

МИНОБРНАУКИ РОССИИ

**Федеральное государственное автономное образовательное
учреждение высшего образования "Пермский
государственный национальный исследовательский
университет"**

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Программа учебной практики

GROUP PROJECT WORK

Код УМК 95072

Утверждено
Протокол №8
от «17» мая 2021 г.

Пермь, 2021

1. Вид практики, способ и форма проведения практики

Вид практики **учебная**

Тип практики **практика по получению первичных профессиональных умений и навыков**

Способ проведения практики **стационарная, выездная**

Форма (формы) проведения практики **дискретная**

2. Место практики в структуре образовательной программы

Учебная практика « Group project work » входит в обязательную часть Блока « Б.2 » образовательной программы по направлениям подготовки (специальностям):

Направление: **05.03.06** Экология и природопользование
направленность Экологическая инженерия и новая энергетика

Цель практики :

The purpose of the training practice is to acquire the skills of working in a team, mastering the methods of laboratory and field research in the development of an environmental project

Задачи практики :

To teach how to develop environmental projects

To develop communication and teamwork skills;

To develop skills in collecting and analyzing stock and literary materials;

To master the methods of laboratory research;

To master the methods of field research.

3. Перечень планируемых результатов обучения

В результате прохождения практики **Group project work** у обучающегося должны быть сформированы следующие компетенции:

05.03.06 Экология и природопользование (направленность : Экологическая инженерия и новая энергетика)

ПК.1 Способен осуществлять выполнение экспериментов и оформление результатов исследований и разработок

Индикаторы

ПК.1.1 Постановка, планирование и решение научно-исследовательских задач по закреплённой тематике

ПК.1.2 Использует в профессиональной деятельности экспериментальные и полевые методы научного исследования

ПК.1.3 Анализирует, интерпретирует, обобщает полученные научные данные, представляет в виде отчетов, обзоров, научных работ

УК.3 Способен участвовать в реализации группового проекта

Индикаторы

УК.3.1 Решает задачи, предусмотренные конкретной ролью в командной работе

УК.3.2 Разрешает противоречия и конфликты, возникающие в ходе командной работы, корректирует работу команды и перераспределяет роли с учетом интересов сторон

4. Содержание и объем практики, формы отчетности

Group project work is a way to achieve a didactic goal by developing an environmental problem in detail, which should result in a clearly defined practical result, formalized in one way or another. This gives students the opportunity to actively express themselves in the system of social relations, contributes to the formation of a new social position in them, allows them to acquire the skills of planning and organizing their activities, to reveal and realize creative abilities, to develop the personality of the individual.

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| Направления подготовки | 05.03.06 Экология и природопользование (направленность: Экологическая инженерия и новая энергетика) |
| форма обучения | очная |
| №№ триместров, выделенных для прохождения практики | 8 |
| Объем практики (з.е.) | 3 |
| Объем практики (ак.час.) | 108 |
| Форма отчетности | Экзамен (8 триместр) |

Примерный график прохождения практики

| Количество часов | Содержание работ | Место проведения |
|----------------------------|--|---|
| Project realization stages | | |
| 108 | <p>1) Group project work is a way to achieve a didactic goal through a detailed development of an environmental problem, which should end with a well-defined practical result, framed in one way or another. This gives students the opportunity to actively express themselves in the system of social relations, contributes to the formation of a new social position, allows them to acquire the skills of planning and organizing their activities, discover and realize creative abilities, develop the personality of the individual.</p> <p>2) The forms of practice for persons with disabilities and disabilities are determined taking into account the peculiarities of psychophysiological development, individual capabilities and health status of students.</p> <p>There may be changes in the time frame for passing the current interim certification, namely, an increase in the time for preparing and submitting the practice report is provided</p> | <p>PSU, Faculty of Geography, Department of Biogeocenology and Nature Protection</p> <p>For students with disabilities and disabilities, alternative places of practice are provided, individually provided, taking into account the recommendations of the psychological, medical and pedagogical commission or the ITU.</p> |
| Preparatory stage | | |
| 7 | <p>Select a topic for a group project. Definition of the environmental problem and the resulting goals and objectives of the study.</p> <p>Finding ways to solve the problem.</p> | <p>PSU, Faculty of Geography, Department of Biogeocenology and Nature Protection</p> <p>For students with disabilities and disabilities, alternative places of practice are provided, individually</p> |

