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**Federal State Autonomous Educational Institution of Higher Education
PEOPLES' FRIENDSHIP UNIVERSITY OF RUSSIA 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:

08.04.01 Construction

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, cameral 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, geoeology 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, 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 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 | <p>Mathematical modelling</p> <p>Fundamentals of scientific research</p> <p>Organization and management in construction</p> <p>Digital technologies in Civil Engineering</p> <p>Theoretical foundations and design methods of pipeline systems for water supply and sanitation</p> | 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 | <p>Mathematical modelling</p> <p>Organization and management in construction</p> <p>Management of operation of water supply and sanitation systems</p> <p>Dynamics of environmental systems</p> <p>Educational practice</p> | |
| 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 | <p>Theoretical foundations and design methods of pipeline systems for water supply and sanitation</p> <p>Educational practice</p> | |

| 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 construction 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 | <p>Organization and management in construction</p> <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> <p>Industry practice</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 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 XIУ 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

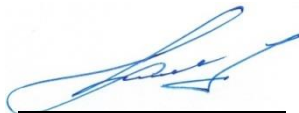
Kucher D.E

name and surname.

HEAD OF EDUCATIONAL DEPARTMENT:

Director of the Department
of Environmental Management

educational department



signature

Kucher D.E

name and surname.

HEAD OF HIGHER EDUCATION PROGRAMME:

Director of the Department
of Environmental Management

position, educational department



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