30
Preparing for defence and defending the internship report		10
TOTAL:		432

* 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: laboratory equipment for determining pollution, transport for field research, cartographic material, satellite images, laboratory equipment for compression and shear testing of soils, field analyzers of air and soil pollution, computers with professional software, special equipment for various types of work in the field of ecology and nature management, depending on the profile of the organization, computer, database, professional software.

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. Исследование природных экосистем. Самостоятельные работы для летней полевой практики. Учебно-методическое пособие для студентов экологических специальностей. / Алейникова А. М., Ванисова Е. А., Васильева Е. Ю., Горбунов С. С., Жмылёв П. Ю., Жмылёва А. П., Стомахина Е. Д., Уланская Ю. В. – М.: Издательство РУДН, 2015

2. Станис Е.В. Дневник производственной (преддипломной, научно-исследовательской, научно-практической, научно-педагогической) практики. Издательство РУДН, 2014. –10 С.

3. Станис Е.В. Положения и программы по производственной и научно-исследовательской практикам по направлению 022000 - «Экология и природопользование» [Текст] - / Станис Е.В. - М.: 2012.

4. Станис Е.В., Макарова М.Г. Методические рекомендации по организации и проведению научно-исследовательской работы в магистратуре по направлению 022000 «Экология и природопользование» - М.: Издательство РУДН, 2011

Additional readings:

Selected according to the subject of research work by the student in the course of bibliographic research.

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/>

- 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).