| Количество часов | Содержание работ | Место проведения |
|-------------------------------------|--|--|
| | | provided, taking into account the recommendations of the psychological, medical and pedagogical commission or the ITU. |
| Planning stage | | |
| 28 | Planning: discussion of research methods, identification of information sources, ways of collecting and analyzing information, ways of presenting results, distribution of tasks and responsibilities in the group | PSU, Faculty of Geography, Department of Biogeocenology and Nature Protection For students with disabilities and disabilities, alternative places of practice are provided, individually provided, taking into account the recommendations of the psychological, medical and pedagogical commission or the ITU. |
| Search and exploration stage | | |
| 42 | Research: collection and systematization of information, solution of intermediate tasks by field and laboratory studies. Preparation of the project budget. | PSU, Faculty of Geography, Department of Biogeocenology and Nature Protection For students with disabilities and disabilities, alternative places of practice are provided, individually provided, taking into account the recommendations of the psychological, medical and pedagogical commission or the ITU. |
| The stage of presenting the results | | |
| 31 | Presentation of results: analysis of the collected information, formulation of conclusions. Preparation of the report. Project protection. | PSU, Faculty of Geography, Department of Biogeocenology and Nature Protection For students with disabilities and disabilities, alternative places of practice are provided, individually provided, taking into account the recommendations of the psychological, medical and |

| Количество часов | Содержание работ | Место проведения |
|------------------|------------------|------------------------------------|
| | | pedagogical commission or the ITU. |

5. Перечень учебной литературы, необходимой для проведения практики

Основная

1. Robert Fletcher, Marie-José Fortin "Spatial Ecology and Conservation Modeling Applications with R" ISBN 978-3-030-01989 - [Электронный ресурс] URL: <https://link.springer.com/book/10.1007/978-3-030-01989-1#about> <https://link.springer.com/book/10.1007/978-3-030-01989-1>
2. Massenov, K. B. Industrial ecology : the monograph / K. B. Massenov, E. T. Abseitov. — Алматы : Нур-Принт, 2016. — 398 с. — ISBN 978-601-238-541-0. — Текст : электронный // Электронно-библиотечная система IPR BOOKS : [сайт]. <https://www.iprbookshop.ru/69045>
3. Dietland Muller-Schwarze. Hands-On Chemical Ecology. Simple Field and Laboratory Exercises. Springer-Verlag New York 2009. Online ISBN 978-1-4419-0378-5. Текст электронный: // <https://link.springer.com/book/10.1007/978-1-4419-0378-5> <https://link.springer.com/book/10.1007/978-1-4419-0378-5>

Дополнительная

1. Robert C. Brears. Natural Resource Management and the Circular Economy. Palgrave Macmillan, Cham, 2018. ISBN 978-3-319-71888-0 [Электронный ресурс] <https://link.springer.com/book/10.1007/978-3-319-71888-0>
2. Martin Kaltschmitt, Wolfgang Streicher, Andreas Wiese. Renewable Energy. Technology, and Environment Economics. Springer-Verlag Berlin Heidelberg 2007. Online ISBN 978-3-540-70949-7. Текст электронный: // <https://link.springer.com/book/10.1007/3-540-70949-5> <https://link.springer.com/book/10.1007/3-540-70949-5>
3. Tanay Sidki Uyar. Towards 100% Renewable Energy. Techniques, Costs and Regional Case-Studies. Springer International Publishing Switzerland 2017. Online ISBN 978-3-319-45659-1. Текст электронный: // <https://link.springer.com/book/10.1007/978-3-319-45659-1> <https://link.springer.com/book/10.1007/978-3-319-45659-1>

6. Перечень ресурсов сети «Интернет», требуемых для проведения практики

При прохождении практики требуется использование следующих ресурсов сети «Интернет» :

<http://lybs.ru/index-781.htm> Project Management - Lecture notes (UDPSU)

<https://priroda.permkrai.ru/> Ministry of Natural Resources, Forestry and Ecology of the Perm Region

https://priroda.permkrai.ru/environment-control/docs_uoos/ Regulatory framework in the field of environmental policy and environmental protection

7. Перечень информационных технологий, используемых при проведении практики

Образовательный процесс по практике **Group project work** предполагает использование следующего программного обеспечения и информационных справочных систем:

Presentation materials (slides on the topics of lectures and practical classes); on-line access to the Electronic Library System; access to the electronic information and educational environment of the university.

Internet services and electronic resources (search engines, e-mail, professional thematic chats and forums, audio and video conference systems, online encyclopedias, etc.)

Office application package "LibreOffice". Programs, demonstrations of video materials (player).

Software for the laptop: OS "Alt Education" (Contract No. DS 003-2020).

При освоении материала и выполнения заданий по дисциплине рекомендуется использование материалов, размещенных в Личных кабинетах обучающихся ЕТИС ПГНИУ (**student.psu.ru**).

При организации дистанционной работы и проведении занятий в режиме онлайн могут использоваться:

система видеоконференцсвязи на основе платформы BigBlueButton (<https://bigbluebutton.org/>).

система LMS Moodle (<http://e-learn.psu.ru/>), которая поддерживает возможность использования текстовых материалов и презентаций, аудио- и видеоконтент, а так же тесты, проверяемые задания, задания для совместной работы.

система тестирования Indigo (<https://indigotech.ru/>).

8. Описание материально-технической базы, необходимой для проведения практики

For conducting seminars (practical) type classes, conducting group and individual consultations, routine monitoring and intermediate certification-an audience equipped with presentation equipment (projector, screen, laptop) with appropriate software, chalk or marker board.

Independent work: An audience for independent work, equipped with computer equipment with the ability to connect to the Internet, provided with access to the electronic information and educational environment of the university. Premises of the Scientific Library of PSU.

For field practice forms - equipment provided by the organization.

Помещения научной библиотеки ПГНИУ для обеспечения самостоятельной работы обучающихся:

1. Научно-библиографический отдел, корп.1, ауд. 142. Оборудован 3 персональными компьютера с доступом к локальной и глобальной компьютерным сетям.

2. Читальный зал гуманитарной литературы, корп. 2, ауд. 418. Оборудован 7 персональными компьютерами с доступом к локальной и глобальной компьютерным сетям.

3. Читальный зал естественной литературы, корп.6, ауд. 107а. Оборудован 5 персональными компьютерами с доступом к локальной и глобальной компьютерным сетям.

4. Отдел иностранной литературы, корп.2 ауд. 207. Оборудован 1 персональным компьютером с доступом к локальной и глобальной компьютерным сетям.

5. Библиотека юридического факультета, корп.9, ауд. 4. Оборудована 11 персональными компьютерами с доступом к локальной и глобальной компьютерным сетям.

6. Читальный зал географического факультета, корп.8, ауд. 419. Оборудован 6 персональными компьютерами с доступом к локальной и глобальной компьютерным сетям.

Все компьютеры, установленные в помещениях научной библиотеки, оснащены следующим программным обеспечением:

Операционная система ALT Linux;

Офисный пакет Libreoffice.

Справочно-правовая система «КонсультантПлюс»

9. Методические указания для обучающихся по освоению дисциплины

The project is issued in the form of a report. Registration according to the methodological recommendations for the preparation of term papers and WRC.

Structure of the Group project report:

- name;
- description of the problem;
- project goal;
- project tasks;
- activity content;
- project implementation period;
- expected project results;
- project resources;
- cost estimate;
- possible project risks.

Фонды оценочных средств для проведения промежуточной аттестации

Планируемые результаты обучения по дисциплине для формирования компетенции. Индикаторы и критерии их оценивания

ПК.1

Способен осуществлять выполнение экспериментов и оформление результатов исследований и разработок

| Компетенция | Планируемые результаты обучения | Критерии оценивания результатов обучения |
|--|--|---|
| <p>ПК.1.1 Постановка, планирование и решение научно-исследовательских задач по закреплённой тематике</p> | <p>Know the basic principles of setting research tasks on a fixed topic Be able to how to plan research activities on a fixed topic Possess the skills of solving research problems on a fixed topic</p> | <p style="text-align: center;">Неудовлетворительно</p> <p>Does not know the principles of setting research tasks on a fixed topic Doesn't know how to plan research activities on a fixed topic Does not have the skills to solve research problems on a fixed topic</p> <p style="text-align: center;">Удовлетворительно</p> <p>Knows superficially the principles of setting research tasks on a fixed topic Knows how to plan research activities on a fixed topic with gross errors Possesses the skills of solving research problems on a fixed topic at a low level</p> <p style="text-align: center;">Хорошо</p> <p>Knows some principles of setting research tasks on a fixed topic Knows how to plan research activities on a fixed topic with minor errors Possesses the skills of solving research problems on a fixed topic at the intermediate level</p> <p style="text-align: center;">Отлично</p> <p>Knows the basic principles of setting research tasks on a fixed topic Knows how to plan research activities on a fixed topic Possesses the skills of solving research problems on a fixed topic</p> |
| <p>ПК.1.2 Использует в профессиональной деятельности экспериментальные и полевые методы научного исследования</p> | <p>Know the basic principles of conducting experimental and field research methods Be able to how to use experimental and field methods of scientific research in his professional activities Possess the skills of conducting</p> | <p style="text-align: center;">Неудовлетворительно</p> <p>Does not know the basic principles of conducting experimental and field methods of scientific research Is not able to use experimental and field methods of scientific research in his professional activities Does not possess the skills of conducting</p> |

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| | <p>experimental and field methods of scientific research</p> | <p>Неудовлетворительно experimental and field methods of scientific research</p> <p>Удовлетворительно Knows superficially the principles of conducting experimental and field methods of conducting scientific research Knows how to use experimental and field methods of scientific research in his professional activity with gross errors Possesses the skills of conducting experimental and field research methods at a low level</p> <p>Хорошо Knows some principles of experimental and field research methods Knows how to use experimental and field methods of scientific research in his professional activity with minor errors Possesses the skills of conducting experimental and field methods of scientific research at the intermediate level</p> <p>Отлично Knows the basic principles of conducting experimental and field research methods Knows how to use experimental and field methods of scientific research in his professional activities Possesses the skills of conducting experimental and field methods of scientific research</p> |
| <p>ПК.1.3 Анализирует, интерпретирует, обобщает полученные научные данные, представляет в виде отчетов, обзоров, научных работ</p> | <p>Know how to analyze, interpret, summarize the obtained scientific data Be able to present the obtained scientific data in the form of reports, reviews, scientific works Possess the skills of analysis, interpretation, generalization of the obtained data and their presentation in the form of reports, reviews, scientific works</p> | <p>Неудовлетворительно Doesn't know how to analyze, interpret, summarize the scientific data obtained Does not know how to present the obtained scientific data in the form of reports, reviews, scientific works Does not possess the skills of analysis, interpretation, generalization of the obtained data and their presentation in the form of reports, reviews, scientific works</p> <p>Удовлетворительно Knows superficially how to analyze, interpret, summarize the scientific data obtained Is able to present the obtained scientific data in the form of reports, reviews, scientific papers with gross errors Possesses the skills of analyzing, interpreting, summarizing the obtained data and presenting them in the form of reports, reviews, scientific</p> |

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| | | <p>Удовлетворительно works at a low level</p> <p>Хорошо Knows partially how to analyze, interpret, summarize the scientific data obtained Is able to present the obtained scientific data in the form of reports, reviews, scientific papers with minor errors Possesses the skills of analysis, interpretation, generalization of the obtained data and their presentation in the form of reports, reviews, scientific works at the intermediate level</p> <p>Отлично Knows how to analyze, interpret, summarize the obtained scientific data Is able to present the obtained scientific data in the form of reports, reviews, scientific works Possesses the skills of analysis, interpretation, generalization of the obtained data and their presentation in the form of reports, reviews, scientific works</p> |
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УК.3

Способен участвовать в реализации группового проекта

| Компетенция | Планируемые результаты обучения | Критерии оценивания результатов обучения |
|---|--|--|
| <p>УК.3.2 Разрешает противоречия и конфликты, возникающие в ходе командной работы, корректирует работу команды и перераспределяет роли с учетом интересов сторон</p> | <p>Know your role in the team and strive to fulfill it Be able to resolve contradictions and conflicts that arise in the course of teamwork Possess the ability to adjust the work of the team and reallocate roles taking into account the interests of the parties</p> | <p>Неудовлетворительно Doesn't know his role in the team Does not know how to resolve contradictions and conflicts that arise in the course of teamwork Does not have the ability to adjust the work of the team and reallocate roles taking into account the interests of the parties</p> <p>Удовлетворительно Knows his role in the team, but does not fulfill it He/she is able to resolve some contradictions and conflicts that arise in the course of teamwork Tries to adjust the work of the team and redistribute the roles taking into account the interests of the parties</p> <p>Хорошо He/she knows his role in the team, practically fulfills it He/she is able to resolve almost all contradictions and conflicts that arise in the course of teamwork</p> |

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| | | <p style="text-align: center;">Хорошо</p> <p>Has the ability to adjust the work of the team, but to redistribute the roles without taking into account the interests of the parties</p> <p style="text-align: center;">Отлично</p> <p>He/she knows his role in the team and strives to fulfill it</p> <p>He/she is able to resolve contradictions and conflicts that arise in the course of teamwork</p> <p>Has the ability to adjust the work of the team and reallocate roles taking into account the interests of the parties</p> |
| <p>УК.3.1 Решает задачи, предусмотренные конкретной ролью в командной работе</p> | <p>Know the effective principles of distribution in which the responsibility of each role does not exceed the skills of the team member who got this role.</p> <p>Be able to assign functional roles in teamwork</p> <p>Have the skills to organize teamwork</p> | <p style="text-align: center;">Неудовлетворительно</p> <p>Does not know the effective principles of distribution in which the responsibility of each role does not exceed the skills of the team member who got this role</p> <p>Does not know how to assign functional roles in teamwork</p> <p>Does not have the skills to organize team work</p> <p style="text-align: center;">Удовлетворительно</p> <p>Knows ineffective principles of distribution in which the responsibility of each role does not exceed the skills of the team member who got this role</p> <p>Can distribute functional roles in team work with gross shortcomings</p> <p>Has the skills to organize team work at a low level</p> <p style="text-align: center;">Хорошо</p> <p>Knows some effective principles of distribution in which the responsibility of each role does not exceed the skills of the team member who got this role</p> <p>Can assign functional roles in team work with minor drawbacks</p> <p>Has the skills to organize team work at the intermediate level</p> <p style="text-align: center;">Отлично</p> <p>Knows effective distribution principles in which the responsibility of each role does not exceed the skills of the team member who got this role</p> <p>Can distribute functional roles in teamwork</p> <p>Has the skills to organize team work at a high level</p> |

Оценочные средства

Вид мероприятия промежуточной аттестации : Экзамен

Способ проведения мероприятия промежуточной аттестации : Защищаемое контрольное мероприятие

Продолжительность проведения мероприятия промежуточной аттестации :
время отводимое на доклад 2

Показатели оценивания

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|--|-----------------------------------|
| <p>The student does not know modern methods of field and laboratory environmental research. It can not resolve contradictions and conflicts that arise in the course of teamwork, is not able to plan and adjust the work of the team and redistribute roles taking into account the interests of the parties. Unable to present their own opinions on a particular problem in the professional field; experiencing insurmountable difficulties in the implementation of the tasks of the practice, writing a report and in the course of its defense.</p> | <p>Неудовлетворительно</p> |
| <p>The student is partially proficient in laboratory environmental research methods. He is able to work in a team and organize the workflow, resolve contradictions and conflicts that arise in the course of teamwork, but he is not able to plan and adjust the work of the team and redistribute roles taking into account the interests of the parties. He has the skills of collective work, but can not present his own opinion on a particular problem in the field of ecology and nature management; he has some problems in the course of performing practical tasks, writing a report and defending it.</p> | <p>Удовлетворительно</p> |
| <p>The student knows some methods of field and laboratory environmental research. He is able to work in a team and organize the work process, plan the work of the team, resolve contradictions and conflicts that arise in the course of teamwork, adjust the work of the team and redistribute roles without taking into account the interests of the parties. He has the skills of teamwork, presenting his own opinion on a particular problem in the field of ecology and nature management in the course of performing practical tasks, preparing a report and defending it; at the same time, it does not do this quite confidently, and allows certain inaccuracies in the design of the practice report, which nevertheless do not affect the final result of the work.</p> | <p>Хорошо</p> |
| <p>The student is proficient in modern methods of field and laboratory environmental research. He is able to work in a team and organize the working process, resolve contradictions and conflicts that arise in the course of teamwork, and adjust the work of the team and redistribute roles taking into account the interests of the parties. He has all the necessary skills of teamwork, presenting his own opinion on a particular problem in the field of ecology and nature management in the course of performing practical tasks, preparing a report and defending it</p> | <p>Отлично</p> |